

STREAMLINING CROSS-LINKING TRANSPORTATION AND EVACUATION PLANNING: A RESOURCE GUIDE

FOR METROPOLITAN PLANNING ORGANIZATIONS
AND REGIONAL COUNCILS



U.S. Department of Transportation
Federal Highway Administration



NARC

Building Regional Communities

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Catalog Number: 09-01

Foreword



Fred Abousleman
Executive Director
National Association of Regional Councils

In September 2008, the **National Association of Regional Councils** entered into a year-long partnership with the U.S. Department of Transportation Federal Highway Administration (FHWA) Office of Planning to address streamlining, cross-linking and coordination of evacuation and transportation planning efforts by regional councils (RCs) and metropolitan planning organizations (MPOs) in instances of manmade or natural disasters.

Through a national Advisory Council of local elected officials, regional planning practitioners, business leaders, interest groups and federal agencies (see Appendix A), NARC collected information on the state of the practice and innovations in cross-linking evacuation and transportation planning at the regional level. NARC used web communications, an electronic newsletter, regular conference calls and two workshops to inform RCs and MPOs of activities, developments and best practices.

This resource compilation is intended to help further the state of practice, and engage RCs and MPOs on a more consistent and widespread level to streamline, cross-link and coordinate transportation and evacuation planning efforts. Information on pertinent research papers, regional case studies, and other available resources that facilitate increased regional approaches to combined, multi-jurisdictional transportation and evacuation planning are provided.

This project yielded success with a large cross-sector of information and participation (see Appendix D) with far-reaching national impact. NARC looks forward to continuing these efforts and furthering critical transportation and evacuation planning and response information, tools and partnerships for local governments, elected officials, regional planning organizations and community stakeholders.

A handwritten signature in black ink, appearing to read "Fred Abousleman". The signature is fluid and cursive, with a long horizontal stroke at the beginning.

About NARC

The **National Association of Regional Councils** (NARC) is a 501(c)(3) nonprofit membership organization and public interest group, which advocates for building regional communities through the representation of multi-purpose, multi-jurisdictional Regional Councils (RCs) and Metropolitan Planning Organizations (MPOs). These organizations serve local elected officials and community leaders in developing common strategies for addressing complex issues, in the areas of transportation, economic development, homeland security and environmental challenges.

A recognized authority and leading advocate for regional organizations and regional solutions, NARC is a unique alliance with representation from local elected officials, RCs and MPOs nationwide. NARC has an active membership, representing over half of the national network of RCs. Of the 39,000 local governments in the U.S. (counties, cities, townships, etc), 35,276 are served by RCs.

Acknowledgments

This work was prepared by the National Association of Regional Councils (NARC) under contract with the U.S. Department of Transportation Federal Highway Administration (FHWA) Office of Planning. We wish to thank FHWA for its support and guidance in making this project possible. We would also like to thank the regional planning organizations, associations, businesses and federal agencies that gave their time and expertise in fulfilling the requirements of this project.

A special thanks to NARC's Homeland Security Committee members and co-chairs the Honorable Patti Kay-Clapper, Commissioner, Pitkin County, CO, and Mr. David Robertson, Executive Director, Metropolitan Washington Council of Governments, Washington, DC.

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Executive Summary

According to a 2005 U.S. Nuclear Regulatory Commission report, between years 1990 and 2003, on average, an evacuation of more than 1,000 people occurred once every two to three weeks somewhere in the continental United States in response to natural disasters, technological hazards and malevolent acts. **Streamlining Cross-linking Transportation and Evacuation Planning: A Resource Guide** is a document geared towards Metropolitan Planning Organizations (MPOs), Regional Councils (RCs) and their local government officials to assist in either creating or enhancing coordinated transportation and evacuation planning and response efforts at the regional level based on peer-to-peer exchanges and expert analysis.



According to this project's research, nearly 75 percent of participating RCs and MPOs are engaged in some form of evacuation planning. These organizations and local governments have a central role in ensuring these evacuations are coordinated to best provide for the safety and security of citizens, communities and resources. This report, section-by-section, provides resources, suggestions and baseline recommendations for furthering this research to benefit the state of the practice.

Section 1 sets the stage for the critical role regional planning organizations play in transportation/evacuation planning and response in emergency situations.

Section 2 details the outcomes of the two issue-specific workshops that highlighted policymaker, practitioner and researcher experiences in and with linking transportation and evacuation planning and response. These workshops provided specific recommendations for the regional role and future activities to further the state of the practice.

Section 3 highlights areas within regional transportation and evacuation planning that need further attention and research in order to better prepare local governments, RCs and MPOs, and communities. For example, the need to incorporate the anticipated impacts of climate change and adaptation strategies into transportation and evacuation planning is something noted as an important area for investigation.

Section 4 is a literature-type review of articles, reports, exercises and analysis of various elements within transportation and evacuation preparedness and response. This listing provides resources for local governments, RCs and MPOs to access for improving their emergency activities.

Section 5 is a complement to Section 4, and lists additional resources for local governments, RCs and MPOs.

The **Appendices** include important research, analysis, findings, recommendations and case studies based on this project's activities. This is an important section to view the project's national far reaching impact, as well as information from local elected officials and regional planning organizations on existing evacuation practices and their recommendations for federal policy and program improvements to facilitate better planning and response at the local and regional levels.

It is evident that more research, outreach and information sharing among local governments, regional planners, businesses, community and emergency stakeholders, and federal and state partners is needed to enhance critical relationships and practices that protect citizens and critical infrastructure to ensure the viability and resiliency of the country.

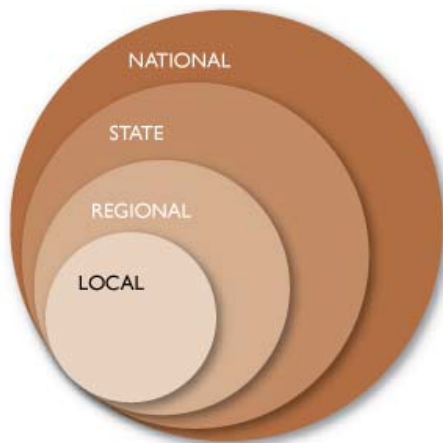
Section One: Background

“Regional transportation and evacuation planning and response are critical to protecting the safety and security of our citizens, resources, communities and future. Manmade and natural disasters do not stop at city, county or state boundaries; and, therefore require the regional cooperation provided through regional councils – large, small, urban and rural – pre and post-disaster.”

The Honorable Stephen Cassano
President, NARC
Selectman, Town of Manchester, Connecticut



Recent high-profile disasters have tested federal, state and local agencies in their ability to evacuate and safely relocate residents, particularly those that represent disabled or disadvantaged populations. Traffic congestion resulting from the simultaneous evacuations of several million residents coupled with shortages of fuel and other basic necessities underscores the need for well-planned, dynamic regional planning strategies that incorporate multiple jurisdictions and agencies.



Areas Affected by Evacuation Plans
Adapted from the National Response Plan definition. P. 71.

Multi-jurisdictional integration and coordination conducted at the regional level provides the organizational framework through which localities can coordinate services and activities, particularly in cases of emergency. Applying coordinated processes between transportation and evacuation planning is a natural extension of transportation and homeland security strategies. Regional Councils (RCs) have proven effective in overcoming multi-jurisdictional barriers when planning for, and responding to, natural or manmade emergencies. Metropolitan Planning Organizations (MPOs), as federally-mandated transportation planning bodies, are also well versed in preparing transportation plans that integrate both safety and security considerations. However, the cross-linking of the MPO transportation plans and the RC emergency preparedness and response work has, at times, been overlooked when creating a fulsome process and plan that extends beyond city, county and state boundaries.

What are Regional Planning Organizations?

Regional Councils of Governments, Regional Development Organizations and Metropolitan Planning Organizations continuously maintain and improve our nation's communities by fostering innovative solutions that provide sustainability to regions through strategic design, creating partnerships and cross-linking towns, cities, counties and states.

Regional Councils of Governments and Regional Development Organizations compose the national network of 520 multi-jurisdictional (and, in some cases, multi-state), local government-based planning and development organizations, including the network of 380 Economic Development Districts designated by the U.S. Department of Commerce's Economic Development Administration.

Metropolitan Planning Organizations (MPOs) refer to the national network of 385 organizations established through federal transportation law (U.S. Code Title 23, Chapter 1, Section 134) to serve as the lead transportation planning organizations for areas with a population of 50,000 or more. Of the existing MPOs, about half are administered, housed or staffed by a Regional Council, with the remaining MPOs operated within a state, county or city planning office or by a stand-alone nonprofit entity.

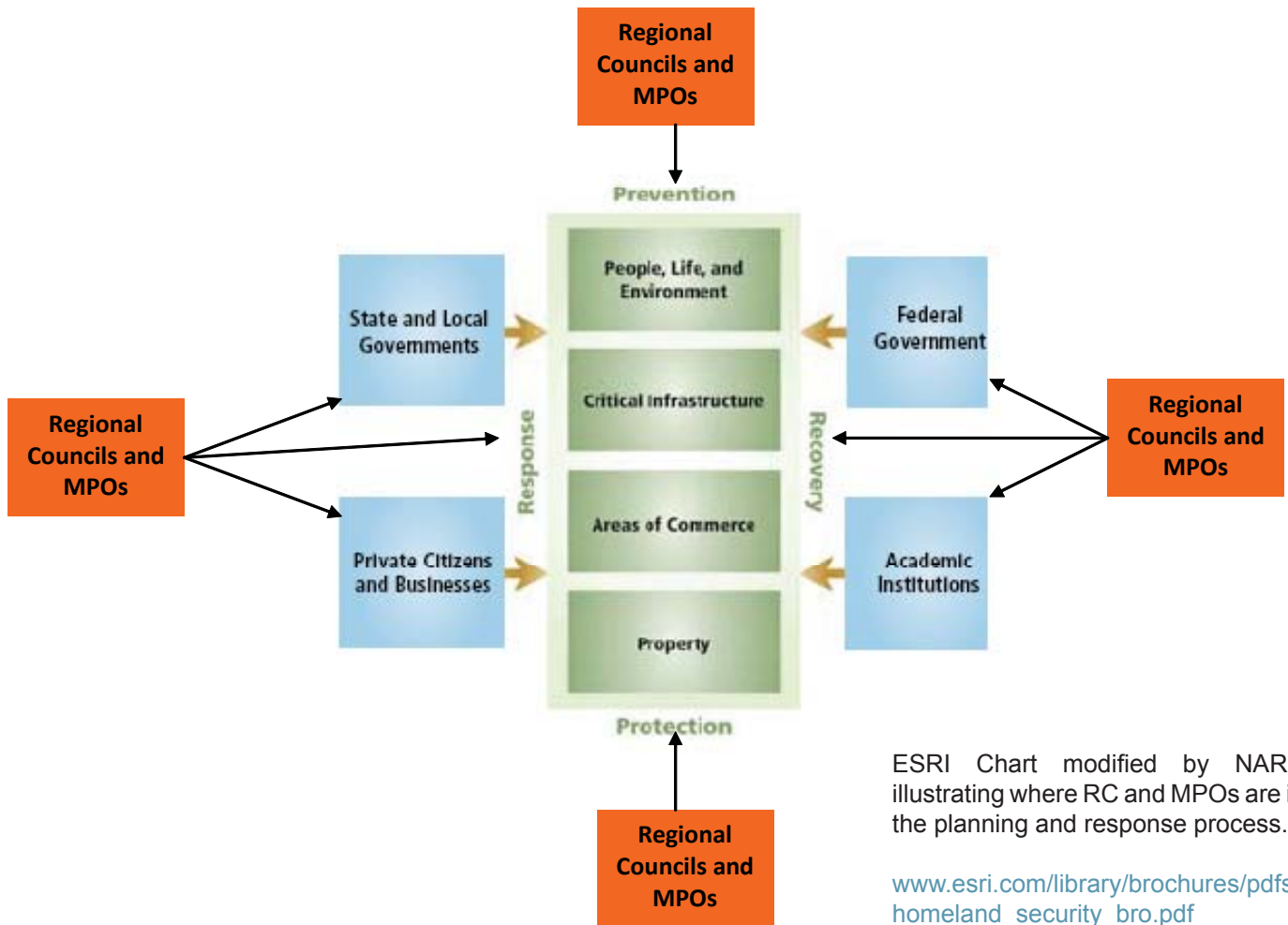
Even in the largest municipalities, first responders need the support of local elected and other officials and personnel from their own and neighboring jurisdictions, as well as support from numerous regional, state, federal and private sector entities. The sheer number of agencies taking part in any emergency response demands coordination, mutual support and effective communication. Regional planning and coordination of response efforts is essential in ensuring threat-based, multi-jurisdictional and interoperable assessments and plans. Coordinated, area-wide training, equipment acquisition and recovery planning is key to effective regional prevention, preparedness, response, recovery and mitigation.

Regional RCs and MPOs have the accountability and experience necessary to develop and coordinate comprehensive regional plans that encompass the needs of the federal, state, and local governments, the private sector, and all other stakeholders in providing security for communities. These organizations have an over 40 year history of being engaged in long-term planning, management and response relationships with local governments, elected officials, community stakeholders and citizens across multiple jurisdictions and issue areas. According to a U.S. Government Accountability Office September 2004 report (see Appendix F),

[r]egional coordination efforts are enhanced by the presence of a collaborative regional organization that includes representation from many different jurisdictions and different disciplines. Also, when regional civic and political traditions foster interjurisdictional coordination, flexibility in the membership and geographic area of the regional organization can enhance collaborative activities. In addition, a comprehensive strategic plan with measurable goals and objectives helps focus resources and efforts to address problems. Finally, funding regional organizations provides incentives for their collaborative planning activities.

Previous experience has illustrated that during a major manmade or natural crises, there is a tremendous need for planning and communications among local first responders, local policy officials, and the state and federal sectors. The administrative framework for regional planning, communications and response is necessary, and one of the best place to do so is through the structure and vehicle of crosslinking RCs and MPOs.

Several MPOs and RCs are successfully breaking these organizational, political and jurisdictional barriers to successfully execute disaster-related transportation and emergency response plans. These effective, regionally coordinated evacuation and transportation plans are critical in mitigating the financial impacts, reducing congestion, ensuring accurate communication, and providing safe and timely departures of people and assets.



ESRI Chart modified by NARC illustrating where RC and MPOs are in the planning and response process.

www.esri.com/library/brochures/pdfs/homeland_security_bro.pdf

“For us, without a doubt, regional efforts helped [in Hurricane Rita]. With the activation of the Deep East Texas COG-Multi-Agency Coordination Center during Hurricanes Gustav and Ike, state agencies, regional utility providers and local officials - for the first time - had a centralized coordination center with which to communicate about the needs of the 12 county region. This type of regional coordination and assistance increases each entity’s ability to deliver disaster services and enhances the effectiveness of those services.”

**The Honorable John Thompson
Past President, NARC
Judge, Polk County, Texas**



Emergency Categories

According to the U.S. Department of Transportation, an emergency is an event that has the potential to become life threatening to individuals. The following are officially recognized categories of disasters:

Category	Description
<i>Planned Disaster</i>	
Biological	Biological attack occurs when a virus or germ is being released, causing widespread illness.
Chemical	Chemical attack occurs when a gas or man-made chemicals is released, causing widespread illness.
Nuclear	Nuclear attack consists of an explosion of intense heat and light, emitting dangerous radiation.
Terrorist Attack	A terrorist attack occurs when terrorists attack a structure or people, risking the safety of a nation or society (e.g. suicide bombings).
<i>Natural Disaster</i>	
Earthquake	An earthquake is a sudden movement of the earth caused by the abrupt release of strain that has accumulated over a long time.
Fire	The underlying principle in providing safety from fire and smoke in buildings is that of safe egress - the efficient relocation of building occupants to an area of safety, usually outside the building.
Flood	Flood occurs when there's disproportional amount of rainfall and could become destructive in surrounding areas.
Hurricane	A hurricane is similar to a tornado but takes place over an ocean with a low pressure weather system.
Thunder Storm	Any thunderstorm is dangerous as it produces lightning which can initiate wildfires or accompany more severe weather such as hail or tornado.
Tornado	A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach up to 300 miles per hour.
Winter Storm	A winter storm can bring significant amounts of snow, freezing rain or sleet to a region.

"In the madness of the 9-11 terrorist attack on the Pentagon, the National Capital Region experienced first-hand the importance of regional cooperation for transportation and evacuation planning, to keep people safe and their property and livelihood secure. The lessons learned have informed many activities since, whether a blizzard or an historic Presidential Inauguration."

***The Honorable Penelope Gross
Board Member, NARC Region III
Supervisor, Fairfax County, Virginia Board of Supervisors
Chairman, Metropolitan Washington Council of Governments***



Section Two: NARC Workshops

In order to gain a variety of perspectives and information, and to develop replicable best practices, NARC held two workshops on RC and MPO goals, strategies, outcomes and experiences in streamlining and cross-linking transportation and evacuation plans.

