Cape Cod

2007 Regional Transportation Plan

Chapter 4

Security

April 2007

Prepared by CAPE COD COMMISSION Transportation Staff
on behalf of the

CAPE COD METROPOLITAN PLANNING ORGANIZATION:

Massachusetts Executive Office of Transportation
Massachusetts Highway Department
Cape Cod Regional Transit Authority
Cape Cod Commission
Barnstable County
Town of Barnstable
Towns of Bourne, Sandwich, Falmouth, and Mashpee
Towns of Yarmouth, Dennis, Harwich, Brewster, and Chatham
Towns of Orleans, Eastham, Wellfleet, Truro, and Provincetown

in cooperation with:
Massachusetts Department of Environmental Protection
United States Department of Transportation Federal Highway Administration
United States Department of Transportation Federal Transit Administration

Table of Contents

List of Figures

4 Security

Concern over security is made clear in the first goal of the Regional Transportation Plan:

> "Create a transportation system that provides safe travel options for people and freight, and protects users from natural and external threats."

The transportation system must prepare for natural disasters, such as hurricanes or flood. Moreover, post-September 11th, protecting users from external threats is also a priority, as indicated by the increased emphasis on security in federal and state transportation regulations and guidelines. For these reasons, the 2007 Regional Transportation Plan sets the goal of providing security to people and goods.

Transportation security includes that of the "users" (i.e., passengers and goods) as well as that of the infrastructure itself (e.g., bus stations, bridges, etc.).

4.1 Emergency Traffic Planning

The most frequently identified security concern is the threat of a weather-related event such as a hurricane. In many cases, the threatened population is a relatively small percentage overall and should seek local shelters per the direction of emergency safety officials. Most residents and visitors should seek "shelter in place," a term that refers to staying in homes or local shelters that are supplied with food, water, etc. The number of people in threatened areas is a small percentage of most towns' population. Regardless, people should heed warnings of public safety officials and evacuate accordingly.

A danger occurs out of panic when vast numbers of people get into their automobiles with the idea that they should "evacuate," clogging up the roadway network. These traffic jams pose a threat to those who truly need to access the network (persons with health problems, injuries, etc.). In the event of a mass exodus from Cape Cod (due to major weather-related, radiation event, etc.), planning is underway by the Barnstable County Emergency Planning Committee, in coordination with the Massachusetts Emergency Management Agency and implementation organizations such as the Massachusetts State Police and MassHighway.

Planning for large-scale traffic flows leaving Cape Cod requires coordination with neighboring regions. For example, routing Cape Cod traffic to I-195 West during an impending hurricane may bring motorists closer to the hurricane's landfall. Landfall predictions always include some uncertainty, such as the exact time and path of impact. When the path of a storm is projected in a wide, imprecise area it can make the evacuation route itself a potentially hazardous area.

One of the most difficult variables in planning for evacuations is human behavior, which can have the greatest impact on the availability of transportation capacity. The figure below illustrates this concept. The chart shows three curves representing the effect of different response rates versus the percentage of evacuation completed over time. This chart was developed for an Alabama evacuation study and is meant to be illustrative of the issues facing emergency responders during the hours leading up to and during this type of event.

