

Issues/Problems

The high volumes of freight moving to, from, within, and through the Nashville region creates many challenges in terms of both maintaining the transportation network and preparing for the continuing growth of freight volumes.

Freight and Logistics Issues

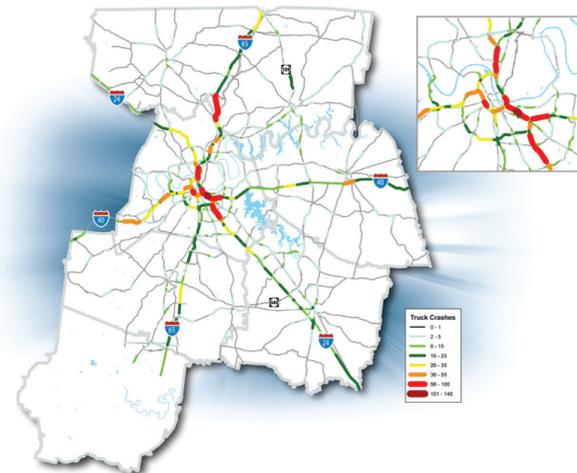
As part of this freight study, stakeholders representing a cross-section of the regional economy and goods movement industry including the health care, publishing, electronics, rail, automotive, and distribution industries offered valuable information and insight into the Nashville freight transportation network through a series of interviews. Among the questions they were asked was the location of bottlenecks at major junctions and interchanges. Among the questions they were asked was the location of bottlenecks at major junctions and interchanges and congested roadway segments. The stakeholders identified bottlenecks and congested roadway segments at the locations listed in the table at right.

Reduced Travel Times

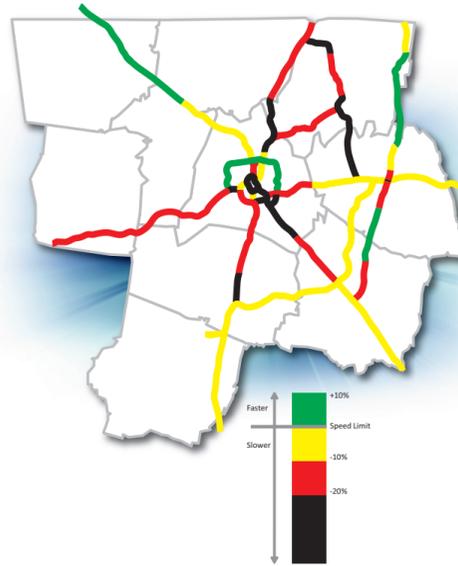
When traffic volumes are below roadway capacity, traffic moves freely allowing fast and efficient movement of freight. However, as soon as volumes exceed capacity, the travel speeds decrease and travel times increases exponentially. This concerns the Nashville region, since roughly 189 miles (4.1%) out of the region's 4,656 mile modeled roadways were at, approaching, or over capacity in 2008. In 2035, 667 miles (13.6%) out of the regions 4,880 mile modeled roadways will be at, approaching, or over capacity. To the right is a map of the observed travel speeds, with respect to the posted speed limit, in the Nashville region for 2011.

Reduced System Reliability

System reliability is the adequate capacity to handle unexpected traffic events (e.g. weather, accidents, and work zones). In some ways, it is more important than congestion. People anticipate routine congestion and plan for congestion, but unexpected delays are more disruptive. Truckers typically have narrow delivery windows and activities such as manufacturing and sales are often closely timed based on a delivery schedule. For both freight and passengers users, travel time reliability is valued at a significant premium.



Congestion and Bottlenecks		
Roadway Name	From:	To:
I-40	SR-265	SR-840
I-40	Bobo Road	SR-141
I-40	McCrorry Lane	SR-46
SR-840	SR-452	SR-265
SR-109	US-70/SR-24	Odoms Bend Road
I-24	US-431/SR-65	SR-49
I-65	I-24 Merge	I-24 Merge
I-65	Exit 65	Exit 65
I-65	I-440 Merge	I-440 Merge
I-65/I-40	Merge	Merge
I-24	I-65 Merge	I-65 Merge
I-24/I-40	Split	Split



Noise, Air and Water Pollution

It is important to consider the effects freight related developments can have on their surrounding environment such as noise pollution, decreased air quality, lighting issues and pollution, and increasing truck traffic. The planning process should proactively pursue integration of compatible land uses and adequate buffering while promoting freight mobility. This can be accomplished by looking at existing and future land uses as well as current zoning policies that focus on potential conflicts that exist while considering the relationship between freight and non-freight uses. Proper planning can ease the transition from high-intensity uses to less intense land uses through the use of landscaping buffers and transitioning.