2.1 Workshop One:

Multi-Modal Evacuation Planning for Special Needs Populations

NARC held the first *Transportation and Evacuation Planning Workshop* on Tuesday, February 24, 2009, during the 2009 National Conference of Regions in Washington, DC. This workshop examined how evacuation planning can be cross-linked and coordinated with multi-modal transportation planning for special needs populations. Three critical components highlighted were:

- Cross-coordination with relevant local and regional agencies during the planning process;
- Effective communication techniques used to make plans accessible to special needs populations; and,
- Efforts for multi-modal evacuations affecting multiple regional planning organizations which are contiguous to one another.

Through presentations by urban and rural, coastal and interior, and large and small regions, as well as national associations representing both individuals and discrete special needs populations, the workshop emphasized that while there are differences in planning for varying situations, there are many common needs. Each presentation emphasized the importance of access to data, effective communication, common terminologies, and coordination and outreach for any successful regional transportation-evacuation planning initiative.

Presenters included: the Houston-Galveston Area Council (Houston, TX), South East Texas Regional Planning Commission (Beaumont, TX), Pitkin County, CO (Aspen, CO), Northwest Colorado Council of Governments (Silverthorne, CO), National Association of Area Agencies on Aging (Washington, DC), and American Association for Retired Persons (Washington, DC).

NARC, in partnership with the Federal Transit Administration (FTA), developed case studies focusing on small and mid-sized MPOs and their work in transit security planning. This useful resource for transportation-evacuation planning is available in Appendix F.

A full workshop summary is attached in Appendix B and additional presentation materials from this workshop are available on NARC's website – www.NARC.org.



2.2 Workshop Two:

The Importance of Data in Transportation - Evacuation Planning

NARC held the second *Workshop* on Monday, June 1, 2009, during its 43rd Annual Conference and Exhibition in Denver, CO, examining the impacts data collection, analysis and implementation have on cross-linking transportation and evacuation planning at the federal, regional and local levels. The workshop examined:

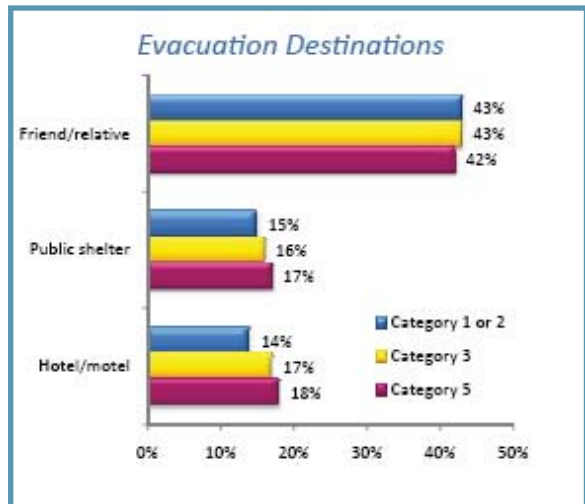
- federal data and tools available for use in regional level planning;
- the ways data is compiled at the federal, local and regional levels, and the impact(s) of the 2010 Census; and,
- the best practices and replicable methods for regional data collection, analysis and implementation.

NARC, FHWA and participating members, speakers and partners created a general baseline for data collection and tools intended to inform transportation and evacuation planning and execution on the local and regional levels.

Presenters noted the existence of multiple sources and methods of collecting data depending on the size, capacity, funding and staffing of a planning organization, but many regional planning organization (both RC and MPO) efforts exemplify the strength of coordinating, analyzing and implementing data at the regional level in order to provide for the most complete and functional regional evacuation models.

The workshop highlighted basic data elements or sets that should be considered in the creation of a general baseline for cross-linking transportation and evacuation planning, including:

- Possible hazards/risk assessment;
- Demographics and Population Characteristics (through local surveys);
 - Vehicle availability/primary method of transportation
 - Age
 - Race
 - Disability status and type
 - English proficiency
 - Residential, Daytime or Tourist/Non-permanent
- Population Evacuation Behavior (through local surveys);
- Land Use Assessment;
- Community Assets and Critical Facilities (i.e. schools, universities, transit, hospitals, street maps, utility lines etc.);
- Shelter Capabilities;
- Commuter Shed flows (work-to-home travel patterns);
- Topography;
- Evacuation routes;
 - Traffic flow and control
 - Estimates of vehicle movements
- Fuel management/available supply; and,
- Relevant and consistent terminologies.



Example of Data Collected from Florida Statewide Regional Evacuation Study Program: South Florida Behavior Survey Report

Presenters: Pitkin County, CO (Aspen, CO), FHWA Office of Planning, U.S. Census Bureau, North Central Colorado All-Hazards Region, Mid-America Regional Council (Kansas City, MO), Deep East Texas Council of Governments (Jasper, TX), Wilbur Smith Associates (Tallahassee, Florida), and Citilabs (Stillwater, MN).

This workshop allowed participations to earn professional development American Institute of Certified Planners (AICP) Certification of Maintenance (CM) program credits.

A full workshop summary, including the draft baseline data, is included in Appendix C, and additional presentation materials from this workshop are available on NARC's website – www.NARC.org.

Section Three: Topics For Further Research

Throughout the project period, NARC staff, the project Advisory Council, and workshop speakers and attendees have raised several issues and challenges for which there are currently not well established solutions or guidance available. By identifying a selection of these issues below, NARC hopes to further the discussion on and increase the practice of streamlining and cross-linking transportation and evacuation plans.

These topics for further investigation, including as future workshop topics or case study subjects, include:

- **The need to incorporate climate change and adaptation into transportation and evacuation planning.** The Transportation Research Board of the National Academies' Special Report 290 shows that there is scientific consensus confirming global climate change will have significant potential effects on critical infrastructure. In order to address this finding, as well as other potential consequences of global climate change, transportation and evacuation planners must take several new factors into account when planning for emergency evacuations at the regional level. As knowledge surrounding climate change and its impacts increases, resources that integrate this information into standard planning processes must be made available for RCs and MPOs to effectively streamline and cross-link transportation and evacuation planning. Many on the Advisory Council were interested in exploring the coordination of hazard mitigation plans, evacuation plans and Long Range Transportation Plans due to the expected impacts of climate change. This would likely include a thorough examination of replicable best practices, training and information on adaptation strategies.
- **The need to expand upon the existing baseline of data necessary to cross-link transportation and evacuation planning.** In the process of identifying speakers for the second *Transportation and Evacuation Planning workshop*, focused on the data needs for transportation and evacuation planning, NARC staff and Advisory Council members discovered a lack of understanding and experience among RC and MPO planners. More information focused specifically on cross linking transportation and evacuation planning at a regional level is essential. RCs and MPOs are infrequently identified as an appropriate audience for training materials and case studies, as is noticeable within the resources compiled in this documented.
- **The need to improve public outreach and general communications efforts among RCs and MPOs, other agencies involved in transportation and evacuation planning, and the general public.** Advisory Council members frequently returned to this issue throughout the life of the project. While there are resources available on this topic, it remains a challenge for many RCs and MPOs in their efforts to cross-link transportation and evacuation planning. With an increase of resources identifying RCs and MPOs as players within emergency evacuation planning efforts, including case studies featuring successful regions, it will be possible to improve and expand the practice of cross-linking the plans in regions across the country. The Advisory Council noted an interest in building planning capacity between local elected officials, transportation planners and public safety officials as a critical step in the transportation-evacuation planning and response programs.

- **The need to improve communications strategies among local elected officials and local communities.** The Advisory Council highlighted the need for better communications strategies, outreach and tools for local elected officials to relay emergency situation information or alerts. This included a better reach with and coordination among regional media messaging and public relations efforts.
- Additional topics raised but not fully addressed by current research or NARC workshops:
 - Regional threat assessment;
 - Vulnerability analyses of regional transportation infrastructure;
 - Multi-modal evacuation planning;
 - Modeling & simulation;
 - Emergency transit operations planning;
 - Training & tabletop simulation exercises;
 - Public outreach efforts and best practices;
 - Logistics support to local, state and federal responders;
 - Support of special facilities & special needs population search and rescue operations;
 - Cost effective recovery investment strategy development;
 - Transportation infrastructure damage assessment;
 - Broadband and its Role in Regional Transportation-Evacuation Planning, Response and Recovery – Urban, Suburban and Rural; and,
 - Social Networking and its Role in Transportation-Evacuation Planning.

NARC will continue to examine these issues and many more through its Campaign initiative. Building upon the success of the environmentally-focused *Green Regions* Campaign, NARC will launch the *Mobile Regions* and *Secure Regions* Campaigns as innovative outreach tools to advance the regional approach to transportation and homeland security issues. Through the campaigns, NARC is able to reach RCs, MPOs, local elected officials, businesses, government and citizens by communicating with relevant public and private partners; researching and surveying stakeholders; launching virtual toolboxes; developing interactive databases of best practices; and, holding educational briefings, workshops, webinars and training sessions.

“Emergencies are seldom confined to just one jurisdiction. Flooding, tornadoes, and hurricanes often affect more than one region, so a county’s or city’s emergency planning must be done in coordination with its neighbors. The state of Texas has facilitated this by providing grant funding for an emergency planner in each of our 24 regions who is charged with helping every jurisdiction within the region coordinate its emergency plans.”

***The Honorable Penny Redington
Executive Director, Texas Association of Regional Councils***



Section Four: Compilation of Resources

4.1 National Analyses

Planning

TITLE	<i>Effective Emergency Management: Making Improvements for Communities and People with Disabilities</i>
LINK	http://www.ncd.gov/newsroom/publications/2009/NCD_EmergencyManagement_HTML/EffectiveEmergencyManagement.html
PUBLICATION	National Council on Disability, August 2009.
ABSTRACT	This report includes a discussion on the variety of hazards in planning for emergency preparedness, response, recovery and mitigation for people with disabilities, as well as a focus on the importance of collaboration among planning agencies. It also includes promising practices and recommendations for action at the federal, state, local and individual level.
<hr/>	
TITLE	<i>Effective Regional Coordination Can Enhance Emergency Preparedness</i>
LINK	http://www.gao.gov/cgi-bin/getrpt?GAO-04-1009
PUBLICATION	U.S. Government Accountability Office (GAO), September 2004
ABSTRACT	This report is a GAO analysis of federal program documents and plans, and interviews with federal, state, and local officials in six metropolitan areas that revealed several factors that characterize effective regional coordination of federally supported efforts.
<hr/>	
TITLE	<i>Improvised Explosive Devices (IED) Attack: A fact sheet from the National Academies and the Department of Homeland Security</i>
LINK	http://www.trb.org/news/blurb_detail.asp?id=10595
PUBLICATION	The Transportation Research Board of the National Academies and the Department of Homeland Security, News & Terrorism: Communicating in a Crisis, 2009.
ABSTRACT	This fact sheet explains what an IED is, how an IED attack might occur and potential hazards that are specific to IED attacks. It also provides examples of past IED attacks within the U.S., and generally offers sufficient background information to begin planning for evacuations or mitigations related to an IED attack.
<hr/>	
TITLE	<i>National Study on Carless and Special Needs Evacuation Planning: A Literature Review</i>
LINK	http://planning.uno.edu/docs/CarlessEvacuationPlanning.pdf
PUBLICATION	John L. Renne, Ph.D., AICP, Thomas W. Sanchez, Ph.D. and Todd Litman, University of New Orleans Transportation Center for U.S. DOT Federal Transit Administration, October 2008.
ABSTRACT	This literature review includes academic, professional and government sources with information on best practices, strengths and weaknesses in the field of evacuation planning for carless and special needs populations. This review features a chapter on city and metropolitan area evacuations and a chapter on policy recommendations for success such as coordinating data from government agencies and non-profit organizations and utilizing census data as an alternative.

TITLE	<i>Preventive Measures</i>
LINK	Unavailable online
PUBLICATION	Bruce Abernethy, Thinking Highways, North American Edition (Vol 2, Issue 4), December 2007.
ABSTRACT	This article provides an argument for the importance of integrating emergency management, traffic and public transit management functions through intelligent transportation systems (ITS). The article focuses on the link between the connection of ITS functions and the ability to prevent or mitigate a terrorist attack.
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TITLE	<i>The Role of the Metropolitan Planning Organization (MPO) In Preparing for Security Incidents and Transportation System Response</i>
LINK	http://planning.dot.gov/documents/securitypaper.htm
PUBLICATION	Michael D. Meyer, Ph.D., P.E., Georgia Institute of Technology, No Date.
ABSTRACT	This paper highlights a variety of potential MPO roles in utilizing planning, modeling, and management and operations to prepare for security incidents and disasters. It focuses on the need for a variety of MPO responses based on the geography and assigned duties of particular MPOs.
<hr/>	
TITLE	<i>Routes to Effective Evacuations Primer Series: Using Highways during Evacuation Operations for Events with Advance Notice</i>
LINK	http://ops.fhwa.dot.gov/publications/evac_primer/primer.pdf
PUBLICATION	U.S. Department of Transportation, 2006.
ABSTRACT	This report provide a wealth of information on each topical area, featuring sections on the planning process and important planning considerations for transportation planners.
<hr/>	
TITLE	<i>Routes to Effective Evacuations Primer Series: Using Highways for No-Notice Evacuations</i>
LINK	http://www.ops.fhwa.dot.gov/publications/evac_primer_nn/primer.pdf
PUBLICATION	U.S. Department of Transportation, 2007.
ABSTRACT	This report provide a wealth of information on each topical area, featuring sections on the planning process and important planning considerations for transportation planners.
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TITLE	<i>Routes to Effective Evacuations Primer Series: Evacuating Populations with Special Needs</i>
LINK	http://www.ops.fhwa.dot.gov/publications/fhwahop09022/fhwahop09022.pdf
PUBLICATION	U.S. Department of Transportation, 2009.
ABSTRACT	This report provide a wealth of information on each topical area, featuring sections on the planning process and important planning considerations for transportation planners.
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TITLE	<i>Saving Lives: Including People with Disabilities in Emergency Planning</i>
LINK	http://www.ncd.gov/newsroom/publications/2005/saving_lives.htm
PUBLICATION	National Council on Disability, April 2005.
ABSTRACT	This report emphasizes the importance of a state and local government role in emergency planning for people with disability, as well as the need to coordinate with multiple government agencies and community-based organizations while developing and executing such a plan. The report also includes information on the Federal Communications Commissions ongoing work on the topic and descriptions of people with disabilities' experiences in emergency evacuations.

TITLE	<i>Tabletop Exercise Instructions For Planned Events and Unplanned Incidents/ Emergencies</i>
LINK	http://www.ops.fhwa.dot.gov/publications/tabletopexercpe/index.htm
PUBLICATION	Federal Highway Administration.
	This FHWA-prepared document offers suggestions on how to test a transportation management plan through a tabletop exercise. It provides scenarios for organizations and key stakeholders to test plans through a facilitated scenario based discussion. Tabletop exercises allow traffic management team officials to review the effect of certain event-specific action plans on other concurrent events. In addition, the tabletop exercise approach is offered as a way to train and familiarize personnel with their roles and responsibilities within the planned special event's transportation management plan.
TITLE	<i>Transportation-Disadvantaged Populations: Actions Needed to Clarify Responsibilities and Increase Preparedness for Evacuations</i>
LINK	http://www.gao.gov/new.items/d0744.pdf
PUBLICATION	U.S. Government Accountability Office Report to Congress, December 2006.
ABSTRACT	This report identifies several barriers to safely and efficiently evacuating transportation-disadvantaged populations and offers examples of actions that local and state governments have taken in order to improve their performance. It also identifies several areas for improvement or innovation for federal agencies.
TITLE	<i>Transportation Evacuation Planning and Operations Workshop</i>
LINK	http://ops.fhwa.dot.gov/publications/tepo_wksp/main.htm
PUBLICATION	Federal Highway Administration, March 2005.
ABSTRACT	This summary document provides information on presentations made during the Transportation Evacuation Planning and Operations Workshop held in conjunction with the 2005 National Hurricane Conference. It features several presentations on state-level issues as well as updates on federal programs from FHWA and FEMA.
TITLE	<i>TRB Peer Exchange: Disaster Response in Transportation Planning</i>
LINK	http://144.171.11.107/Main/Public/Blurbs/159341.aspx
PUBLICATION	Transportation Research Board's (TRB) National Cooperative Highway Research Program, May 2007
ABSTRACT	The American Association of State Highway and Transportation Officials' Standing Committee on Planning released a report produced by TRB's National Cooperative Highway Research Program summarizing a peer exchange held on May 23, 2007, that explored ways in which disaster response could be more effectively integrated the transportation planning processes of state departments of transportation and metropolitan planning organization.