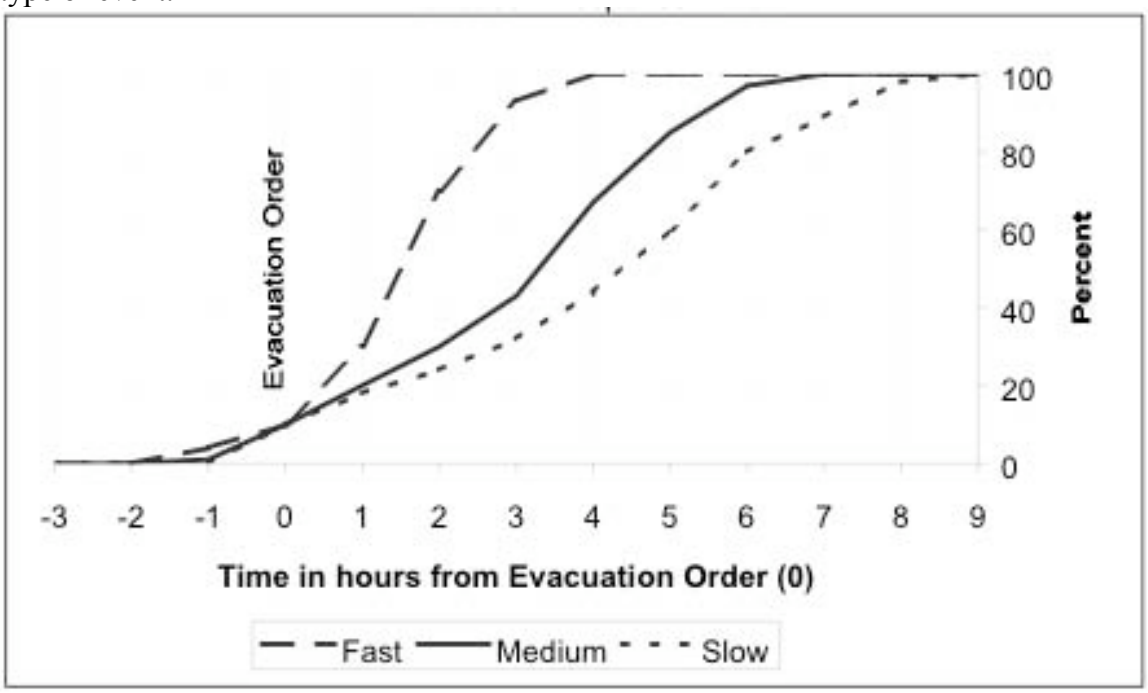

Figure 4-1 - Evacuation Behavior Response Curves

(Source: Alabama Hurricane Evacuation Study - U.S. Army Corps of Engineers, May 2001)

Emergency events requiring evacuation can be terrifying experiences, causing a range of emotions and reactions from confusion to total panic. Reactions vary depending on many different factors such as age, gender, and socioeconomic conditions. This varied reaction can influence the departure timing and loading levels of evacuation during an emergency event. This in turn impacts the design and implementation of policies and procedures for effective evacuation (Source: "Heuristic Prioritization of Emergency Evacuation Staging to Reduce Clearance Time," Mitchell & Radwan, Transportation Research Board 2006 Annual Meeting CD).

One method that can be used to improve efficiency is staged evacuation. Staged evacuation is best used where different parts of the road network may suffer different levels of severity over different time windows. By evacuating those populations in the network as part of an optimized sequence, a staged evacuation strategy can best utilize available roadway capacity, optimally distribute the total demand over the evacuation time horizon, and thus minimize the network congestion level. A properly designed staged evacuation strategy will significantly reduce congestion on the evacuation network via a more uniform demand distribution over the allowable safety time window. It also allows responsible agencies to prioritize their limited resources in those areas that have or will suffer the most severe damage (Source: "A Cell-Based Network Optimization Model for Staged evacuation Planning Under Emergencies," Liu, Lai, & Chang, Transportation Research Board 2006 Annual Meeting CD).

The above-mentioned research has shown that an optimized staged evacuation strategy can effectively mitigate network congestion under various demand patterns, which is reflected in a shorter average travel time for evacuees. This is in comparison with a "simultaneous" – or uncontrolled evacuation.

A draft "Cape Cod Emergency Traffic Plan" (ETP) has been developed by the Massachusetts State Police in cooperation with the Massachusetts Emergency Management Agency (MEMA) and several other agencies to facilitate the egress of a high volume of traffic from Cape Cod in the event of a hurricane, particularly during peak tourist season. The design of the ETP is based upon the need to eliminate the causes of congestion in the area of the Bourne and Sagamore Bridges and the main arteries leading up to them, Routes 6 and 28. Specific details of the plan may be included in the RTP following consultation with state officials. The following is a general outline of the plan's implementation:

- As traffic levels build before the hurricane arrives, direct access to and from off-Cape locations will be restricted at the bridges in order to allow vehicles to continue north from the bridges unimpeded.

- At higher traffic levels, and as bridge flows warrant (e.g., lower demand at Bourne Bridge than at Sagamore Bridge), traffic on Route 6 destined for Routes 25 & 495 would be diverted through the Massachusetts Military Reservation (MMR).

- When sustained winds reach 80 mph, the bridges will be closed and the motorists will have the option of going to designated emergency parking areas in the MMR and to be shuttled to shelter in the MMR.

The ready availability of advance information to the public is a vital component necessary to maximize the efficiency of the ETP. Traffic will flow only as fast as the slowest vehicles are traveling. The following measures are planned in order to provide a

high level of public knowledge regarding the various aspects and the changes in traffic patterns that will be encountered during the ETP:

Signage
MassHighway will erect ETP signs giving advance notice of all detours and changes in traffic flow. The signs will include a radio frequency for ETP information

FM Radio Broadcast
Changes in traffic patterns will be announced on WQRC (99.9 MHz). WQRC will continually play a variety of pre-recorded instructions geared to address the various phases of the ETP.

