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THE ROLE OF TRANSIT IN EMERGENCY EVACUATION

Transit can play a vital role in an emergency evacuation, as demonstrated by the terrorist attacks of September 11, 2001, when transit shuttled passengers out of Lower Manhattan and rushed employees, buses, and equipment to the World Trade Center site to support emergency responders. In 2005, transit could have played an important role in New Orleans in advance of Hurricane Katrina but failed to do so when few drivers reported to work, transit equipment proved inadequate and was left unprotected, and communications and incident command were nonexistent. Emergency plans that inadequately represent transit or are poorly executed risk significant loss of life, particularly among those who are dependent on transit for evacuation out of harm's way.

Study Charge and Scope

The Transportation Research Board's *Special Report 294: The Role of Transit in Emergency Evacuation* explores the roles that transit systems can play in accommodating the evacuation, egress, and ingress of people from or to critical locations in times of emergency. Requested by Congress, funded by the Federal Transit Administration (FTA) and the Transit Cooperative Research Program, and conducted by a committee of experts under the auspices of the Transportation Research Board, the study focuses on transit systems serving the 38 largest urbanized areas in the United States—a proxy for transit properties serving more than 1 million in population. Transit is defined broadly to include bus and rail systems, paratransit and demand-responsive transit, commuter and intercity rail, and ferries, whether publicly operated or privately contracted. Highways and their capacity are also considered, because many transit systems only provide bus service and must share the highways with private vehicles in an emergency evacuation. The report focuses on major incidents that could necessitate a partial to full evacuation of the central business district or other large portion of an urban area. Meeting the surge requirements and coordination demands of such incidents is likely to strain the capacity of any single jurisdiction or transit agency and exceed local resources.

Planning for Major Disasters and Evacuation

Historical data show that severe storms are the most common major, presidentially declared disaster, but there are considerable differences in the hazards facing U.S. regions, such as hurricanes in the Gulf and Atlantic Coasts, flooding in the Midwest, and earthquakes in California and elsewhere. Some hazards, like tropical storms, provide “advance notice” and recur with some regularity.

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Others, like earthquakes and terrorist events, strike without warning. Communities can plan for the former, but planning for the latter is difficult. In view of the general unpredictability of many hazards and uncertainty about the precise location of an incident and the extent of its impact, emergency managers take an all-hazards approach to emergency planning, scalable to the type and magnitude of the disaster.

Local governments have the primary responsibility for responding to emergency incidents and, if necessary, ordering an evacuation. If an incident overwhelms local capability, mutual-aid agreements with neighboring jurisdictions can be invoked, and in a major event or when special equipment is needed (e.g., U.S. Coast Guard vessels, helicopters), state and federal assistance may be requested. Typically, transportation and transit agencies play a supporting role in an emergency incident. Local emergency managers have the primary responsibility for managing and coordinating the response. Police, fire, and emergency medical services—the first responders to an incident—generally take the lead in any necessary evacuation.

Transit's ability to be a successful partner in an evacuation depends on a good local emergency response and evacuation plan. These plans generally comprise four major elements: mitigation, preparedness, response, and recovery. Transit has a role to play in each of these areas. However, the extent of transit's participation and the ability of the local area to plan for and respond to an emergency depend on the type of emergency involved; the characteristics of the urban area; geographic considerations, in particular any constraints, such as limited access to a mainland location; the number of jurisdictions that must coordinate in an emergency; the willingness of citizens to heed evacuation orders; resources; and more.

Incorporate Transit in Local Emergency Evacuation Plans

The majority of urbanized area emergency operations plans are only partially sufficient in describing in specific and measurable terms how a major evacuation could be successfully conducted, and few have focused on the role of transit. **Therefore, local emergency managers should focus greater attention on evacuation planning as an important element of overall emergency planning, and should both determine and incorporate a role for transit and other public transportation providers in meeting evacuation needs.** Ensuring that transit is included in evacuation plans is the responsibility of both emergency managers and transportation and transit agencies.

Few localities, even among those with evacuation plans, have provided for a major disaster that could involve multiple jurisdictions or multiple states in a region and necessitate an evacuation of a large fraction of the population. Leadership is lacking because no one jurisdiction “owns” the problem, and no clear regional emergency management protocols are evident. Moreover, the feasibility of evacuating major portions of large, highly developed, congested urban areas is questionable. In many urban areas, severe congestion at peak periods lasts for several hours each morning and evening, straining the system under normal conditions.

To help fill the planning gap, the report recommends that **the Department of Homeland Security and the Federal Emergency Management Agency, in conjunction with the U.S. Department of Transportation, should provide guidance to state and local governments on regional evacuation planning, including the role of transit and other public transportation providers, and that states should take the lead in ensuring the development of such plans, coordinating with appropriate regional entities. In addition, federal funding should be provided for the development of regional evacuation plans that include transit and other public transportation providers, and grant recipients should be required to report on their progress and meet milestones and timetables.**

Make Transit a Full Partner

In areas where transit is a full partner in local emergency evacuation plans, transit agencies have been involved in the development of such plans and are part of the designated emergency command structure. As a result, the committee recommends that **transit agencies participate with emergency management agencies and departments of transportation when evacuation plans are developed and be full partners in the command structure established to handle emergency response and evacuation.** To the extent that transit agencies are recognized as full partners in emergency evacuation plans, they will have to shoulder new responsibilities and costs and should therefore be eligible for cost reimbursement with other first responders. Transit agency personnel should be considered essential personnel, along with representatives of police, fire, and emergency medical services, when asked to assume a major role in emergency evacuation.