Operational

TITLE	<i>Best Practices in Emergency Transportation Operations Preparedness and Response: Results of the FHWA Workshop Series</i>
LINK	http://ops.fhwa.dot.gov/publications/etopr/best_practices/etopr_best_practices.pdf
PUBLICATION	Nancy Houston, Booz Allen Hamilton for FHWA, December 2006.
ABSTRACT	This report features best practices identified in the FHWA Workshop Series, held between 2002 and 2005 in various locations throughout the country. This report provides information on best practices that were identified during the workshops, such as tools and strategies for interagency coordination and communication, information sharing and policy.
TITLE	<i>Catastrophic Hurricane Evacuation Plan Evaluation: A Report to Congress</i>
LINK	http://www.fhwa.dot.gov/reports/hurricanevacuation/
PUBLICATION	U.S. DOT and U.S. Department of Homeland Security (DHS), June 2006.
ABSTRACT	The U.S. DOT developed a process to evaluate the readiness and adequacy of State and local jurisdictions evacuation plans, including identifying the major components of a comprehensive evacuation planning and implementation program, collecting current practices and information on evacuations, developing criteria to assess current plans, conducting on-site discussions with State and local emergency management officials, and identifying lessons learned and best practices from recent evacuations. The assessment criteria were developed from current Federal guidelines on evacuations; the issues identified in SAFETEA-LU and the FY 2006 DOT Appropriations Act; recent government reports on Hurricanes Katrina and Rita; and additional issues identified by U.S. DOT.
TITLE	<i>Common Issues in Emergency Transportation Operations Preparedness and Response: Results of the FHWA Workshop Series</i>
LINK	http://ops.fhwa.dot.gov/publications/etopr/common_issues/etopr_common_issues.pdf
PUBLICATION	Nancy Houston, Booz Allen Hamilton for FHWA, February 2007.
ABSTRACT	The companion to the Best Practices report, this report focuses on issues that arose throughout the FHWA Workshop Series that may not have established solutions. Issues discussed in this report include remaining difficulties in interagency coordination and communication, strategies for mutual aid, difficulties in facilitating information sharing and many others.
TITLE	<i>Development of Evacuation Time Estimate Studies for Nuclear Power Plants</i>
LINK	http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6863/index.html#pub-info
PUBLICATION	L.J. Dotson and J. Jones, Sandia National Laboratories for the U.S. Nuclear Regulatory Commission, January 2005.
ABSTRACT	This report focuses on new developments in the practices and technologies used to determine Evacuation Time Estimates (ETEs) and the importance of using these new technologies when developing new ETEs.

TITLE	<i>Emergency Preparedness Guide for Local Governments and People with Disabilities</i>
LINK	http://www.ada.gov/emergencyprep.htm
PUBLICATION	Americans with Disabilities Act
ABSTRACT	One of the most important roles of local government is to protect the citizenry from harm, including helping people prepare for and respond to emergencies. Making local government programs on emergency preparedness and response accessible to people with disabilities is a critical part of this responsibility. Making these programs accessible is also required by the Americans with Disabilities Act of 1990 (ADA).
TITLE	<i>FEMA Interim Emergency Management Planning Guide for Special Needs Populations</i>
LINK	http://www.fema.gov/pdf/media/2008/301.pdf
PUBLICATION	Federal Emergency Management Agency (FEMA)
ABSTRACT	The FEMA released a Comprehensive Preparedness Guide 301 as a tool for state, territorial, tribal, and local emergency managers to use in the development of emergency operations plans that are inclusive of the entire population of a jurisdiction of any size. It specifically provides recommendations for planning for special needs populations.
TITLE	<i>Identification and Analysis of Factors Affecting Emergency Evacuations</i>
LINK	http://www.nrc.gov/reading-rm/doc-collections/nuregs/contract/cr6864/index.html
PUBLICATION	L.J. Dotson and J. Jones, Sandia National Laboratories for the U.S. Nuclear Regulatory Commission, January 2005.
ABSTRACT	This study features case studies, interviews and analysis in an examination of efficiency and effectiveness for evacuations of 1,000 or more people in the U.S. between 1990 and 2003. It provides a broad overview, as well as detailed statistical analysis identifying factors related to less efficient evacuations.
TITLE	<i>Strategies in Emergency Preparedness for Transportation-Dependent Populations</i>
LINK	http://www.dotcr.ost.dot.gov/Documents/Emergency/Emergency%20Preparedness%20Strategy%20Paper.doc
PUBLICATION	National Consortium on Human Services Transportation
ABSTRACT	This study features case studies, interviews and analysis in an examination of efficiency and effectiveness for evacuations of 1,000 or more people in the U.S. between 1990 and 2003. It provides a broad overview, as well as detailed statistical analysis identifying factors related to less efficient evacuations.
TITLE	<i>Transportation Emergency Checklist</i>
LINK	http://www.dotcr.ost.dot.gov/Documents/Emergency/Emergency%20Checklist.doc
PUBLICATION	National Consortium on Human Services Transportation
ABSTRACT	The National Consortium on Human Services Transportation, "Strategies in Emergency Preparedness for Transportation-Dependent Populations," and "Transportation and Emergency Preparedness Checklist," highlight essential strategies for providing safe and efficient transportation for persons requiring mobility assistance in the event of an emergency.

TITLE	<i>NCHRP Synthesis 392: Transportation's Role in Emergency Evacuation and Reentry</i>
LINK	http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_392.pdf
PUBLICATION	Transportation Research Board of the National Academies; Brian Wolshon, Louisiana State University, 2009.
ABSTRACT	This paper provides a summary of the current state of practice in managing and maintaining transportation systems, including traffic control, monitoring, planning, and management during emergency evacuations and the reentry process; however it does not include specific examples of MPOs.
TITLE	<i>Preparing for and Responding to Disasters</i>
LINK	http://www.gao.gov/new.items/d07395t.pdf
PUBLICATION	U.S. Government Accountability Office (GAO), March 2007
ABSTRACT	This GAO report was done after Hurricane Katrina to analyze DHS efforts. GAO found that DHS needs to more effectively coordinate disaster preparedness, response, and recovery efforts. The GAO analysis shows improvements were needed in leadership roles and responsibilities, development of necessary disaster capabilities, and accountability systems that balance the need for fast, flexible response with the need to prevent waste, fraud, and abuse.
TITLE	<i>Staying Dry: New Floodplain Maps Present New Challenges</i>
LINK	http://www.planning.org/planning/2009/jun/stayingdry.htm
PUBLICATION	James Krohe, Jr., Planning, Volume 75, Number 6, June 2009
ABSTRACT	This article provides an overview of the Federal Emergency Management Agency's (FEMA) five-year Flood Map Modernization program, including its successes and shortcomings. Information related to flood plane mapping, geographical information systems (GIS) technologies and how to locate and utilize a community's Flood Insurance Rate Maps (FIRMs) is also included.
TITLE	<i>Understanding Preparedness Issues in Public Safety Communications: A Guidebook for Homeland Security and Preparedness Planning for Public Safety Communications Centers (PSCC)</i>
LINK	http://apco911.org/new/government/documents/hspguidebook.pdf
PUBLICATION	Association of Public-Safety Communications Officials-International, Inc., Sept 2007.
ABSTRACT	This white paper provides the background information on the importance of public safety communications in emergency evacuation planning and response, with a focus on the need for Continuity of Operation Plans. It emphasizes the need for collaboration combined with strong leadership in order to develop highly effective public safety communications strategies for evacuation and other emergency plans.
TITLE	<i>Website: Emergency Preparedness and Individuals with Disabilities</i>
LINK	http://www.emergencyprep.dot.gov
ABSTRACT	This on-going website contains useful emergency transportation information and resources for individuals with disabilities, their families, caregivers, and transportation and service providers. Resources cover a range of topics including providing accessible transportation services during and after a disaster or an emergency, safe and accessible evacuation from transit systems, and community transportation assistance programs.

Transit

TITLE	<i>Disaster Response and Recovery Manual for Transit Agencies</i>
LINK	http://transit-safety.volpe.dot.gov/Publications
PUBLICATION	FTA Volpe Center
ABSTRACT	This FTA document provides best practices and links to specific resources for transit agencies concerning emergency preparedness, disaster response and disaster recovery.
TITLE	<i>The Role of Transit in Emergency Evacuation: Special Report 294</i>
LINK	http://www.nap.edu/catalog.php?record_id=12445#toc
PUBLICATION	Committee on the Role of Public Transportation in Emergency Evacuation, The Transportation Research Board of the National Academies, 2008.
ABSTRACT	This report evaluates the role of transit, including bus and rail systems, paratransit and demand-responsive transit, commuter and intercity rail, and ferries, and emphasizes the importance of coordinating transit agencies and transportation and emergency planning efforts at all levels. The report found that in large urban areas, transit is only partially integrated into emergency operations plans and that often when plans were in place they were not capable of handling a full regional or large-scale evacuation; in response to these findings, the report offers several recommendations for future improvements in the role of transit in emergency evacuations.
TITLE	<i>Trainings: Emergency Response Preparedness Program</i>
LINK	http://www.apta.com/services/emergency/
PUBLICATION	American Public Transportation Association (APTA)
ABSTRACT	This program is designed to assist transit systems, their cities, regions, and states with emergency evacuation and temporary transit needs that may arise from hurricanes or other emergencies.
TITLE	<i>Trainings: Connecting Communities Public Transportation Emergency Preparedness Workshops</i>
LINK	http://www.connectingcommunities.net
PUBLICATION	FTA
ABSTRACT	These FTA workshops are on-going and designed to coordinate the assets and specialized resources of transit and transportation systems with local, county, and state response and emergency management agencies.
TITLE	<i>Transportation Equity in Emergencies</i>
LINK	http://www.fta.dot.gov/civilrights/civil_rights_6343.html
PUBLICATION	FTA
ABSTRACT	This FTA report reviews the extent to which transit providers, MPOs, and state DOTs in selected metropolitan areas in the United States and Puerto Rico are identifying and addressing the needs of populations that may be especially vulnerable in the event of a natural or man-made disaster. The report includes Geographic Imaging System (GIS) maps of 20 metropolitan regions that highlight concentrations of populations that may need evacuation assistance in an emergency, with overlays of the transit service area in these regions.

4.2 Regional Examples

Planning

TITLE	<i>Disaster Zone</i>
LINK	http://viewer.zmags.com/publication/bd2c9caa#/bd2c9caa/42
PUBLICATION	Laurel J. Radow, Traffic Technology International, June/July 2009.
ABSTRACT	This article emphasizes the importance of preparing for emergency evacuations by coordinating transportation and evacuation plans, referencing several FHWA publications which may be helpful in doing so. It features experiences and examples of successful evacuations, including those in the Houston region, in which the Houston-Galveston Area Council plays a major role.
TITLE	<i>Evacuation Planning in Texas: Before and After Hurricane Rita</i>
LINK	www.hro.house.state.tx.us/interim/int79-2.pdf
PUBLICATION	State of Texas
ABSTRACT	Includes detailed information on how the State of Texas modified its evacuation planning processes due to lessons learned from Hurricane Rita.
TITLE	<i>Evacuation Task Force Report</i>
LINK	http://www.txregionalcouncil.org/ep/EvacuationTaskForceReport.pdf
PUBLICATION	Governor Perry (TX) Task Force on Evacuation, Transportation and Logistics, Feb 2006
ABSTRACT	This Texas Task Force final report to the Governor examined the post-Katrina and Rita Hurricanes preparedness and response in Texas, documenting lessons learned from Hurricane Rita evacuation; reinforcing positive lessons; identifying key challenges; documenting the Task Force's findings; and, making recommendations on how to improve evacuation plans and evacuation execution to better protect Texans.
TITLE	<i>Local Government Performance and the Challenges of Regional Preparedness for Disasters</i>
LINK	Not Available Online
PUBLICATION	Gerber, Brian J. and Scott E. Robinson. 2009.
ABSTRACT	As is well known, most emergency incidents are managed by local governments. However, when an incident of disaster-scale occurs, the traditional model of emergency management has certain limitations. The threat of a catastrophic terrorist attack and of other regional-scale natural disasters like Hurricane Katrina has led to a policy demand for actual regional coordination in emergency response. This article discusses the local development of regionalism in emergency management; an approach to assessing the effectiveness of such efforts; and, strategies for assessing the push for regionalism in emergency management, including several regional performance indicators.

TITLE	<i>Managing Pedestrians During Evacuation of Metropolitan Areas</i>
LINK	http://www.ops.fhwa.dot.gov/publications/pedevac/ped_evac_final_mar07.pdf
PUBLICATION	Battelle Center for Human Performance and Safety for FHWA, 2007.
ABSTRACT	This report identifies the current state of the practice and level of knowledge regarding pedestrian traffic in metropolitan evacuations in the U.S. It includes examples and observations from Washington, DC; Cleveland, OH; San Francisco, CA; New York City, NY; and Seattle, WA; and also highlights areas for further research and better incorporation of transportation and intelligent transportation systems (ITS) during the emergency management planning process.
TITLE	<i>Rural Preparedness Planning Guide: Planning for Population Surge Following Urban Disasters</i>
LINK	http://www.norc.org/NR/rdonlyres/227B10FB-44B4-41D9-B214-6F5DD26ABA6D/0/RuralPreparednessGuide2008.pdf
PUBLICATION	Western New York Public Health Alliance, Inc.
ABSTRACT	This planning guide answers the question, “so, now what?,” by providing planning recommendations for rural communities in the areas of pre-event, event and post-event planning. Each section includes recommendations, checklists and completion dates for task assignments. Recommendations included in this guide are based on actual population surge experiences of a panel composed of rural public health and preparedness officials from across the United States.
TITLE	<i>Security and Emergency Preparedness in the Transportation Planning Process: The Houston-Galveston Area Council</i>
LINK	http://planning.dot.gov/Documents/SEPHouston.pdf
PUBLICATION	Cambridge Systematics for the Federal Highway Administration, 2004.
ABSTRACT	This case study highlights the Houston-Galveston Area Council’s (H-GAC) incorporation of primary and secondary evacuation routes into their Transportation Improvement Program (TIP), along with other measures to incorporate security and emergency preparedness into the transportation planning process.
TITLE	<i>Southeast Texas Regional Planning Commission: Regional Pet Evacuation Initiative</i>
LINK	http://www.txregionalcouncil.org/ep/SETRPC_COG_Spotlight_2008.pdf
PUBLICATION	Texas Association of Regional Councils, 2008
ABSTRACT	This article describes the SETRPC’s pet and people evacuation program.
TITLE	<i>State of Louisiana – Hurricanes Katrina and Rita After-Action Report and Improvement Plan</i>
LINK	http://www.apointl.org/new/commcenter911/downloads/Katrina_After_Action_Report_fedstate.pdf
PUBLICATION	State of Louisiana, 2006.
ABSTRACT	This report features summaries of and information from three regional and one statewide After-Action Conference held on the impacts of Hurricanes Katrina and Rita in Louisiana with the goal of identifying issues, lessons learned and best practices related to these emergency evacuation incidents.

TITLE	<i>Summary Report: MPO Peer Workshop on Addressing Security Planning and Natural & Manmade Disasters</i>
LINK	http://www.ampo.org/assets/library/172_securitywkshpjan08final.pdf
PUBLICATION	Resource Systems Group, Inc. for Federal Highway Administration, 2008.
ABSTRACT	This workshop summary includes presentations on and discussions about incorporating one-way and other evacuation planning into MPO's security planning efforts.
TITLE	<i>Urban-to-Rural Evacuation: Planning for Population Surge</i>
LINK	http://www.norc.org/NR/rdonlyres/E4EC878E-1D63-4D93-AB1C-E5F76349E2FC/0/WalshCtr2007NORC_BriefW9.pdf
PUBLICATION	Department of Health Policy and Evaluation at NORC at the University of Chicago
ABSTRACT	This four-page brief presents the findings from interviews with national preparedness experts and both urban and rural local emergency preparedness planners. Experts and planners expressed concern about the strain that urban evacuees, who are either traveling to or through rural communities, are expected to place on rural infrastructure. The interviews suggest the need for estimates of the number of evacuees to facilitate rural preparedness planning. They also encourage coalitions between urban and rural areas and recommend that rural planners predetermine sites for receiving and triaging evacuees.

Operational

TITLE	<i>Cross-Border Issue Analysis: Guide to Multi-Jurisdictional Collaborations</i>
LINK	http://sphhp.buffalo.edu/emergency_preparedness/guide.pdf
PUBLICATION	Western New York Public Health Alliance, Inc.
ABSTRACT	This report is a resource tool for leaders in Public Health Emergency Preparedness who seek answers about their community's capacity to respond to disasters. It is designed to be a simple tool one can use to access existing essential resources, identify gaps and provide examples of laws, inter-jurisdictional cooperation agreements, collaborations, documents, policies, practices, procedures and activities. Additionally, it will address the various formal and informal means to develop agreements, the potential legal issues these agreements may generate and the benefits and liabilities governments and their agents may reasonably expect when entering into such agreements.
TITLE	<i>HOTCOG: Emergency Notification System</i>
LINK	http://hotready.com
PUBLICATION	Heart of Texas Council of Government (HOTCOG)
ABSTRACT	Officials of the HOTCOG and six area counties are urging residents and business owners to sign up for a new emergency notification system that can deliver messages to area residents via telephone, cell phone, e-mail and text message. The emergency messages can target areas geographically and may range from weather alerts to a notification of a broken waterline in a neighborhood.