Incidents and Traffic Accidents

Safety is an important aspect of freight transportation and is a priority for both public officials and commercial freight carriers. A better understanding of the characteristics of truck crashes can result in policies and technology investments that can positively impact the safety of goods movement and congestion in the Nashville region.

Solutions

Solutions and Mitigation Strategies

Potential projects were assessed through a variety of criteria that were developed by the Nashville Freight Advisory Committee (FAC). A component of this evaluation was an assessment of project benefits and costs. Projects with a benefit/cost ratio above one, i.e. whose benefits were deemed to outweigh the costs typically scored high. Projects that increase roadway capacity or provide low cost, high-impact quick fixes with positive benefit/cost ratios are listed at right.

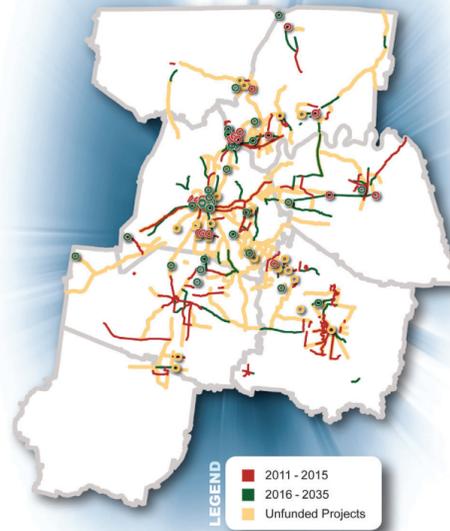
The study considered a number of transportation/system operations policies. These often do not include the construction of infrastructure but represent a change in the way that existing infrastructure is used, or new infrastructure is funded. These policies may have a general impact on the region or pertain to a specific location.

Land use policies and urban design guidelines are aimed at reducing conflicts between freight and other land uses, as well as improving freight access to dense urban environments.

MPO's Role in Freight Transportation

The Nashville Area MPO, through federal transportation legislation, is the organization charged with providing the tools and plans necessary to help ensure that a multimodal transportation infrastructure system is maintained and developed in a manner that supports all modes of travel. This includes the safe and efficient movement of freight and goods. The MPO has developed and continues to develop several tools and plans to assist in maintaining and enhancing the regional transportation infrastructure and this freight study is just one of those tools. The more detailed freight study technical memorandums can be downloaded at www.nashvillempo.org. These documents identify many potential infrastructure and policy related projects to maintain and improve the freight transportation network (several of these strategies are identified in this Executive Summary) over the next several years.

Many of the identified freight infrastructure projects were included in the MPO's 2035 Nashville Area Regional Transportation Plan (RTP). This is significant because the RTP establishes the priority projects for the region in terms of funding and implementation. Many efforts were made to continue to establish the region's freight and goods movement transportation network as a priority in the RTP. In fact, proposed transportation infrastructure projects were subject to specific freight related scoring criteria that were largely derived from this freight study. This is a critical step in institutionalizing freight into the RTP development process because this helps to ensure that freight is a significant consideration in regional project prioritization. The 2035 Nashville Area RTP identifies planned projects and unfunded needs for the region.