Internet
Detour instructions and maps will be available on the Internet from the state police web site: <www.state.ma.us/msp>

It is extremely important that the public is informed of the need to evacuate only under a set of specific scenarios. For example, Hurricane events may only threaten certain coastal areas. For those residents in the affected areas, public safety officials would likely direct evacuees to local or regional shelters. By 'sheltering in place' or relocating to the nearest emergency shelter, impacts on the roadway network are minimized, freeing up capacity for emergency responders. The map in the following figure indicates local and regional shelters throughout the County. Updated and higher-resolution maps are available on the Cape Cod Commission's "Project Impact" website at the address listed here:
<www.capecodcommission.org/projectimpact/handbook.htm>

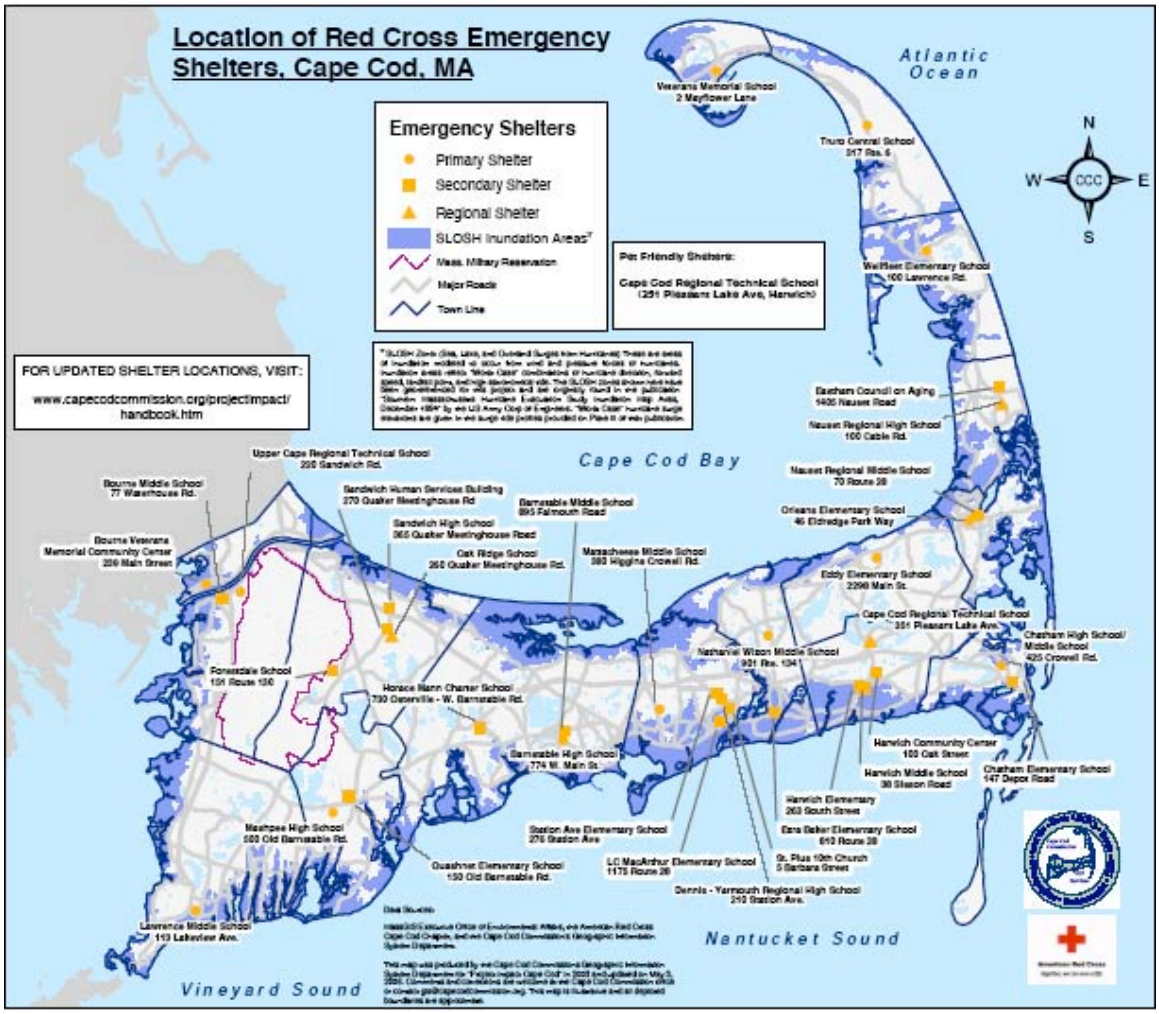

Figure 4-2 - Location of Emergency Shelters

4.2 Public Transportation Security

Security of public transportation systems has been regarded with greater importance in recent years. The Federal Transit Administration (FTA) provides guidance and a wide variety of strategies to maintain and improve security. It is also important to note that public transit may serve an important role in evacuation (e.g., moving residents from nursing homes etc. to shelters). Also, verification and certification of public transit employees in security procedures is important to assure response capability.