TITLE	<i>Multiple Levels of Emergency Preparedness: Where Do Municipalities Fit?</i>
LINK	http://www.nhlgc.org/LGCWebSite//InfoForOfficials/townandcityarticles.asp?TCArticleID=175
PUBLICATION	C. Christine Fillmore, Esq., New Hampshire Town and City, Volume LII, Number 7, July/August 2009.
ABSTRACT	This article details the roles of federal, multi-state, state, regional, and municipality responsibilities in emergency preparedness and planning, with a focus on New Hampshire. The article emphasizes the importance of planning, communication and coordination of activities before, during and after emergencies, and also provides links to several useful resources.
TITLE	<i>The Role of the Metropolitan Planning Organization (MPO) in Preparing for Security Incidents and Transportation Response</i>
LINK	http://www.planning.dot.gov/Documents/Securitypaper.htm
PUBLICATION	Michael Meyer, Georgia Tech University
ABSTRACT	According to this report, effective coordination and communication among the many different operating agencies in a region and across the nation is absolutely essential. MPOs play an important role in promoting coordinated planning in anticipation of unexpected events or natural disasters, providing a centralized location of information on transportation system conditions and local/national responses that might be useful in an emergency. This white paper examines these possible roles and raises other issues that should be considered by MPO officials. Disaster/security planning is divided into several components that reflect the different elements in dealing with such events, e.g., prevention, surveillance/monitoring, information dissemination/ communications, incident response, and system recovery. The prospective role of the MPO in each of these components of an incident/disaster event response is discussed.
TITLE	<i>Securing the homeland across jurisdictional boundaries</i>
LINK	http://www.articlearchives.com/government/government-bodies-offices-us/988282-1.html
PUBLICATION	David Robertson, MWCOG, The Public Manager, March 22, 2003
ABSTRACT	This article, written by David Robertson, executive director of the Metropolitan Washington Council of Governments (MWCOG) in Washington, DC, describes MWCOG's role in the events after 9/11 and why working multi-jurisdictionally was and remains so vital to the region's security.
TITLE	<i>Security and Emergency Preparedness in the Transportation Planning Process: The San Diego Association of Governments</i>
LINK	http://planning.dot.gov/Documents/SEPSanDiego.pdf
PUBLICATION	Cambridge Systematics for the Federal Highway Administration, 2004.
ABSTRACT	This case study emphasizes the San Diego Association of Governments' (SANDAG) use of management and operations techniques and the development of planning manuals to assist in planning for security.

4.3 Technical Studies

Planning

TITLE	<i>Emergency Evacuation Planning as a Network Design Problem: A Critical Review</i>
LINK	http://www.ifac-papersonline.net/Detailed/30985.html
PUBLICATION	Hossam Abdelgawad and Baher Abdulhai, Transportation Letters: The International Journal of Transportation Research (2009) 1: (41-58).
ABSTRACT	This research paper reviews and compiles several strategies and approaches to emergency evacuation planning, with a focus on technical elements such as the network design problem and the mutual mapping to the evacuation problem. The paper includes a discussion of existing transportation simulation tools and emergency evacuation planning methods, providing suggestions for improved uses and future research.
TITLE	<i>Evacuation Planning, Human Factors, and Traffic Engineering: Developing Systems for Training and Effective Response</i>
LINK	http://onlinepubs.trb.org/onlinepubs/trnews/trnews238.pdf
PUBLICATION	Reuben B. Goldblatt and Kevin Weinisch, TR News: Transportation Security Training and Education Resources, Techniques, and Strategies, May-June 2005, Number 238; P. 13-172005
ABSTRACT	This article describes in detail potential data and modeling techniques to be used in developing evacuation plans, including some suggestions for improving the planning process and techniques.
TITLE	<i>FEMA: Lessons Learned Information Sharing Network</i>
LINK	https://www.llis.dhs.gov
PUBLICATION	FEMA
ABSTRACT	Lessons Learned Information Sharing is the national network of Lessons Learned and Best Practices for emergency response providers and homeland security officials. LLIS.gov's secure, restricted-access information is designed to facilitate efforts to prevent, prepare for and respond to acts of terrorism and other incidents across all disciplines and communities throughout the US. This is membership-based and requires special log-in information. Those eligible for membership include: Emergency response providers and homeland security officials from the local, state, and federal levels.
TITLE	<i>Population Reallocation Methods to Support Emergency Evacuation Planning</i>
LINK	http://www.earthzine.org/2009/03/16/population-reallocation-methods-to-support-emergency-evacuation-planning/
PUBLICATION	David Haynes II & Marc P. Armstrong, Earthzine, March 16th, 2009
ABSTRACT	According to this article, the conceptual design of emergency evacuation plans may be flawed if they rely exclusively on residential (night-time) population data. This paper uses a two-step method to create time-based population distributions. The first step, Area to Vertex, converts census block-level population data into a point-based dataset, which is then transformed in the second step, Hierarchical Population Reallocation, into various time-of-day distributions. These results provide a more realistic depiction time-of-day populations, which emergency planners can use to create robust and dynamic emergency plans that identify the locations of persons at risk.

“Linking transportation and evacuation planning at the regional level is key to public safety. My regional council, the Mid-America Regional Council, covering the Greater Kansas City area [Missouri and Kansas bi-state], coordinates regional planning efforts and administers grants that provide training and equipment to emergency personnel throughout the metropolitan area. Their work is vital in assisting communities and providing a neutral forum for local elected officials like myself to work with businesses, emergency personnel and other stakeholders to ensure appropriate preparedness and response in times of emergency.”

**The Honorable Betty Knight
Immediate Past President, NARC
Commissioner, Platte County, Missouri**



Operational

TITLE	<i>An Assessment of Activity-Based Modeling and Simulation for Applications in Operational Studies, Disaster Preparedness and Homeland Security</i>
LINK	not available online
PUBLICATION	Kriste M. Henson, Konstadinos G. Goulias and Reginald G. Golledge, Transportation Letters: The International Journal of Transportation Research (2009) 1: (19-39).
ABSTRACT	This research paper examines existing activity-based models and their data for their usefulness in emergency planning, including planning for evacuations. The paper notes the substantial progress in modeling and simulation capabilities, along with the potential for innovations in the field, while also identifying gaps in information that could be useful in future models, such as improved land use and population data.
TITLE	<i>Regional Traffic Simulation for Emergency Preparedness</i>
LINK	http://utca.eng.ua.edu/projects/final_reports/03226fnl.pdf
PUBLICATION	Department of Civil and Environmental Engineering at the University of Alabama at Birmingham; Virginia P. Sisiopiku, Ph.D., Steven L. Jones, Jr., Ph.D., Andrew J. Sullivan, P.E., et al., 2004.
ABSTRACT	The project examined the usefulness of micro-simulation modeling in creating emergency response plans for evacuations. The findings were expected to assist in the development of improved strategies for traffic management in a regional emergency.
TITLE	<i>Role of Traffic Incidents in Hampton Roads Hurricane Evacuations</i>
LINK	not available online
PUBLICATION	Robert Michael Robinson, Asad J Khattak, John A Sokolowski, Peter Foytik and Xin Wang, Transportation Research Board, 2009.
ABSTRACT	This study features a detailed analysis of Virginia’s Hurricane Emergency Response Plan through a simulation of evacuation traffic, including average traffic accidents and incidents but no catastrophic traffic events, over a 70-hour period. The study found that traffic incidents significantly extend evacuation time for those involved, including them in the simulation increased the full region’s evacuation time only marginally.

Section Five:

Additional Resources and Links

NARC

Transportation and Evacuation Planning Workshops and Grant Proceedings

<http://narc.org/events/workshops/other-workshops/transportation-and-evacuation-planning.html>

Transit Security Case Studies

<http://narc.org/activities/transportation/transit-security-planning-project.html>

Transportation Policy and Program Information

<http://narc.org/activities/transportation.html>

Homeland Security Policy and Program Information

<http://narc.org/activities/homeland-security-2.html>

Federal

U.S. Census Bureau Information on Using Census Data to Plan for Emergencies

<http://www.census.gov/Press-Release/www/emergencies/>

U.S. Department of Homeland Security Centers of Excellence Program

http://www.dhs.gov/xres/programs/editorial_0498.shtm

U.S. Department of Homeland Security Center of Excellence – Natural Disasters, Coastal Infrastructure and Emergency Management (DIEM)

<http://hazardscenter.unc.edu/diem/index.php>

Best of Public Safety and Emergency Transportation Operations CD from U.S. DOT Research and Innovative Technology Administration (RITA) and FHWA

http://www.its.dot.gov/its_publicsafety/index.htm

National

National Center on Senior Transportation

<http://seniortransportation.easterseals.com>

National Organization on Disability's Emergency Preparedness Initiative

<http://www.nod.org/index.cfm?fuseaction=Page.viewPage&pageId=1564>

National Center for Accessible Transportation

<http://oregonstate.edu/~hunterzk/ncat/>

AARP – Transportation Policy

<http://www.aarp.org/research/housing-mobility/transportation/>

AASHTO Page on Transportation Security and Emergency Management

<http://security.transportation.org>

Surface Transportation and Public Transportation Information Sharing and Analysis Center

www.surfacetransportationisac.org

Associations of Public-Safety Communication Officials Hurricane Resources

<http://www.apointl.org/new/resources/hurricanes.php>

Appendices

- A. Advisory Council Members
- B. Workshop Summary One
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- D. National Project Impact
- E. Survey of Existing Practices and Recommendations
- F. Support for Survey Recommendations
- G. Transit Security Planning Case Studies
 - KYOVA Interstate Planning Commission
 - St. Joseph Area Transportation Study Organization
 - Yuma Metropolitan Planning Organization
- H. Acronyms

A. Advisory Council Members

“In my experience as a County Commissioner and Registered Nurse, I have come to realize that emergency situations, natural or man made, go beyond city limits or jurisdictional boundaries. This is why regional preparedness – linking both transportation and evacuation planning – is of such importance to facilitate timely and successful regional response efforts.”

The Honorable Patti Kay-Clapper
Board Member, NARC Region III
Co-Chair, NARC Homeland Security Committee



Regional Representatives

Michael Ada, Texas Association of Regional Councils
Naresh Amaty, Southern California Association of Governments
Denise Bunnewith, North Florida Transportation Planning Organization
Regina Chapline, Texas Association of Regional Councils
Alan Clark, Houston-Galveston Area Council
Henry Gardner, Association of Bay Area Governments
Howard Glassman, Florida Metropolitan Planning Organization Advisory Council
Mark Gumula, AICP, Charlotte County-Punta Gorda MPO
Chester Jourdan, Mid-Ohio Regional Planning Commission
Ginny Lewis, Texas Association of Regional Councils
Rich Macias, Southern California Association of Governments
Kelly Murray, Illinois Association of Regional Councils
Marlene Nagel, Mid-America Regional Council
Hon. Penny Redington, Texas Association of Regional Councils
Melissa Rivord, Metropolitan Washington Council of Governments
David Robertson, Metropolitan Washington Council of Governments
Jiten Shah, Green River Area Development District
Clifford Weldon, MIDAS Council of Governments
Christy D. Whillhite, Houston-Galveston Area Council

Elected Officials

Hon. Steve Cassano, Town of Manchester, CT
Hon. Patti Kay-Clapper, Pitkin County, CO

Federal Representatives

Dan Ferezan, U.S. Department of Transportation
Susan Grosser, Federal Highway Administration, Office of Planning
Kenneth Petty, Federal Highway Administration, Office of Planning
Laurel J. Radow, Federal Highway Administration, Office of Operations
Robert Ritter, P.E., AICP, Federal Highway Administration, Office of Planning
Spencer Stevens, Federal Highway Administration, Office of Planning
Kimberly Vasquez, M.P.I.A., Federal Highway Administration, Office of Operations

Other

Brian J. Gerber, Ph.D., Louisiana State University
Dalen Harris, National Association of Counties
Rod Nydam, Nexus Enterprises, LLC
Julia Pulidindi, National League of Cities
Katie Seeger, National League of Cities
Lincoln N. Walther, CSA International, Inc.
Leslie Wollack, National League of Cities

B. Workshop One Summary

TRANSPORTATION AND EVACUATION WORKSHOP A SUMMARY

February 24, 2009
2009 National Conference of Regions
Washington, DC

The **National Association of Regional Councils** (NARC) held its first *Transportation and Evacuation Planning Workshop* to examine the cross-linking and coordination of multi-modal transportation and evacuation planning for special needs populations during the 2009 National Conference of Regions in Washington, DC on Tuesday, February 24, 2009. Three critical components were highlighted:

1. Cross-coordination with relevant local and regional agencies during the planning process;
2. Effective communication techniques used to make plans accessible to special needs populations; and,
3. Efforts for multi-regional coordination of multi-modal evacuations.

Featured speakers:

The Honorable Patti Kay Clapper, Pitkin County Commissioner and NARC Board Member. Commissioner Clapper shared her experiences as a Board Member for the Northwest Colorado Council of Governments (NWCCOG) in Silverthorne, CO, serving a five county region. Her recommendations for multi-modal evacuation planning focused on the challenges facing a rural, land-locked region with a highly variable population composition and size.

Mr. K.J. Hertz, Associate Director of Public Policy and Legislative Affairs at the National Association of Area Agencies on Aging (N4A). Mr. Hertz described the efforts of Area Agencies on Aging (AAAs) throughout the country and their involvement to improve the planning process. He recommended that metropolitan planning organizations (MPOs) and councils of governments (COGs) focus on outreach to their local AAA in order to better incorporate special needs populations into their planning.

Mr. Shaun Davis, Executive Director of the South East Texas Regional Planning Commission (SETRPC). Mr. Davis shared his experiences and lessons learned from planning and carrying out evacuations from Hurricanes Rita, Humberto, Edward, Gustav and other similar natural disasters in his three-county region. Mr. Davis focused on the region's planning improvements for special needs populations, their medical considerations and their pets.

Mr. Jack Steele, Executive Director of the Houston-Galveston Area Council (H-GAC). Mr. Steele's organization represents the 13-county Gulf Coast region, serving 12,500 square miles and more than 5.7 million people. He discussed the improvements that the region made in evacuation planning between Hurricanes Rita and Ike, particularly in better identifying the populations and specific communities that should be evacuated versus sheltering in place.

Mr. Brewster Thackeray, Portfolio Director for Livable Communities, Mobility for the American Association for Retired Persons (AARP). Mr. Thackeray focused on the importance of identifying special needs populations without access to automobiles and determining the equipment needs they may have in an evacuation.



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Several common themes were discussed, including:

The importance of a planner's knowledge and access to regional data on special needs population(s).

Commissioner Clapper noted that NWCCOG uses a reverse 9-1-1 system, encouraging visitors to the region, which includes the tourist destination of Aspen, CO, to register upon arrival. This system allows for an exchange of information – visitors and residents can be notified and instructed during an emergency situation, while planners and local responders can effectively plan by knowing the location and needs of their population at any given time.

Mr. Davis (SETRPC) noted that his region uses a 2-1-1 system that allows planners and emergency operations centers to identify the location and specific needs of special needs residents of the region. Through this system, the planners can be prepared with any specialized equipment needed to evacuate certain residents.

Mr. Davis (SETRPC) and Mr. Thackeray (AARP) both emphasized the importance of planning to use and transport the equipment for people with special needs. This is particularly relevant to ensure safe mobility and effective communication during and after the evacuation.

The importance of fast and effective communication with special needs populations.

Beyond simply identifying special needs populations, their location and individual needs, regions must plan to communicate effectively with the population. Programs such as the reverse 9-1-1 and 2-1-1 registration initiatives are helpful, as they provide an avenue and contact information for localities to communicate with people during the emergency.

Mr. Davis (SETRPC) noted that information provided through the 2-1-1 registration program is provided to first responders who can then reach out to individuals and assist them in their evacuation. He also noted that the region assists in coordinating between first responders and social service agencies (see below) prior to the time an evacuation is called, allowing for seamless and expedited communication to assist in special needs evacuations during the emergency.

The importance of coordinating with regional and local social service agencies.

Mr. Hertz (N4A) emphasized the importance of not only communicating directly with the special needs populations, but also communicating with other planning and social service agencies. As was noted in several presentations, it is essential to build relationships and eliminate language/terminology barriers that may exist between planning and social service agencies prior to an emergency.

Mr. Hertz (N4A) also noted that while many AAAs are becoming more involved in emergency planning, very few have a dedicated planner on their staff. Therefore, it is increasingly important that COGs and MPOs reach out to their AAAs in order to coordinate more effectively.

Commissioner Clapper noted that NWCCOG has established voluntary driver programs for assistance in evacuating special needs populations through existing Meals on Wheels volunteers, while Mr. Steele (H-GAC) described a volunteer program in which AAA volunteer drivers assist in evacuating those without access to a vehicle early enough so that they are able to return from the evacuation point to pick up their own families.

Through presentations by urban and rural, coastal and interior, and large and small regions, as well as by associations representing both individuals and discrete populations of those with special needs, the workshop emphasized that while there are differences in planning for different situations, there are many common needs. Each presentation emphasized the importance of access to data, effective communication, and coordination and outreach for any successful regional transportation-evacuation planning initiative.

TRANSPORTATION AND EVACUATION WORKSHOP A SUMMARY

June 1, 2009
NARC 43rd Annual Conference & Exhibition
Denver, CO

The **National Association of Regional Councils** (NARC) held its second workshop on *Streamlining Cross-linking and Coordination of Transportation and Evacuation Planning among Regional Councils and Metropolitan Planning Organizations* during the NARC 43rd Annual Conference and Exhibition in Denver, CO, to examine the impacts data collection, analysis and implementation have on cross-linking transportation-evacuation planning work at the federal, regional and local levels. NARC, Federal Highway Administration (FHWA) and its participating members, speakers and partners worked, during this workshop, to create a general baseline for data collection and tools that informs transportation-evacuation planning and execution on the local and regional levels. The workshop answered a variety of questions, including:

- What are the available federal data and data tools? How are they used at the regional level for planning purposes?
- How and what data is compiled at the federal, local and regional levels?
- How will the next census impact this data?
- What are the best practices/replicable methods for regional data collection, analysis and implementation?