Capacity Improvement Projects on Freight Corridors

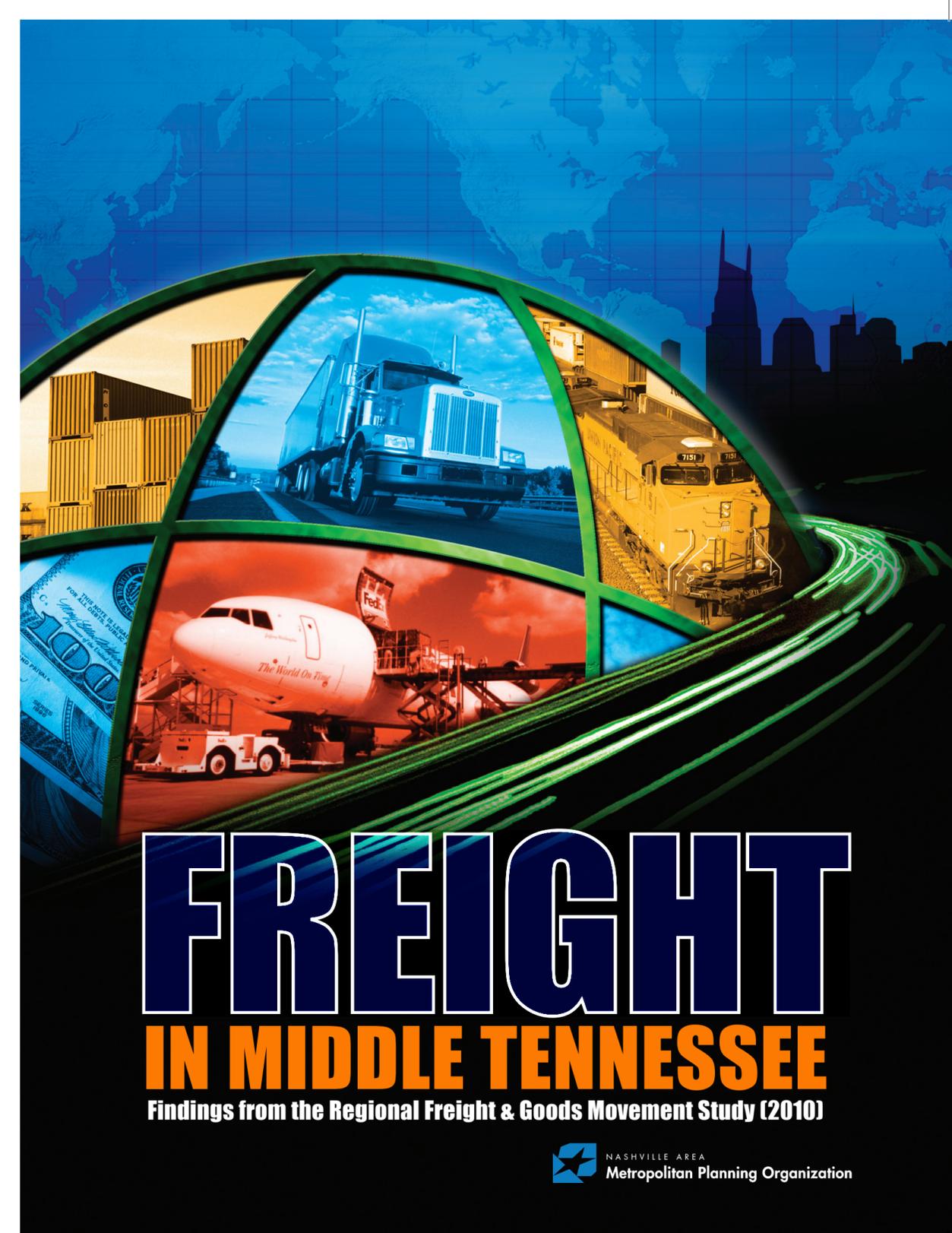
- Widen I-65 between Nashville and Spring Hill from 4 to 8 lanes.
- Help CSX to move intermodal and automotive operations from Radnor Yard to new site.
- Expand I-24/I-40 between interchanges from 6 to 8 lanes; add ramps on the western side of the Fessler Lane Exit.
- Widen I-440 from 6 to 8 lanes.
- Widen I-40 from 4 to 8 lanes between SR-265 and SR-840.
- Widen I-24 from 8 to 10 lanes between Nashville and La Vergne.
- Widen I-24 at Exit 56 from 8 to 10 lanes.

* Widening projects on interstates will include HOV lanes.

Lower-Cost High-Impact Quick-Fix Projects

- Redesign the Firestone Parkway/Bridgestone Boulevard and Parthenon Boulevard intersection.
- Add a left turn lane to Firestone Parkway at the Old Hickory Boulevard intersection.
- Redesign the Sidco Drive and Powell Avenue intersection.
- Add a signal at the intersection between Jefferson Pike and Murfreesboro Road in La Vergne.
- Redesign the TN 109 and U.S. 31 Intersection.
- Redesign the Butler Drive and U.S. 231 intersection.
- Build a rail spur into Hailey's Harbor Terminal.

Issue/Opportunity	Recommendation
Roadway infrastructure continues to deteriorate due to funding shortages	<ul style="list-style-type: none"> Study utilizing innovative funding strategies to increase funding for roadway infrastructure. Encourage a long term federal highway transportation bill.
Continue to improve safety and efficiency of trucking.	<ul style="list-style-type: none"> Study utilizing dedicated truck lanes and truck bypasses for interstates and state routes. Conduct a truck route study to identify key truck routes that could benefit from efficiency and safety improvements.
Congestion caused by improper loading and unloading of trucks in urban environments.	<ul style="list-style-type: none"> Conduct a study to identify existing loading and unloading problem areas. Identify and improve substandard requirements in local government zoning ordinances, subdivision regulations, and access management ordinances. Conduct a regional study that results in a recommended or "model" ordinance for on-street and off-street parking as it relates to loading/unloading freight and goods.
Conflicts between freight land uses and other less intense land uses.	<ul style="list-style-type: none"> Promote transitioning of land uses from more intense freight producing developments to less intense freight producing developments. Promote the use of "freight villages" in local land use zoning regulations. Involve freight stakeholders in local development review processes where impacts to the flow of freight and goods could occur as a result of new or expanded developments.