Furthering its commitment to assist public transportation agencies in their efforts, FTA released its "Top 20 Security Program Action Items for Transit Agencies" in January

2003. This list contains measures recommended by FTA for immediate consideration and implementation by transit agencies to improve both security and emergency preparedness. The goal of this program is to ensure that the nation's public transportation systems:

- Are prepared for and well-protected against attacks;
- Respond rapidly and effectively to natural and human-caused threats and disasters;
- Appropriately support the needs of emergency management and public safety agencies; and
- Can be quickly and efficiently restored to full capability.

The "Top 20" are divided into several categories as listed below:

Management and Accountability

1. Written security program and emergency management plans are established.
2. The security and emergency management plans are updated to reflect anti-terrorist measures and any current threat conditions.
3. The security and emergency management plans are an integrated system program, including regional coordination with other agencies, security design criteria in procurements and organizational charts for incident command and management systems.
4. The security and emergency management plans are signed, endorsed and approved by top management.
5. The security and emergency management programs are assigned to a senior level manager.
6. Security responsibilities are defined and delegated from management through to the front line employees.
7. All operations and maintenance supervisors, forepersons, and managers are held accountable for security and emergency management issues under their control.

Security Problem Identification

8. A threat and vulnerability assessment resolution process is established and used.
9. Security sensitive intelligence information sharing is improved by joining the FBI Joint Terrorism Task Force (JTTF) or other regional anti-terrorism task force; the Surface Transportation Intelligence Sharing & Analysis Center (ISAC); and security information is reported through the National Transit Database (NTD).

Employee Selection

10. Background investigations are conducted on all new front-line operations and maintenance employees.
11. Criteria for background investigations are established.

Training

12. Security orientation or awareness materials are provided to all front-line employees.
13. Ongoing training programs on safety, security and emergency procedures by work area are provided.
14. Public awareness materials are developed and distributed on a system wide basis.

Audits and Drills

15. Periodic audits of security and emergency management policies and procedures are conducted.
16. Tabletop and functional drills are conducted at least once every six months and full-scale exercises, coordinated with regional emergency response providers, are performed at least annually.

Document Control

17. Access to documents of security critical systems and facilities are controlled.
18. Access to security sensitive documents is controlled.

Access Control

19. Background investigations are conducted of contractors or others who require access to security critical facilities, and ID badges are used for all visitors, employees and contractors to control access to key critical facilities.

Homeland Security

20. Protocols have been established to respond to the Office of Homeland Security Threat Advisory Levels.

More information on public transportation security is available from FTA at:
<http://transit-safety.volpe.dot.gov>

4.3 Air Travel Security

Security for travel by air is a primary function of the Transportation Security Administration (TSA). The TSA has been required to make a number of improvements to aviation security. The improvements included that by November 19, 2002, screening of individuals and property in the United States would be conducted by TSA employees and companies under contract with TSA. Federal law also requires enhanced qualifications training and testing of individuals who perform screening functions. It requires that Federal law enforcement officers be present at screening locations. More information is available at:
<http://www.tsa.gov>

4.4 Intelligent Transportation Systems

Intelligent Transportation Systems (ITS) technologies are applied to vehicles and roadways that perform communications, data processing, traffic control, surveillance, navigation, sensing, and various other functions that aid in the management of the security process. ITS elements, such as traffic cameras, signal preemption devices and Variable Message Boards (VMB), would provide timely responses for emergency vehicles and the ability to monitor evacuations during times of natural, or other disasters.

MassHighway's Traffic Operations Center (MTOC) is located in South Boston. The MTOC's primary mission is traffic incident management throughout the Commonwealth of Massachusetts. The MTOC is the headquarters for the application of Intelligent Transportation Systems (ITS) around the state. From the MTOC, reports on traffic incidents are relayed to the involved MassHighway district office, which assigns the necessary personnel and equipment, required to abate the incident.

4.5 Summary of Transportation Security Recommendations

Recommendations for transportation security may include:

- Incorporating intelligent transportation systems, such as variable message signs, into the emergency response system;
- Fostering communication and cooperation between federal, state, and local agencies for the planning, practice, and implementation of emergency scenario plans;
- Designating and indicate, through road signs, emergency evacuation routes, and shelters;
- Supporting enforcement of state and local traffic laws; and
- Increasing surveillance and security efforts at transportation facilities throughout Cape Cod, such as the Hyannis Transportation Center, Falmouth Bus Depot, Wood's Hole port facilities, park-and-ride lots, and Cape Cod Canal Bridges.

4.6 Conclusion

Security is a high priority goal of the Regional Transportation Plan. The transportation system must be prepared for natural disasters, such as hurricanes. This RTP also adds emphasis on security from federal and state transportation regulations and guidelines.

The most pressing security issue facing Cape Cod is the heavy volume of traffic departing during weather events, such as impending hurricanes. The alternatives analysis chapter of this Plan will include the strategies needed (e.g., traffic flow improvements, travel demand management) to address such a scenario.