The workshop was split into two parts – the first focusing on federal resources and offerings and the second highlighting regional activities and examples – to ensure a varied amount of information was shared among the participants.

The Honorable Patti Kay Clapper, Pitkin County Commissioner and NARC Board Member, moderated the workshop, sharing her experiences from a rural, land-locked region with a highly variable population composition and size. Commissioner Clapper introduced each of the speakers and facilitated the workshop.

Panel I: Federal Resources and Tools

Ms. Robin Smith, Transportation Planner, Office of Planning, FHWA addressed how FHWA can serve as a resource in assessing and collecting data that is available through the federal government. She highlighted the areas a planning entity would have to take into consideration for crosslinking transportation and evacuation planning, as well as the varying federal agencies, and available tools and data resources.

Mr. Jeremy Wu, Ph.D., Manager/Assistant Division Chief, U.S. Census Bureau demonstrated the Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) and Local Employment Dynamics (LED) as data tools for regional planning organizations and local governments to use in various contexts to incorporate in-depth employment and job information when informing the transportation and evacuation planning process.



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Panel II: Regional Examples and Activities

Mr. Scott Kellar, Homeland Security Coordinator, North Central Colorado All-Hazards Region explained how his region created their multi-jurisdictional transportation-evacuation plan – the successes, challenges and data needs.

Ms. Marlene Nagel, Director of Community Development, Mid-America Regional Council (MARC) discussed how their joint planning, communications and collaboration is assisted by collecting and using Geographic Information Systems (GIS) data through the use of a regional server.

Mr. Walter Diggles, Executive Director, Deep East Texas Council of Governments (DETCOG) detailed the \$4 million FEMA pilot Regional Hurricane Response project DETCOG is undertaking to develop a long-term hurricane disaster recovery model.

Mr. Bob Hamm, Senior Transportation Planner, Wilbur Smith Associates described the Florida Statewide Regional Evacuation Study Program (SRESP) – the role the regional councils are playing in this effort and how and what data sets are being collected, analyzed and implemented to inform transportation and evacuation planning at the regional and local levels.

Mr. Colby Brown, PTP, Training Director, Citilabs discussed building an evacuation model with the Houston-Galveston Area Council (H-GAC), and focused on the types of data used in the model and other types of data that would be applicable when building similar models.

FEDERAL DATA RESOURCES

Several federal data resources, critical planning items and considerations were discussed, including:

- **The need to incorporate supply, residential population, employment and estimated daytime population.** There are several federal data sources that can help with this, particularly what is derived from Census data.
- **The usefulness of the American Community Survey (ACS) is important to local and regional data collection and implementation efforts.** The ACS indicates the characteristics (not count) of a population, including the services and allocation of resources. This is particularly critical to transportation and evacuation planning because of the household and persons variables determined and available:
 1. Household – i.e. vehicle availability; income; and, poverty status.
 2. Persons – i.e. age; disability status and type; English proficiency; and, place of work.
- **There are multiple federal agencies that have data responsibilities and products available for transportation-evacuation planning efforts:**
 - Federal Highway Administration (FHWA)
 - Research and Innovative Technology Administration (RITA)
 - Bureau of Transportation Statistics (BTS)
 - U.S. Census Bureau
 - Oak Ridge National Laboratory
- **There are many programs, tools and data available or integrated from the federal government, such as:**
 1. *Integrated Public Use Microdata Sets (IPUMS)* is provided in partnership with the University of Minnesota Population Center that collects, harmonizes, distributes and preserves U.S. Census data free of charge. This data set is particularly relevant for large metropolitan areas. After the last census, U.S. Department of Transportation staff prepared a guidance paper on defining Public Use Microdata Areas (PUMAs) for transportation planning purposes. [Click here to access the paper.](#)

2. *Census Transportation Planning Products (CTPP)* is a set of special tabulations from decennial census demographic surveys designed for transportation planners. CTPP uses ACS data and summarizes the flows between work and home, which will be updated with new data in June 2010. The CTPP offers not only data products, but also trainings, articles, status reports and additional related links. Visit CTPP's website for more information.
3. *Longitudinal Employer-Household Dynamics (LEHD)* is a program within the U.S. Census Bureau that uses modern statistical and computing techniques to combine federal and state administrative data on employers and employees with core Census Bureau censuses and surveys while protecting the confidentiality of people and firms that provide the data. LEHD is a very useful source of place of work and flow data. However, one using the data must be careful to ensure the employment data is for specific offices or franchises rather than one headquarter.

There are multiple benefits of the LEHD tool's "On the Map" function – most importantly the free online availability and the data manipulation – in creating a step-by-step guide to determine and analyze a transportation and evacuation plan. The 2010 Census will assist in making this data more complete, allowing for more user functions to be derived from the tool.

- The online tool allows the user to perform analysis on the data, based on where people work and live, while defining, if desired, cities, counties, states, school districts and legislative districts, and giving descriptions about the workplace and laborshed in real time calculations. This tool's data can be customized to fit a regional planning organization's specific qualifications, be incorporated with other federal information like that from a WIRED Department of Labor (DOL) Workforce zone, or even map the trajectory of a simulated hurricane or tornado path. It's helpful in allowing geographic flexibility and easy visualization of massive amounts of data.
- The availability to manipulate the data in LEHD is beneficial when incorporating other existing data to determine the following dynamics – 1) employment (jobs created or destroyed); 2) location/geography; 3) job flows – with the overlaying of other critical information.

Click here to access the Census Bureau's page on LEHD. Click here for an evaluation on the use of the LEHD tool for transportation planning.

4. *Community Economic Development HotReport* provides access for users seeking economic indicators for individual counties or for the Employment & Training Administration's WIRED Regions. This tool, a collaborative project between U.S. DOL, U.S. Census Bureau, and the U.S. Economic Development Administration, is useful for areas that experience economic disruptions due to natural disasters, plant closings, base closings, and other economic changes, such as abrupt increases in employment, to show pertinent economic indicators in unified online reports from many data sources, including:
 - Economic: industry wages; top industries; top occupation groups; labor force by age; and, education levels.
 - Housing: mortgage averages; occupancy status; ownership rates; and, housing costs.
 - Demographic: income; population pyramid; and, school enrollment.
 - Transportation: commute times and means of transportation.
 - Community Assets: public schools and colleges and universities.
5. *Transportation Research Board (TRB) Subcommittee on Census Data for Transportation Planning* has a site developed to help provide a forum for those with an interest in transportation planning and census data. The focus of the Subcommittee spans the entire spectrum of census related activities including applied uses of the data, the content of censuses, collection procedures and dissemination programs all within the context of past, present and future censuses.

REGIONAL ACTIVITIES & EXAMPLES

Regional transportation-evacuation professionals cited their on-the-ground integration of various data for planning purposes:

- **Creating an all-hazards, regional transportation and evacuation plan requires a variety of data, taking into consideration factors that may go beyond the normal scope of regional planning.**

Mr. Scott Kellar explained the importance of an all-hazards regional emergency management and evacuation plan that includes multi-jurisdictional organizations and local governments as key to all activities, allowing local governments an opportunity to build their own pieces to fit into a larger regional plan, as well as the necessity of involving the regional Department of Homeland Security Urban Area Security Initiative (UASI) group, the Denver Regional Council of Governments (DRCOG), Denver Regional Transportation District (RTD) and other partners. With this as the base, Mr. Kellar detailed their efforts to incorporate various planning assumptions to create an overarching analysis for the entire region, which then allowed for examining the threat of individual hazards. The plan utilized population data from DRCOG and started to look at how to control movement of people into different areas of jurisdiction, including these factors as required planning data. One major activity in creating this transportation evacuation plan was a traffic management analysis undertaken by the all-hazards region. This analysis used available data sources – local, state, regional and federal – such as:

- Currently identified evacuation routes;
- Traffic flow and control;
- Reversing interstates;
- General weather patterns;
- People without vehicles and capacity of public transit; and,
- Fuel management/available supply.

When examining these data sets, Mr. Kellar detailed the need for more information surrounding reversing interstates in relationship to public safety concerns. Mr. Kellar indicated the All-Hazards' planning efforts to include data on sheltering and logistics support points, long travel times and distances, and special needs population factors.

Mr. Kellar's All-Hazards region experienced several challenges where data, funding and increased coordination with public and private partners would help in a better harmonized transportation and evacuation plan. For example,

- Bus and transit needs outstripped capacity;
- Logistical support required more attention and resources;
- Increased school coordination would assist in getting larger numbers of people out quicker;
- Sheltering facilities necessitated more personnel; and,
- Hospitals needed to coordinate their evacuation plans with the larger regional plan.

Some of the critical lessons learned from the all-hazard's transportation and evacuation planning exercise are:

- Multi-jurisdictional coordination and integration is required;
- The Incident Command System (ICS) Structure** is necessary for supporting evacuations;
- Incident-specific evacuation planning assists in coordinated, large scale evacuations; and,
- Detailed logistical analysis with up-to-date data is required.

**ICS is the model tool for command, control, and coordination of a response and provides a means to coordinate the efforts of individual agencies as they work toward the common goal of stabilizing the incident and protecting life, property, and the environment. ICS uses principles that have been proven to improve efficiency and effectiveness in a business setting and applies the principles to emergency response. [Click here for more information on ICS.](#)

- **Establishing a regional server tied to Geographic Information Systems (GIS) greatly assists regional planning efforts in the areas of transportation, environment and emergency services.**

Ms. Marlene Nagel discussed the evacuation planning considerations used by the Mid-America Regional Council (MARC), a nonprofit association of city and county governments that serves as the metropolitan planning organization for the nine-county, 120-city, bistate Kansas City region and is governed by a board of local elected officials. The specific considerations used by MARC, in cooperation with their local governments, to conduct regional transportation and evacuation planning includes:

- Risks to the region;
- How to support local efforts through regional support;
- Looking at factors regionally, i.e. sheltering, special needs populations, transportation; and,
- Creating a comprehensive regional coordination guide.

In doing this, MARC went through a strategic planning activity and determined that creating and using a Geographic Information Systems (GIS) program would work well for their region's homeland security needs. The establishment of a KC Metro GIS Consortium, composed of local GIS managers who develop policies and technical standards for sharing GIS information at the regional level, allowed the development of a server which would enable data gathering, sharing and analysis from one central point. In this process, MARC and the Consortium examined:

- What would be the right data to collect?
- How could it be shareable?
- How could it be secured?
- How could it be integrated into day-to-day and pre-established operations?
- How can it feed into interoperability efforts?

GIS uses detailed computer files that allow users to visualize information as multiple layers of data overlaid on a map. For example, a GIS file might begin with a background layer that shows detailed aerial photographs of the region. Subsequent layers could include street maps, utility lines, population and demographic data, land uses, the location of fire and police stations, transit routes or any other information with a geographic component.

- Multi-jurisdictional coordination and integration is required;
- The Incident Command System (ICS) Structure** is necessary for supporting evacuations;
- Incident-specific evacuation planning assists in coordinated, large scale evacuations; and,
- Detailed logistical analysis with up-to-date data is required.

This regional data server, which brings together local cities and counties, state, federal and private sector partners to map the appropriate and available data for a variety of homeland security functions, is housed in one of the region's local emergency centers. This allows for the data to be flexible (for multiple applications) and available at any time, and for the local governments to maintain overall control. The GIS data layers stored on MARC's regional data server are pulled for many products and applications, and focus on certain types of mapping for both incident- and geographic-specific planning.

In addition to developing and sharing GIS data regionally, MARC is completing work on a web-based application that allows non-GIS professionals to utilize the GIS resources for emergency response applications. This data will be able to be tied to another region's data through street, aerial, Google® or topography maps. In fact, this effort is working across the regional border with Missouri because of the impacts of any potential activity surrounding the New Madrid Fault and the possibility of Kansas receiving its evacuees.

This web-based application will create four different types of incident reports; allow a better understanding of the infrastructure and community assets; assess post-incident damages; and, allow users to see demographics. This effort and the sharing GIS files will allow the region, for the first time, the creation of a regional map that can seamlessly zoom all the way from the broad, eight-county "big picture" down to individual parcels, the smallest units of land ownership. MARC and KC Metro GIS are working with local governments to develop a system for sharing GIS files to maximize their usefulness to public decision-making.

- **Producing a long-term disaster response model through specific data collection assists in post-incident regional and local recovery.**

Mr. Walter Diggles of the Deep East Texas Council of Governments (DETCOG), a voluntary association of local governments (counties, cities, and school districts) that provides a wide range of services to the citizens of deep East Texas, detailed his organization's engagement in a \$4 million Federal Emergency Management Agency (FEMA) pilot project to create a long-term recovery model to assist citizens post-Hurricane Ike (September 2008). In this effort, DETCOG began collecting data to create the recovery model and assist citizens, including:

- An assessment of needs;
- Development and implementation of plans that assist in restoring citizens to pre-hurricane conditions; and,
- Determining and referring citizens to appropriate service providers.

DETCOG is still working through the project and has found that in order to institute long-term recovery, the following must be incorporated into evacuation planning post-incident to ensure the survivability of citizens:

- Available and safe housing that leads to a long-term, sustainable solutions;
- Basic furniture and supplies;
- Job training to restore the ability to gain employment;
- Assistance with physical or mental health resources;
- Interpretation services for non-English speakers;
- Financial counseling;
- Transportation for employment purposes; and,
- Utility deposits or installation fees.

The two lists above are relevant data that, in the experience of DETCOG, should be gathered and incorporated into the evacuation and post-disaster recovery plan. Establishing a data system to address these elements, as well as immediate disaster transportation and evacuation considerations, will create a comprehensive plan that reflects real life experiences and needs.

- **Creating a replicable regional evacuation response model with regional planning organizations at the center of data collection, analysis and implementation is vital to integrating transportation and evacuation planning.**

Mr. Bob Hamm is working on the Florida Statewide Regional Evacuation Study Program, which is lead by the Florida Department of Emergency Management and includes the eleven Florida regional councils as agency partners. This study will determine and update the state's hurricane regional response evacuation plans. This program, which is expected to be completed later this year, will utilize consistent methodologies and format to ensure complete transparency and visibility in data collection and analysis. This effort is being conducted in two phases:

Phase 1 is about 95 percent complete and provides for data on Demographic and Land Use Analysis; Critical Facilities Inventory; Hazards Analysis; Vulnerability, Behavioral, Shelter and Regional Evacuation Transportation Network Analyses; defining relevant terms; and, GIS. This effort will yield updated basis for plans and mitigation strategy.

Phase 2 is 35 percent complete and provides for the collection of topography data and new modeling efforts, as well as a vulnerability analysis of the delineation of the storm tide limits and evacuation zones, identification of population-at-risk and evacuation populations, storm surge analysis of critical facilities and the evacuation transportation analysis. This effort will develop impact methodology and evacuation zones impacts assessment tools.

When undergoing these data collection and analysis tasks, particularly in Phase 1, the Florida partner agencies realized it was very difficult to collect data in some of the small, rural regions, as well as the larger, more diverse urban regions. However, the model structure and data collection sets and efforts are working to create the model structure from the regional level throughout the state.

For more on the Florida Statewide Regional Evacuation Study Program, please contact Jeff Alexander, project manager, at jalexander@nefrpc.org.

Mr. Colby Brown is working with the Houston-Galveston Area Council (H-GAC) to develop a “Strategic Hurricane Evacuation Model,” as a response to the multiple evacuation issues experienced in the region due to Hurricane Rita. H-GAC coordinated with various governmental agencies to develop a hurricane evacuation plan and, from that, was asked to develop a tool for evacuation planning. The goals of this model or tool, which would stimulate how traffic spreads throughout the area, were to:

- Simulate the Rita evacuation;
- Provide evacuation demands;
- Estimate traffic volumes and delays;
- Maintain sensitivity to various scenarios and plans; and,
- Apply it to non-evacuation planning (corridor, sub-area, ITS, etc).

In accomplishing these goals, H-GAC encountered challenges such as the lack of survey data from Hurricane Rita; the varied evacuation demands (i.e. time periods, origin and destination); and, the interaction between evacuation, normal daily, and non-evacuation traffic. The H-GAC approach created a tool that focuses on major routes and is linked into the regular regional planning model, requiring information on evacuation trip estimations and background trip estimations. The project benefited from having some useful data available such as the origin-destination survey; Houston Transtar speed information; and, regional travel demand model data set. However, according to their experiences, additional data would have helped, including:

- More accurate data during evacuation;
- More complete GIS network information;
- Hourly traffic variations for the typical weekday;
- Ongoing enhancements;
- Refinements to zone system, user classes, and transportation network coding accuracy;
- Hybrid equilibrium / incremental algorithms; and,
- Detailed and statewide model efforts.