To ensure that transit is used to its maximum potential, **the emergency operations centers of transit agencies should be linked with those of**

emergency management agencies. Transit should have the capability for real-time interoperable communications (both voice and data), be part of the decision-making team for emergency operations, develop effective ways of communicating with transit passengers in advance of and during an emergency, and participate in annual exercises and drills that involve multiple agencies and jurisdictions.

Encourage Transit's Multiple Roles in an Emergency Evacuation but Remain Realistic

Transit can perform multiple roles in an emergency evacuation. For example, it can transport those who do not have access to a private vehicle, either to area shelters or to other destinations outside the affected area. Transit is often the only means of evacuation for vulnerable, carless populations, many of whom may need assistance (see subsequent section). Transit drivers can also transport emergency personnel and equipment to an incident site. After the emergency has passed, transit providers can transport carless evacuees to their original locations or destinations, help supply real-time information on the extent of damage, and resume normal service as quickly as possible.

Emergency managers, elected officials, and the general public should be realistic in their expectations with regard to the role transit can play in an emergency evacuation, particularly in a no-notice incident that occurs during a peak service period. The extent of transit's participation depends on the nature of the incident and its location in a region; the size and scale of area transit service; and the extent of damage, if any, to transit equipment and facilities. Meeting surge requirements will also depend on the availability of transit drivers and equipment readiness, which are especially challenging at off-peak times; prearranged continuity-of-service provisions for contracted transit services; and mutual-aid agreements with other providers to help fill service gaps. Were a major no-notice emergency to occur at peak periods when transportation systems are heavily congested, the capacity of the transportation system, including transit, would be severely taxed.

Integrate the Requirements of Carless and Special Needs Populations into Evacuation Planning

Transit has a unique role to play in evacuating the carless and special needs populations such as the disabled, the elderly, and the medically homebound in an emergency, but these groups are inadequately

addressed in most local emergency evacuation plans. Part of the difficulty is the diversity of population groups that fall under the designation of "carless" and "special needs" and the different types of transit service they may require. Ambulatory but carless low-income populations can use fixed-route transit service, whereas the elderly, disabled, or medically homebound are likely to use sparser paratransit service with accessible equipment and trained operators. Finally, identifying and keeping current information about the geographic location and transit needs of special needs populations are major challenges. Because of these concerns, **evacuation of the carless and those with special needs must be an integral part of evacuation planning, operations, and funding. A public information campaign and sheltering strategy specifically targeting these populations should be developed.**

Fund Evacuation-Related Capacity Enhancements to Transportation Systems

The capacity and resilience of transit and highway systems affect the successful use of transit in an emergency evacuation but are poorly addressed in current funding programs. Therefore, **in the reauthorization of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, Congress should authorize FTA and the Federal Highway Administration to make eligible and fund evacuation-related capacity enhancement projects aimed at adding redundancy to critical transit and highway infrastructure, respectively, and increase funding for intelligent transportation systems technologies that can enhance network resilience in an emergency. State funds should also be directed to these purposes.**

Conduct Needed Research

Research is needed to support many of the committee's recommendations. Network simulation models, which have been developed and are used by metropolitan planning organizations in some urban areas to model evacuation times and road capacity, should be extended to include transit buses in traffic projections; models should be developed for use in more urban areas. Research is also needed to enhance understanding of the spatial dimensions of demand for and supply of transit services in an evacuation. Projects could include effective ways to identify general and special needs populations who are likely to use transit in an emergency evacuation, best methods for communicating with these groups before and during an event, methods for

assessing the availability and inventorying the allocation of transit equipment and drivers, best practices to ensure transit workforce availability through family evacuation assistance programs, and ways to mobilize the private sector (e.g., rental car and private bus fleets) in an emergency.

Emergency Evacuation Planning Is Everyone's Responsibility

Enhancing transit's role in emergency evacuation will depend on the actions of many. The majority of the recommendations in *The Role of Transit in Emergency Evacuation* require the joint action of local emergency managers and transit agencies. However, state emergency management agencies, state departments of transportation, and state departments of health all have critical roles to play in coordinating the development and implementation of regional evacuation plans that should include a role for transit and other public

transportation providers, in funding and managing capacity enhancements and operational improvements on major evacuation routes, and in planning for the sheltering of special needs populations. Social service agencies and nonprofit organizations are also important partners in helping identify and plan for the evacuation of special needs groups. Finally, federal agencies and Congress have a role to play in guiding state and local governments in the development of regional evacuation plans that include roles for transit and other public transportation providers and in providing funding to help carry them out. In addition, priority should be given to evacuation-related capacity enhancement projects that will add redundancy at critical links in transit and highway systems and to intelligent transportation systems projects to enhance network resilience. Through a concerted local, state, and federal effort, the full potential of transit in emergency evacuation can be realized.

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