Resources Recommended:

U.S. Federal Highway Administration - www.fhwa.dot.gov/

U.S. Census Bureau - www.census.gov

North Central All-Hazards Region - www.ncrcolorado.org/

Mid-America Regional Council – www.marc.org

Deep East Texas Council of Governments - www.detcog.org

Northeast Florida Regional Council - www.nefrpc.org

Wilbur Smith Associates - www.wilbursmith.com

Houston-Galveston Area Council - www.h-gac.com

Houston Transtar - www.houstontranstar.org

Citilabs - www.citilabs.com

WORKSHOP LESSONS LEARNED AND DATA BASELINE

Data is central to informing and cross-linking transportation and evacuation planning. There are multiple sources and ways of collecting data depending on the size, capacity, funding and staffing of any particular planning organization, but many presenters noted and exemplified the strength of coordinating these efforts through regional planning organizations (both Councils of Governments and Metropolitan Planning Organizations) in order to provide for the most complete and functional regional evacuation models. Taking the information from the workshop presenters, many basic data elements or sets should be looked in order to create a general baseline for cross-linking transportation and evacuation planning, including:

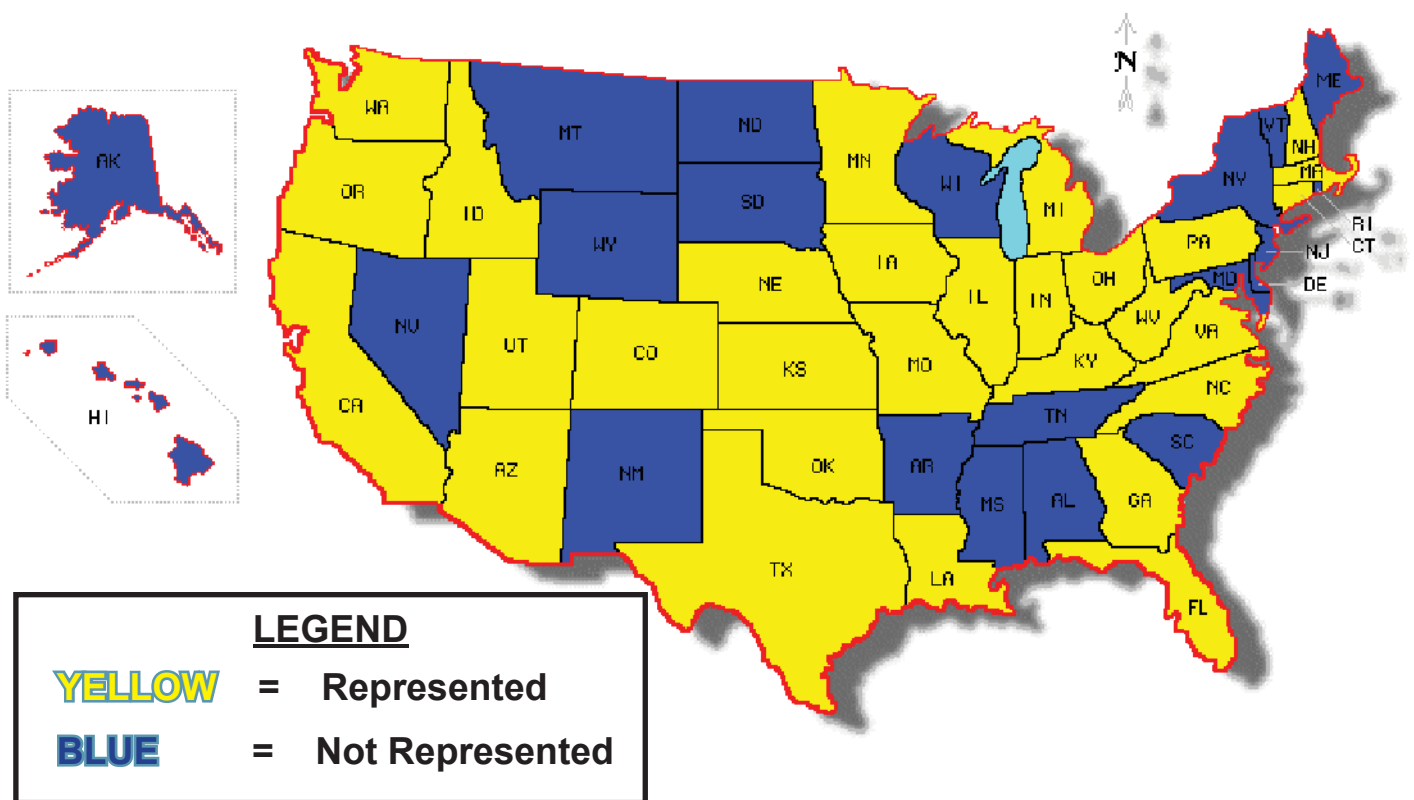
- Possible hazards/risk assessment;
- Demographics and Population Characteristics (local surveys);
 - Vehicle availability
 - Age
 - Race
 - Disability status and type
 - English proficiency
 - Residential, Daytime or Tourist/Non-permanent
- Population Evacuation Behavior (local surveys);
- Land Use Assessment;
- Community Assets and Critical Facilities (i.e. schools, universities, transit, hospitals, street maps, utility lines etc.);
- Shelter Capabilities;
- Commuter Shed flows (work-to-home travel patterns);
- Topography;
- Evacuation routes;
 - Traffic flow and control
 - Estimates of vehicle movements
- Fuel management/available supply; and,
- Relevant and consistent terminologies.

Putting this information into a sophisticated modeling program and linking it to other regions will begin determining the baseline for region evacuation systems that respond to the needs of a region's local governments, citizens and businesses, and their safety and sustainability given any type of event.

D. National Project Impact

This project – through the Advisory Council, workshops and participants, and collaborative organizations that provided research and information – had a significant and far reaching impact as demonstrated in the map and participants list below.

The project scope and activities included organizations covering 29 states, and representing a total population of 82,568,004 (nearly 27 percent of the nation’s population). Among those included, are 19 Major Metro regions (1 million population and over); 20 Medium Metro regions (251,000 population to 1 million population); and 15 Rural regions (250,000 population or less). The blue, unrepresented states, underscore the need for additional outreach, training and peer-to-peer exchange on the issues pursued in this project.



“In a metropolitan region of over 5 million residents, you can’t successfully respond to emergencies unless there is a sound plan and strong partnership in place to ‘direct traffic’ across multiple states and jurisdictions.”

David Robertson
Co-Chair, NARC Homeland Security Committee
Executive Director, Metropolitan Washington Council of Governments



ARIZONA

Maricopa Association of Governments

Regional Makeup: 1 county - Maricopa, 25 cities and towns, 3 Native American Indian Communities

Location: Phoenix, Arizona

Population: 3,072,149

<http://www.mag.maricopa.gov>

CALIFORNIA

Association of Bay Area Governments

Regional Makeup: 9 counties – Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma

Location: Oakland, California

Population: 7 million

<http://www.abag.ca.gov/>

University of California Berkeley: Building Resilient Regions Network

Makeup: Planning, economics, political science, and sociology

Location: Berkeley, California

http://www.macfound.org/site/c.1kLXJ8MQKrH/b.2617639/k.850F/Building_Resilient_Regions.htm

City of Lakewood

Location: Los Angeles County, California

Population: 80,952

<http://www.lakewoodcity.org/>

Southern California Association of Governments

Regional Makeup: 6 counties - Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial

Location: Los Angeles, California

Population: 18 million

<http://www.scag.ca.gov/>

COLORADO

City of Federal Heights

Location: Adams County, Colorado

Population: 11,706

www.ci.federal-heights.co.us

City of Greenwood Village

Location: Arapahoe County, Colorado

Population: 12,817

<http://www.greenwoodvillage.com/>

CH2M Hill

Makeup: Environmental and engineering consulting services

Location: Englewood, Colorado

<http://www.ch2m.com>

Colorado Department of Transportation

Makeup: Colorado's highway and bridge system

Location: Denver, Colorado

<http://www.dot.state.co.us/>

Denver Regional Council of Governments

Regional Makeup: 9 counties – Adams, Arapahoe, Boulder, Broomfield, Denver, Clear Creek, Douglas, Jefferson, Gilpin, 47 municipalities

Location: Denver, Colorado

Population: 2,458,701

<http://www.drcog.org>

Felsburg Holt & Ullevig

Makeup: Transportation engineering

Location: Denver and Colorado Springs, Colorado

<http://www.fhueng.com/>

Navjoy Consulting Services, Inc.

Makeup: Traffic Engineering, Intelligent Transportation Systems, Technology and Planning

Location: Denver, Colorado

<http://www.navjoyinc.com/>

Northwest Colorado Council of Governments

Regional Makeup: 5 counties – Jackson, Grand, Eagle, Summit, Pitkin

Location: Silverthorne, Colorado

Population: 116,845

<http://www.nwc.cog.co.us/>

Pikes Peak Area Council of Governments

Regional Makeup: 3 counties – Park, El Paso, Teller

Location: Colorado Springs, Colorado

Population: 507,288

<http://www.ppacg.org/>

Pitkin County

Location: Pitkin County and the City of Aspen, Colorado
Population: 14,872
<http://county.aspenpitkin.com/>

Town of Bennett

Location: Eastern Adams and Arapahoe Counties, Colorado
Population: 2,536
<http://www.townofbennett.org/>

Town of Castle Rock

Location: Douglas County, Colorado
Population: 46,000
<http://www.crgov.com/>

CONNECTICUT

South Central Regional Council of Governments

Regional Makeup: 15 cities or towns
Location: North Haven, Connecticut
Population: 550,000
<http://www.scrkog.org/>

Town of Manchester

Location: Hartford, Connecticut Region
Population: 54,740
<http://www.townofmanchester.org/>

DISTRICT OF COLUMBIA

American Association of Retired Persons

Makeup: Represents people aged 50 years and over
Location: Washington, District of Columbia
<http://www.aarp.org/>

The Community Transportation Association of America

Makeup: Represents transit mobility entities
Location: Washington, District of Columbia
<http://www.ctaa.org/>

Federal Highway Administration, U.S. Department of Transportation

Makeup: Highway transportation issues
Location: Washington, District of Columbia
<http://www.fhwa.dot.gov/>

Federal Transit Administration, U.S. Department of Transportation

Makeup: Public transit transportation issues
Location: Washington, District of Columbia
<http://www.fta.dot.gov/>

Metropolitan Washington Council of Governments

Regional Makeup: (bi-state and DC) 7 counties District of Columbia; Maryland –Prince George’s County, Montgomery County, Frederick County; Virginia –Fairfax County, Loudoun County, Arlington County, Prince William County
Location: Washington, District of Columbia
Population: 4,211,964
<http://www.mwcog.org/>

National Association of Area Agencies on Aging

Makeup: Represents Area Agencies on Aging
Location: Washington, District of Columbia
<http://www.n4a.org/>

National Association of Counties

Makeup: Represents county governments in the United States
Location: Washington, District of Columbia
<http://www.naco.org/>

National League of Cities

Makeup: Represents municipal governments throughout the United States
Location: Washington, District of Columbia
<http://www.nlc.org/>

FLORIDA

Charlotte County-Punta Gorda Metropolitan Planning Organization

Regional Makeup: Charlotte County and the City of Punta Gorda
Location: Punta Gorda, Florida
Population: 142,500
<http://www.ccmpo.com/>

CSA International, Inc.

Makeup: Marine and Ocean Engineering
Location: Stuart, Florida
<http://www.marine-resources.com/>

First Coast Metropolitan Planning Organization

Regional Makeup: 4 counties - Duval County and portions of Clay, Nassau and St. Johns Counties

Location: Jacksonville, Florida

Population: 1.2 million

<http://www.firstcoastmpo.com/>

Florida Metropolitan Planning Organization Advisory Council

Regional Makeup: Represents 26 Metropolitan Planning Organizations in the State of Florida

Location: Tallahassee, Florida

<http://www.mpoac.org/>

Tampa Bay Regional Planning Commission

Regional Makeup: 4 counties - Hillsborough, Manatee, Pasco and Pinellas, 19 municipalities

Location: Pinellas Park, Florida

Population: 2.6 million

<http://www.tbrpc.org/>

GEORGIA

Georgia Institute of Technology: Center for Quality Growth and Regional Development

Makeup: New ideas and technologies that improve the theory and practice of quality growth

Location: Atlanta, Georgia

<http://www.cqgrd.gatech.edu/>

IDAHO

Community Planning Association

Regional Makeup: 2 counties – Ada, Canyon, 10 cities

Location: Meridian, Idaho

Population: 563,786

<http://www.compassidaho.org/>

ILLINOIS

Chicago Metropolitan Agency for Planning

Regional Makeup: 7 counties - Cook, DuPage, Kane, Kendall, Lake, McHenry and Will, City of Chicago

Location: Chicago, Illinois

Population: 8,183,799

<http://www.cmap.illinois.gov>

Illinois Association of Regional Councils

Makeup: Represents regional organizations in the State of Illinois

Location: Springfield, Illinois

<http://www.ilarconline.org/>

INDIANA

Northwestern Indiana Regional Planning Commission

Regional Makeup: 3 counties - Lake, Porter and La Porte, 41 cities and towns, 44 townships

Location: Portage, Indiana

Population: 741,468

<http://www.nirpc.org/>

IOWA

Des Moines Area Metropolitan Planning Organization

Regional Makeup: 3 counties - Dallas County, Warren County, Polk County, 16 cities

Location: Des Moines, Iowa

Population: 395,072

<http://www.dmampo.org/>

East Central Intergovernmental Association

Regional Makeup: 5 counties - Cedar, Clinton, Delaware, Dubuque and Jackson

Location: Dubuque, Iowa

Population: 77,018

<http://www.ecia.org/>

MIDAS Council of Governments

Regional Makeup: 6 counties - Calhoun, Hamilton, Humboldt, Pocahontas, Webster and Wright

Location: Fort Dodge, Iowa

Population: 102,471

<http://www.midascog.net/>

KANSAS

APEX Innovations

Makeup: Data Information Sharing

Location: Olathe, Kansas

<http://www.apex-innovations.com/>

MJ Harden Associates, Inc.

Makeup: Geospatial products and services

Location: Mission, Kansas

<http://www2.mjharden.com/>

KENTUCKY

Bluegrass Area Development District

Regional Makeup: 17 counties: Anderson, Bourbon, Boyle, Clark, Estill, Fayette, Franklin, Garrard, Harrison, Jessamine, Lincoln, Madison, Mercer, Nicholas, Powell, Scott, Woodford
Location: Lexington, Kentucky
Population: 722,243
<http://www.bgadd.org/>

City of Frankfort

Location: Franklin County, Kentucky
Population: 28,000
<http://www.frankfort.ky.gov/>

Garrard County

Location: Garrard County, Kentucky
Population: 14,792
<http://www.garrardcounty.ky.gov/>

Green River Area Development District

Regional Makeup: 7 counties - Daviess, Hancock, Henderson, McLean, Ohio, Union, Webster, 27 cities
Location: Owensboro, Kentucky
Population: 207,377
<http://www.gradd.com/>

LOUISIANA

Louisiana State University Stephenson Disaster Management Institute

Makeup: Institute of academic researchers, experienced disaster managers, and experts from the private sector studying crisis and disaster management problems
Location: Baton Rouge, Louisiana
<http://www.bus.lsu.edu/centers/sdmi/>

MASSACHUSETTS

Pioneer Valley Planning Commission

Regional Makeup: 2 counties – Hampden, Hampshire, 43 cities and towns
Location: West Springfield, Massachusetts
Population: 608,000
<http://www.pvpc.org/>

MICHIGAN

Southeast Michigan Council of Governments

Regional Makeup: 7 counties - Livingston, Macomb, Monroe, Oakland, St. Clair, Washtenaw, and Wayne
Location: Detroit, Michigan
Population: 4.87 million
<http://www.semco.org/>

Toledo Metropolitan Area Council of Governments

Regional Makeup: 4 counties (bi-state) – Lucas, Ottawa, Wood, Monroe
Location: Toledo, Ohio
Population: 656,696
<http://www.tmacog.org/>

MINNESOTA

GeoComm

Makeup: Integrated geographic information systems (GIS) and communications consulting firm
Location: St. Cloud, Minnesota
<http://www.geo-comm.com/>

MISSOURI

Mid-America Regional Council

Regional Makeup: (bi-state) 9 counties Missouri – Cass, Clay, Jackson, Ray; Kansas – Johnson, Leavenworth, Miami, Wyandotte
Location: Kansas City, Missouri
Population: 1,850,644
<http://www.marc.org/>

NEBRASKA

Metropolitan Area Planning Agency

Regional Makeup: 5 counties – Washington, Douglas, Pottawattamie, Mills, Sarpy, 38 towns, 19 special purpose governmental entities and 1 city council
Location: Omaha, Nebraska
Population: 707,310
<http://www.mapacog.org/>

NEW HAMPSHIRE

Southern New Hampshire Planning Council

Regional Makeup: 3 counties – portions of Hillsborough, Merrimack and Rockingham, 1 city, 12 towns

Location: Manchester, New Hampshire

Population: 259,521

<http://www.snhpc.org/>

NORTH CAROLINA

Western Piedmont Council of Governments

Regional Makeup: 4 counties - Alexander, Burke, Caldwell, and Catawba, 24 municipalities

Location: Hickory, North Carolina

Population: 361,241

<http://www.wpcog.org/>

OHIO

Mid-Ohio Regional Planning Commission

Regional Makeup: 12 counties - Fairfield, Fayette, Franklin, Delaware, Knox, Licking, Madison, Marion, Morrow, Pickaway, Ross and Union

Location: Columbus, Ohio

Population: 1,835,189

<http://www.morpc.org/>

Northeast Ohio Areawide Coordinating Agency

Regional Makeup: 5 counties - Cuyahoga, Geauga, Lake, Lorain and Medina

Location: Cleveland, Ohio

Population: 2.1 million

<http://www.noaca.org/>

Ohio-Kentucky-Indiana Regional Council of Governments

Regional Makeup: 8 counties (tri-state) – Butler, Clermont, Hamilton, Warren, Boone, Campbell, Kenton, Dearborn

Location: Cincinnati, Ohio

Population: 1,886,650

<http://www.oki.org/>

Toledo Metropolitan Area Council of Governments

Regional Makeup: 4 counties (bi-state) – Lucas, Ottawa, Wood, Monroe

Location: Toledo, Ohio

Population: 656,696

<http://www.tmacog.org/>

OKLAHOMA

Association of Central Oklahoma Governments

Regional Makeup: 4 counties – Kingfisher, Oklahoma, Logan, Cleveland

Location: Oklahoma City, Oklahoma

Population: 1,076,258

<http://www.acogok.org/>

OREGON

Lane Council of Governments

Regional Makeup: 1 county - Lane, 12 cities

Location: Eugene, Oregon

Population: 313,100

<http://www.lcog.org/>

PENNSYLVANIA

Southwestern Pennsylvania Commission

Regional Makeup: 10 counties – Allegheny, Armstrong, Beaver, Butler, Fayette, Greene, Indiana, Lawrence, Washington, Westmoreland, and the City of Pittsburgh

Location: Pittsburgh, PA

Population: 2.66 million

<http://www.spcregion.org/>

TEXAS

Alamo Area Council of Governments

Regional Makeup: 12 counties – Atascosa, Bandera, Bexar, Comal, Frio, Gillespie, Guadalupe, Kendall, Kerr, Medina, Wilson

Location: San Antonio, Texas

Population: 2,000,230

<http://www.aacog.com/>

Brazos Valley Council of Governments

Regional Makeup: 7 counties – Brazos, Leon, Burleson, Madison, Robertson, Grimes, Washington

Location: Bryan, Texas

Population: 281,574

<http://www.bvcog.net/>

Central Texas Council of Governments

Regional Makeup: 7 counties – Bell, Coryell, Hamilton, Lampasas, Milam, Mills, San Saba, 31 cities

Location: Belton, Texas

Population: 385,000

<http://www.ctcog.org/>

Deep East Texas Council of Governments

Regional Makeup: 12 counties – Angelina, Houston, Jasper, Nacogdoches, Newton, Polk, Sabine, San Augustine, San Jacinto, Shelby, Trinity, and Tyler

Location: Jasper, Texas

Population: 368,675

<http://www.detcog.org/>

East Texas Council of Governments

Regional Makeup: 14 counties – Anderson, Camp, Cherokee, Gregg, Harrison, Henderson, Marion, Panola, Rains, Rusk, Smith, Upshur, Van Zandt, Wood

Location: Kilgore, Texas

Population: 745,180

<http://www.etcog.org/>

Houston-Galveston Area Council

Regional Makeup: 13 counties – Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller, Wharton

Location: Houston, Texas

Population: 5.7 million

<http://www.h-gac.com>

Nortex Regional Planning Commission

Regional Makeup: 11 counties – Archer, Baylor, Clay, Cottle, Foard, Hardeman, Jack, Montague, Wichita, Wilbarger, Young

Location: Wichita Falls, Texas

Population: 224,336

<http://www.nortexprc.net>

South East Texas Regional Planning Commission

Regional Makeup: 3 counties - Hardin, Jefferson and Orange

Location: Beaumont, Texas

Population: 385,090

<http://www.setrpc.org/>

Texas Association of Regional Councils

Makeup: Represents 24 Councils of Governments in the State of Texas

Location: Austin, Texas

<http://www.txregionalcouncil.org/>

UTAH

Mountainland Association of Governments

Regional Makeup: 3 counties – Utah, Wasatch, Summit

Location: Orem, Utah

Population: 413,487

<http://www.mountainland.org/>

Wasatch Front Regional Council

Regional Makeup: 5 counties - Salt Lake, Davis, Weber, Morgan, and Tooele, 60 cities

Location: Salt Lake City, Utah

Population: 1.6 million

<http://www.wfrc.org>

VIRGINIA

Nexus Enterprises, LLC

Makeup: Infrastructure protection consulting

Location: Fairfax, Virginia

<http://www.nexusenterprisesllc.com/>

WASHINGTON

Yakima Valley Conference of Governments

Regional Makeup: 15 jurisdictions, 2 cities –

Yakima, Sunnyside, 3 areas, 1 county - Yakima

Location: Yakima, Washington

Population: 222,581

<http://www.yvcog.org/>

WEST VIRGINIA

KYOVA Interstate Planning Commission

Regional Makeup: (bi-state) West Virginia - Cabell,

Wayne, City of Huntington; Ohio - Lawrence, City of Ironton

Location: Huntington, West Virginia

Population: 315,538

<http://www.wvs.state.wv.us/kyova/>

E. Survey of Existing Practices and Recommendations

The following are results from the National Association of Regional Councils' (NARC) workshops on Streamlining Cross-linking Transportation and Evacuation Planning for Metropolitan Planning Organizations (MPOs) and Regional Councils (RCs). The information provides both a survey of existing cross-linking practices, as well as suggestions for improvements to the process.

RCs/MPOs Involved in Evacuation Planning

Of the respondents, nearly 75 percent are engaged in some form of evacuation planning. Some states, like Texas for example, have a mandated, integral role in evacuation and emergency preparedness activities, while others are reliant on the state and local emergency management and law enforcement personnel.

RC/MPO Evacuation Planning Activities

Those involved in evacuation planning and emergency response run a wide range of activities, including, but not limited to:

- Providing a community forum, through committee-type structures, for prioritization of and consensus building for emergency issues;
- Creating and updating regional emergency preparedness, response and evacuation plan;
- Facilitating the meeting of all emergency responders and law enforcement to discuss the regional plan requirements;
- Collecting and aggregating U.S. Census data;
- Providing Geographic Information System (GIS) data;
- Operating travel demand modeling, pavement management and functional classifications;
- Building and maintaining web-based applications for data sharing;
- Conducting and participating in “awareness workshops;”
- Creating regional planning for flooding and power outages;
- Developing regional sheltering plans;
- Regulating traffic flow through safer highway design; and,
- Organizing training sessions for local elected officials.

“TBRPC has been involved in emergency management planning since 1978 by creating the nation’s first regional hurricane evacuation study. Our regional dependencies were recognized early in the process and demonstrated in the plan. In 1985 with Hurricane Elena, the counties in the Tampa Bay Region coordinated to ensure local evacuation and shelter decisions were made understanding that one county’s actions would significantly impact the adjacent communities. Coordination and collaboration among public and private partners is now standard operating procedure in the State of Florida for all types of emergencies from hurricanes to H1N1.”

***The Honorable Jill Collins
Board Member, NARC Region V
Gubernatorial Appointee, Hillsborough County, Florida***



RC/MPO Evacuation Planning Partners

Several evacuation planning and implementation partners were indicated from the respondents. Due to duplication of responses, the partners are categorized as *often engage* or *sometimes engage*. The main partners within evacuation activities are:

<i>Partner Category</i>	<i>Often Engage</i>	<i>Sometimes Engage</i>
Local Law Enforcement/Fire Department	√	
Medical Providers		√
State Departments and Officials	√	
Local Elected Officials	√	
State Associations of RCs/MPOs		√
Business Groups	√	
Churches and Other Non-Profit Organizations	√	
Transit Authority	√	
Utilities	√	
Newspapers and Media Outlets	√	
Federal Government Agencies	√	

RC/MPO Recommendations for Improving Evacuation Planning

The following are general recommendations from respondents on ways the federal government can improve the involvement of RCs and MPOs in transportation-evacuation planning:

- Provide funding for regional level planning with less strings to avoid duplicative efforts and allow plan implementation for greater regional preparedness. Generally speaking, local governments receive funding, but nothing goes to build RC/MPO capacity in these areas;
- Provide funding to purchase equipment and facility improvements;
- Continue to support training, seminars and workshops;
- Provide oversight management, technical assistance and guidance;
- Incentivize regular coordination of information and planning strategies at the federal, state, local and regional levels;
- Incentivize the development of mutual aid agreements that cover state boundaries to ensure collaboration between stakeholders;
- Create a general framework by which regional transportation-evacuation planning can be pursued;
- Ensure urban, suburban and rural regional transportation-evacuation planning is incorporated into national objectives;
- Improve recognition of the variety of threats that impact various areas across the country; and,
- Encourage cross-linking transportation-evacuation planning in MPO certification reviews.

F. Support for Survey Findings and Recommendations

A September 2004 GAO report, “Effective Regional Coordination Can Enhance Emergency Preparedness,” supports the findings and recommendations of this project. Their investigation found the following results in brief:

Regionally coordinated and planned programs have existed in such fields as transportation and environmental planning for decades. For example, the metropolitan transportation planning model came into being in response to federal transportation planning requirements in the 1960s. In contrast, homeland security is a relatively new public policy field, emerging in prominence after the terror attacks of September 11, 2001. According to our work in six metropolitan areas, several factors characterize effective regional coordination in those regions.

- Regional organizations that include representation from many different jurisdictions and diverse stakeholders serve as structured forums for these parties to discuss public policy problems and agree on possible solutions. These organizations exist in metropolitan regions for a variety of purposes—for example, to coordinate transportation planning or clean water initiatives. Decisions made collaboratively are likely to have broader support than those that are unilateral. For example, federal transportation law requires metropolitan planning organizations (MPO) with multijurisdictional representation to work together to agree on a regional transportation plan and allows the use of federal funding for such planning. For example, in the NCR, the Metropolitan Washington Council of Governments (MWCOCG) promotes collaborative transportation decision making by requiring the majority of the area’s multijurisdictional board to support a regional transportation improvement plan. Agreements on such projects as road improvements associated with rebuilding the Woodrow Wilson Bridge were approved by the MWCOCG Transportation Planning Board and included in the transportation plan for federal funding.
- Where regional collaboration is encouraged by the leadership and political traditions of state, regional, and local entities, flexibility for regional organizations to establish their membership requirements and collaborative processes is important. Such flexibility helps regional organizations function effectively in the existing political and civic environment by allowing them to expand the scope of the collaborative activities; under these circumstances, overly prescriptive requirements could impede effective coordination. For example, emergency preparedness officials in the San Francisco Bay area told us that first responder agencies in that area have a longstanding tradition of interjurisdictional coordination. However, in our view, in cases where state and local traditions do not engender interjurisdictional collaboration, more prescriptive requirements regarding regional group members, decision-making processes, and planning can establish minimum thresholds for those activities and may provide an incentive for regional coordination.
- Strategic plans developed by regional organizations can be effective tools to focus resources and efforts to address problems. Effective plans often contain such features as goals and objectives that are measurable and quantifiable. These goals and objectives allow problems and planned steps to be defined specifically and progress to be measured. For example, according to Tampa Bay Estuary Program officials, the involvement of federal, state, and local government partners, environmentalists, and the private sector in proposing and implementing solutions to cleaning up Tampa Bay ensures agreement on technically sound plans that are based on measurable goals and objectives. An agreement involving state and local agencies, as well as industry, committed

these parties to specific actions to achieve those goals, including an overall goal of restoring sea grasses to the conditions of about 50 years ago. By specifying goals and objectives, plans can also give planners and decision makers a structure for allocating funding to those goals and objectives. Moreover, the application of standards, where existent, can focus the strategic planning process by allowing planners to measure the current status (baseline) of performance, express measurable goals, and identify any gaps between the baseline and goals.

The federal government can provide support for regional coordination. In particular, through its grant design and requirements, the government encourages structures and practices associated with effective regional efforts.

- Some federal programs support the existence of regional organizations that reach collaborative decisions, and several federal programs require the grantee to establish such an organization before it can receive federal funds. For example, under federal transportation law, all transportation improvement plans must be prepared by MPOs prior to the allocation of highway and transit funds. To avoid one party or type of party being overrepresented in the regional group or wielding too much power, some federal programs define acceptable requirements for the group and the associated planning processes.
- Some federal grants allow local jurisdictions the flexibility to organize themselves in ways consistent with their regional environment. For example, in fiscal year 2003, the Dallas UASI region as defined by DHS included the City of Dallas and its contiguous counties, but not Tarrant County, Texas. Many regional, state, and city officials felt that Tarrant County should be included in the UASI planning. To address this issue, the state of Texas provided funding to Tarrant County from the 20 percent of UASI funding that was not passed through to the City of Dallas. On the other hand, if the regional environment is not friendly to collaboration, then federal grantor agencies can specify minimum requirements for a regional organization and procedures that elicit collaborative decisions.
- Some grants require a strategic plan as a precondition for receiving federal funds, but to be effective the plans should include measurable goals and objectives. In addition, clear standards help to guide the progress toward measurable objectives. For example, MPOs must show that metropolitan transportation plans and programs conform to the goals of the state (air quality) implementation plan for the region. Reducing transportation emissions in the metropolitan planning process is usually achieved by a combination of new construction, system improvements, and demand reduction measures.
- We also found that federal funding targeted at collaborative regional groups can encourage regional coordination. For example, federal transportation funds pay for the coordination activities of MPOs.

In summary, the federal government can encourage regional coordination through its grant programs. Regional organization structures, flexibility to account for local conditions, and strategic planning are key characteristics of regional coordination. Given the important role that regional planning and governance can play in improving national preparedness, these developments warrant continuing congressional oversight.

G. Transit Security Case Studies

KYOVA Interstate Planning Commission:

A Case Study for Transit

December 2008

The **KYOVA Interstate Planning Commission** is a voluntary, non-profit association of local governments in southwestern West Virginia and southeastern Ohio that serves as a forum for assessing and acting upon regional transportation problems. The Commission's goal is to promote cooperation among its member organizations and to maximize their ability to solve problems that cannot be solved by any jurisdiction individually. KYOVA serves a population of slightly over 200,000, and under federal law, KYOVA is the Metropolitan Planning Organization (MPO) responsible for ensuring the coordinated use of federal transportation funds for the bi-state region, which benefits from a multi-modal transportation system linking the two States. One particular area where KYOVA is focusing is integrating transit security into overall transportation planning per the requirements of the current five-year law Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU).

In 2005, SAFETEA-LU created a separate and distinct "security" planning factor however, little is known about small and mid-sized MPOs successes and challenges in integrating this planning factor into their transportation plans. The KYOVA Interstate Planning Commission recognizes that the terrorist attacks on America have mandated that future transportation planning incorporate public and private interests to achieve a higher level of security across all modes. KYOVA plans to incorporate its planning activities with other federal, state, and local agencies involving future transportation objectives in order to obtain a broad scope of management activities concerning the safeguarding of its citizens. The region seeks to address hazards presented by both flooding due to

the topography of the region (two rivers converge five miles west of downtown), but also from commerce-related hazards occurring along the Ohio River.

KYOVA works closely with the regional transit authority, The Transit Authority (TTA). TTA provides bus service on 17 routes Monday through Saturday, and Dial-A-Ride para-transit service in both West Virginia and Ohio. TTA's service reaches and connects all major low income and elderly housing facilities in the region, medical, governmental and shipping establishments in the urbanized area of Wayne and Cabell counties in West Virginia. While



KYOVA and TTA are not co-located, the two organizations partner on transit-related projects and studies, and often utilize independent consultants for these joint projects. As KYOVA conducts all of the transportation

planning for the region, TTA will contract with KYOVA to conduct studies and design-work on behalf of TTA. Any transit-related capital expenditure in the Huntington region must be approved by KYOVA's Board of Directors. For example, KYOVA, TTA and the Kanawha Regional Transit Authority (KRT) in Charleston, West Virginia, are working together to initiate a low-cost bus service between Charleston and Huntington, West Virginia, beginning in January, 2009. KYOVA and TTA have worked closely on studying and implementing projects beyond those listed in the past, and will continue to do so when new opportunities arise in the future.

KYOVA has been active and continues to look for new ways to integrate security concerns into their transportation processes. KYOVA staff attends regular meetings of the Regional Homeland Security committee comprised of representatives of local law enforcement, fire protection, the state and

Federal military, transit, and others. Initially, in its 2005 Transportation Improvement Program (TIP), KYOVA incorporated funding for the replacement of security fencing around the TTA facilities, and for upgrading the surveillance system on the transit authority's buses and around its maintenance facility. Additionally, KYOVA commissioned a study which began in November, 2008, and addresses disaster response and recovery in the KYOVA metropolitan area. This study is anticipated to be completed in Spring, 2009. Through this study, KYOVA and TTA are exploring ways in which the transit function can act as the mechanism by which the region can be quickly and efficiently evacuated in the event of a man-made or natural disaster. KYOVA is both funding the study and coordinating the various state agencies which have jurisdictional responsibility over disaster management. The results of this study will aid in developing an emergency preparedness plan for

KYOVA and TTA for the Huntington region.

The KYOVA and TTA 2007 Transit Authority Strategic Plan notes, "When emergencies occur, TTA's role is to support the efforts of fire, police, and emergency medical services and rescue workers." TTA's important role in providing response and recovery services also includes TTA's equipment and personnel, as TTA is required to offer services for evacuations, transporting emergency workers and warming or cooling areas at the scene of an incident, as well as to assist in the area's recovery immediately after an incident. At times when public transit may be many residents' only transportation option, TTA serves as a lifeline to the community. The need to be better prepared for an emergency has led to KYOVA and TTA's work in developing a planned, documented and organized response to potential events, in an effort to minimize the negative impacts of a disaster on TTA, its employees, customers, operations and property.

About SAFETEA-LU Regulations

The passage of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act - a Legacy for Users (SAFETEA-LU) increased the number of federally required planning factors that Metropolitan Planning Organizations (MPOs) must include in their Transportation Improvement Programs (TIPs). Whereas under the previous authorization of the Transportation Equity Act of the 21st Century (TEA-21), MPOs were required to account for a "safety and security" planning factor, SAFETEA-LU broke apart this singular factor into "safety" and "security." The separation of this singular planning factor into two separate and distinct factors was an attempt to address concerns as to the lack of preparedness of localities to the attacks of September 11, 2001. One lesson learned from September 11th is that effective coordination and communication among the different operating agencies in a region is paramount. This type of coordination is needed to allow enforcement, security and safety responses to occur expeditiously, while concurrently permitting the transportation system to handle a potentially overwhelming public response to the incident, and providing the public with clear and concise information about the situation and any actions that should be taken.

About MPO Responsibilities

Metropolitan Planning Organizations (MPOs) are responsible for administering federal funds, though the duties performed vary by state law and other mandates as directed by their MPO board. The Metropolitan Transportation Plan or Long-Range Transportation Plan, which visualizes the MPO's region 20 years into the future, forms the basis of all activities. From this 20-year plan, a shorter term priority list of projects is maintained in the TIP, identifying projects of the greatest importance for construction, upgrade or maintenance. MPOs may also be required, depending on their region, to prepare plans for non-motorized transportation, public transit or air quality.



About the National Association of Regional Councils

The National Association of Regional Councils (NARC) serves as the national voice for regionalism by advocating for regional cooperation as the most effective way to address a variety of community planning and development opportunities and issues. NARC's member organizations are composed of multiple local governments that work together to serve American communities – large and small, urban and rural. For additional information, please visit www.NARC.org.



About the Kyova Interstate Planning Commission

KYOVA Interstate Planning Commission is a transportation planning agency established by federal law. Its mission is to plan for an orderly, cost-effective, multi-modal transportation system for all citizens of the service area. With the support of your local officials, we plan for sound transportation improvements, which will facilitate the movement of goods and people in a safe and efficient manner.



NARC

Building Regional Communities

St. Joseph Area Transportation Study Organization:

A Case Study for Transit

December 2008

The St. Joseph Area Transportation Study Organization (SJATSO) is the Metropolitan Planning Organization (MPO) in the St. Joseph, Missouri Urbanized Area and develops transportation plans and programs in conjunction with the States of Missouri and Kansas. The St. Joseph Urbanized Area includes three counties and five cities in both Kansas and Missouri, and is mainly a rural, agricultural region. The region, which has a population of approximately 108,000, is within close proximity to several military installations and has become known for its high-tech animal health industry. SJATSO's mission is to develop an efficient, multi-modal transportation system that minimizes fuel consumption and pollution across their region. The organization also strives to provide pedestrian walkways and bicycle transportation facilities within its continuing, cooperative and comprehensive planning efforts.



In 2005, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) created a separate and distinct “security” planning factor, however little is known about small and mid-sized MPOs successes and challenges in integrating this planning factor into their transportation plans. SJATSO recognizes that transit is an integral component to the St. Joseph Urbanized Area’s local emergency response plan that is administered by existing programs and administrators within the urban area, and the Local Emergency Committee (LEC) works diligently to be prepared on all fronts. According to federal guidelines, LECs must include representatives from law enforcement, emergency management, transportation, fire fighting, first aid, health, media, community and environmental groups, as well as local, state, federal elected officials, hospitals, and owners and operators of key facilities.

LECs are responsible for developing and distributing an emergency plan annually, as well as evaluating local needs and making recommendations for additional resources required for local emergency response and recovery. While LEC’s relationships with their military installations results in some confidential details of their plans, SJATSO’s focus on transit security addresses both passenger coach and facility safety. Major homeland security risks SJATSO has identified within the region include flooding, the nearby New Madrid Fault, hazardous materials from major manufacturing plants, and agri-terrorism. Examples of integration typically focus upon evacuation support in response to various scenarios and the corresponding levels of possible events.

St. Joseph Transit, “The Ride,” is the second oldest transit system in the U.S. and serves the St. Joseph Urbanized Area. The Ride operates eight fixed bus routes throughout the City of St. Joseph, including three overnight routes, Monday through Saturday. In 2007, The Ride served approximately 417,906 passengers. SJATSO and The Ride work closely together on short- and long-term transit planning, as well as special projects, often collaborating in securing funding for joint work. SJATSO and The Ride address their homeland security needs through regular meetings and cooperative work between their staffs.

Through a Federal Transit Administration (FTA) pilot program, SJATSO and The Ride were recently selected to work with an FTA contractor for a regional safety and security review. The goal of this assessment was to obtain the perspective of an expert in the area of transit security, and to communicate with the transit operator areas in which

they are succeeding, areas where improvement is possible, and provide the tools with which they may better their processes. Given SJATSO's current level of knowledge on the topic of transit security, the pilot program helped them expand their intellectual capacity in that area. The pilot program conducted by FTA was also helpful in providing smaller MPOs, like SJATSO, with information and emergency planning expertise that was not previously available for MPOs with their level of resources. As a result of the review, SJATSO and The Ride have identified issues in the areas of operations, training, best practices and capital investments. The entire process has been beneficial for both improving SJATSO's knowledge of transit issues and improving The Ride's transit operations. Additionally, operational issues, involving training and identifying facility vulnerability, are being examined and addressed as funding becomes available.

In SJATSO's 2009-2012 Transportation Improvement Plan (TIP), two transit security related projects were prioritized. The first project, scheduled for 2009, is to implement a new, web-based security system and "Next Stop" passenger information systems that will track transit service with Global Positioning System (GPS). The second project, slated for 2011 and 2012, will improve the administrative and maintenance facilities access security systems through "Smart Card" access that is integrated with a photo identification system. These specific projects don't relate to urban-wide emergency planning, but instead relate to system security. Both projects were identified as investments previous to the security review and were confirmed as sound technology enhancements thereafter. The projects are consistent with the recommended framework of an overall security plan recognized by transit staff and confirmed through the MPO review.

In terms of additional homeland security planning, SJATSO does not have primary responsibility for the region. SJATSO members participate as members of the LEC; however, the majority of the work is done by the City of St. Joseph's Emergency Management Coordinator and the Buchanan County Emergency Management Coordinator, with additional support from surrounding urban area coordinators. In their role with this Committee, SJATSO provides technical assistance and contributes information regarding St. Joseph's critical infrastructure. SJATSO feels that this role is fitting, helps to avoid redundancy and maximizes the use of scarce resources.

About SAFETEA-LU Regulations

The passage of the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act - a Legacy for Users (SAFETEA-LU) increased the number of federally required planning factors that Metropolitan Planning Organizations (MPOs) must include in their Transportation Improvement Programs (TIPs). Whereas under the previous authorization of the Transportation Equity Act of the 21st Century (TEA-21), MPOs were required to account for a "safety and security" planning factor, SAFETEA-LU broke apart this singular factor into "safety" and "security." The separation of this singular planning factor into two separate and distinct factors was an attempt to address concerns as to the lack of preparedness of localities to the attacks of September 11, 2001. One lesson learned from September 11th is that effective coordination and communication among the different operating agencies in a region is paramount. This type of coordination is needed to allow enforcement, security and safety responses to occur expeditiously, while concurrently permitting the transportation system to handle a potentially overwhelming public response to the incident, and providing the public with clear and concise information about the situation and any actions that should be taken.

About MPO Responsibilities

Metropolitan Planning Organizations (MPOs) are responsible for administering federal funds, though the duties performed vary by state law and other mandates as directed by their MPO board. The Metropolitan Transportation Plan or Long-Range Transportation Plan, which visualizes the MPO's region 20 years into the future, forms the basis of all activities. From this 20-year plan, a shorter term priority list of projects is maintained in the TIP, identifying projects of the greatest importance for construction, upgrade or maintenance. MPOs may also be required, depending on their region, to prepare plans for non-motorized transportation, public transit or air quality.



About the National Association of Regional Councils

The National Association of Regional Councils (NARC) serves as the national voice for regionalism by advocating for regional cooperation as the most effective way to address a variety of community planning and development opportunities and issues. NARC's member organizations are composed of multiple local governments that work together to serve American communities – large and small, urban and rural. For additional information, please visit www.NARC.org.



About the St. Joseph Area Transportation Study Organization

The St. Joseph Area Transportation Study, in cooperation with the States of Missouri and Kansas, develops transportation plans and programs for the St. Joseph, Missouri Urbanized Area (UZA), in order to encourage and promote the development of a transportation system embracing various modes of transportation in a manner which will efficiently maximize mobility of people and goods within and through the urbanized area, and minimize transportation-related fuel consumption and air pollution.



NARC

Building Regional Communities

Yuma Metropolitan Planning Organization:

A Case Study for Transit

December 2008

The Yuma Metropolitan Planning Organization (YMPO) represents the Yuma, Arizona, region and includes the Cities of Yuma, San Luis and Somerton, the Town of Wellton, Yuma County and the Cocopah Indian Tribe. The mainly rural region covers 5,561 square miles and has a population of 203,779. The metropolitan region shares an international border with Mexico and is home to Marine Corps Air Station Yuma, which provides air combat training to both U.S. and NATO forces. Since YMPO's boundaries extend into California, it is considered a bi-state MPO within the Arizona DOT Yuma District.

YMPO plans, coordinates and integrates all modes of transportation, roadways, transit, aviation and waterways for the Yuma region. The MPO strives to maintain a comprehensive, multi-agency transportation planning program as the coordinating agency for all federal highway, transit and surface transportation funds for the region and receives federal metropolitan planning funding through the Arizona Department of Transportation. In FY 2007, the YMPO continued cross-border transportation planning to maximize mobility, economic, and lifestyle improvements through its continued support of the development of the new commercial port of entry (San Luis II) and the rehabilitation of San Luis I in San Luis, Arizona, construction of the Area Service Highway, and the designation of U.S. 95 as the CANAMEX Western Passage.

Three years after SAFETEA-LU created a separate and distinct "security" planning factor, little is known about small and mid-sized MPOs successes and challenges in integrating this planning factor into their transportation plans. YMPO recognizes the challenges of homeland security for the region, including the major concerns of earthquakes and the potential for flooding due to the nearby Hoover Dam. The MPO also participates in local Emergency Medical Services (EMS) coordination meetings and assists in planning for a new port of entry at the Mexican border. Although there are identified homeland security risks, no dedicated plans, programs or reports have been developed to combat these risks. YMPO reports that the lack of funding significantly inhibits planning activities in this area.

YMPO currently serves as the region's transit authority. The MPO owns all of the transit vehicles and contracts with Yuma County Area Transit (YCAT), a contractor with a staff of 46, to operate the vehicles. YMPO's contract administrator oversees YCAT's daily operations, including insurance compliance and requirements, customer service and complaints. YMPO receives STP flexible funds for its transit operations, and maintains seven bus routes through YCAT, as well as demand-responsive service through the Dial-a-Ride program. YCAT serves approximately 33,000 people each month, with Dial-a-Ride serves approximately 3,500 additional passengers each month.



YCAT contractors neither play an active role in the MPO planning process nor in coordinating with local EMS agencies. As YMPO is the organization responsible for conducting the planning, YMPO actively participates in the Local Emergency Management Planning Committee, and coordinates with local EMS agencies. Through YMPO's participation on the emergency management planning committee, and directly as a result of its role as the lead transportation planning agency in Yuma, YMPO has the ability to direct YCAT's work and resources accordingly to meet the regions overall security planning needs.

In YMPO's 2007-2011 Transportation Improvement Plan (TIP), one transit security related project was prioritized. The project, scheduled for 2008, includes the purchasing of mobile surveillance equipment for the transit systems bus fleet. YMPO's centralized transit planning function also ensures that capital transit needs, related to security, will be prioritized through the MPO's standard process. Currently, YMPO recognizes that its current activities may not be sufficient in planning for and meeting all regional homeland security risks. Funding, staffing and local expertise have all been cited as necessary to significantly improve the MPO's ability to engage in a more active role. Changes in staffing and funding, as well as an updated mission and authority would all be required for YMPO to more fully participate in the regional homeland security planning process. For instance, Arizona state law allows for a Regional Transportation Authority (RTA). The RTA is a public, political, tax-levying public improvement and taxing subdivision of the state and a municipal corporation established in a county with a population of between 400,000 and 1,200,000 persons. If YMPO were able to gain designation as an RTA (albeit the region's population would have to double), the MPO would have the opportunity to ask its citizens for additional revenue to fund transit security related activities. The MPO's lack of financial resources is cited as one of the major hurdles in integrating the security planning factor to a greater degree.

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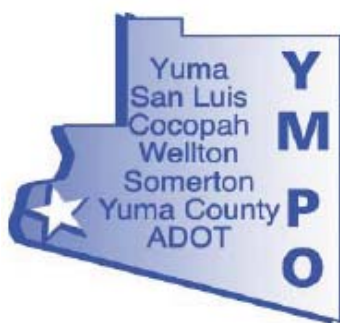
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About Yuma Metropolitan Planning Organization

The Yuma Metropolitan Planning Organization (YMPO) was formed in 1983 with the mission responsibility of transportation planning for the Yuma region. YMPO plans, coordinates and integrates activities necessary to maintain a comprehensive multi-agency transportation planning program. This planning includes all modes of transportation, roadways, transit, aviation and waterways. YMPO is the coordinating agency for Federal highway, transit and surface transportation funds.



NARC
Building Regional Communities

H. Acronyms

Below is a list of acronyms that have been referenced throughout the report.

AARP	American Association for Retired Persons	LED	Local Employment Dynamics
AASHTO	American Association of State Highway and Transportation Officials	LEHD	Longitudinal Employer-Household Dynamics
ACS	American Community Survey	MARC	Mid-America Regional Council
ADA	Americans with Disabilities Act of 1990	MPO	Metropolitan Planning Organization
AICP	American Institute of Certified Planners	MWCOG	Metropolitan Washington Council of Governments
APCO	Association of Public-Safety Communications Officials-International	N4A	National Association of Area Agencies on Aging
APTA	American Public Transportation Association	NARC	National Association of Regional Councils
BTS	Bureau of Transportation Statistics	NCHRP	National Cooperative Highway Research Program
CM	Certification of Maintenance	NOD	National Organization on Disability
CTPP	Census Transportation Planning Products	NWCCOG	Northwest Colorado Council of Governments
DETCOG	Deep East Texas Council of Governments	PSCC	Public Safety Communications Centers
DHS	U.S. Department of Homeland Security	PUMA	Public Use Microdata Areas
DIEM	The Department of Homeland Security Center of Excellence—Natural Disasters, Coastal Infrastructure and Emergency Management	RC	Regional Council
DOL	U.S. Department of Labor	RITA	Research and Innovative Technology Administration
DRCOG	Denver Regional Council of Governments	RTA	Regional Transportation Authority
EMS	Emergency Medical Services	RTD	Regional Transportation District
ETEs	Evacuation Time Estimates	SAFETEA-LU	Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users
FEMA	Federal Emergency Management Agency	SANDAG	San Diego Association of Governments
FHWA	Federal Highway Administration	SETRPC	Southeast Texas Regional Planning Commission
FIRMs	Flood Insurance Rate Maps	SJATSO	St. Joseph Area Transportation Study Organization
FTA	Federal Transit Administration	SRESP	Florida Statewide Regional Evacuation Study Program
H-GAC	Houston-Galveston Area Council	ST-ISAC	Surface Transportation and Public Transportation Information and Analysis Center
HOTCOG	Heart of Texas Council of Governments	TEA-21	Transportation Equity Act of the 21st Century
GAO	U.S. Government Accountability Office	TTA	The Transit Authority (West Virginia)
GIS	Geographical/Geographics Information Systems	TIP	Transportation Improvement Program
ICS	Incident Command System	TRB	Transportation Research Board
IED	Improvised Explosive Devices	UASI	Urban Area Security Initiative
IPUMS	Integrated Public Use Microdata Sets	USDOT	U.S. Department of Transportation
ITS	Intelligent Transportation Systems	YCAT	Yuma County Area Transit
KRT	Kanawha Regional Transit Authority	YMPO	Yuma Metropolitan Planning Organization
KYOVA	KYOVA Interstate Planning Commission		
LEC	Local Emergency Committee		

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