Existing Behaviors

Regional Characteristics

The Nashville region is strategically located within 650 miles of half of the United States population and is home to approximately 1.5 million people. Some of the key characteristics of the Nashville region include the following:

- Approximately 800,000 people in the workforce
- 1 out of every 11 jobs are transportation related
- 40,000 businesses
- Corporate Headquarters location of Nissan North America, Bridgestone America, Gaylord Entertainment, HCA, and Asurion
- Cost of living is nearly 12% lower than the nation as a whole
- Ranked 8th for Best Cities for Job Growth by Fortune Magazine

These are very important characteristics of the Nashville region and indicate why the Nashville region is one of the most desirable places to live in the United States. There are many important factors driving the region's success, but perhaps none as important as the transportation network. More specifically, the means for which freight and goods are transported to and from their ultimate destinations. This document provides an overview of the tremendous network of freight related transportation infrastructure and its importance to the Nashville region.

Freight Transportation Network in 2010

Middle Tennessee benefits tremendously from freight transportation related assets and infrastructure. Among these are the region's roadways, waterways, railroads, and airports. Nashville is at the nexus of three major Interstate highways, Interstate 24, 40, and 65, and three major limited access bypasses, Interstate 440, Briley Parkway, and State Route 840. The Cumberland River provides barge access to the Mississippi River system and the Gulf of Mexico. One Class I (CSX) and two Class II rail carriers operate within the region along with a major rail classification yard, an intermodal ramp, an automotive ramp, and bulk and break bulk terminals. Two of the region's airports have sufficient runways to accommodate large aircraft such as the Boeing 747, Nashville International Airport and the Smyrna/Rutherford County Airport. In addition there are seven general aviation airports in the region. However, the central location and proximity to several major distribution cities is what makes Nashville a unique city for freight transportation.



Nashville as an International Trade Zone

Nashville's Foreign Trade Zone (FTZ) 78 was established in 1983. This general purpose zone is centered on the Nashville International Airport and includes the area within 60 miles or a 90 minute drive. The Metropolitan Government of Nashville and Davidson County is the local grantee for the FTZ. FTZ's are areas designated by the U.S. Department of Commerce considered to be outside the U.S. Customs territory. FTZ's assist companies in delaying, reducing or eliminating payment of U.S. Customs duty since no duty is paid on merchandise brought into a FTZ.

Top Five Trading Partners			
BY VALUE		BY TONNAGE	
Inbound	Outbound	Inbound	Outbound
East South Central	East South Central	East South Central	East South Central
East North Central	South Atlantic	East North Central	South Atlantic
South Atlantic	Middle Atlantic	South Atlantic	East North Central
West South Central	East North Central	West South Central	West South Central
Pacific	Mexico/Canada	West North Central	Middle Atlantic

Top Five Commodities			
BY VALUE		BY TONNAGE	
Inbound	Outbound	Inbound	Outbound
Secondary Traffic	Transportation Equipment	Nonmetallic Minerals	Secondary Traffic
Transportation Equipment	Secondary Traffic	Secondary Traffic	Clay, Concrete, Glass or Stone
Electrical Equipment	Fabricated Metal Products	Coal	Transportation Equipment
Fabricated Metal Products	Machinery	Clay, Concrete, Glass or Stone	Nonmetallic Minerals
Machinery	Electrical Equipment	Petroleum or Coal Products	Food or Kindred Products



Merchandise in a FTZ exported outside the U.S. or transferred to another FTZ incurs no customs duty. Merchandise may also be assembled, consolidated, repackaged or otherwise manipulated while in a FTZ to reduce duty payments.

In addition, the Metropolitan Government can designate a facility outside of the general purpose zone site as a subzone. This designation allows companies to take advantage of FTZ benefits while using their own facilities. There are four subzones in the Nashville region:

- 78A Nissan
- 78E Saturn
- 78G Columbia Specialties
- 78H Sanford LP

Freight and Goods Movement Characteristics

According to the American Transportation Research Institute (ATRI) and FHWA Office of Freight Management and Operations, from the Nashville region, a truck should be able to travel as far as Pennsylvania to the northeast, southern Michigan to the north, New Mexico to the west, and north central Florida to the south in one day.

In two days, that same truck should be able to travel as far as the southern tip of Maine to the northeast, Minnesota to the northwest, Colorado and Arizona to the west, and central Florida to the south.



Forecasted Behaviors

Regional Freight Movement

In 2007, over 298 million tons of freight moved to, from, within, or through the Nashville region. This amount is expected to increase by over half to 402 million tons by 2035. 89 million tons of this 104 million ton increase between 2007 and 2035 is strictly truck freight. Therefore, a much larger strain is going to be placed on the roadway network in the Nashville region, particularly on interstates/freeways and major arterials.

Directional Freight Movement Characteristics

As previously stated, over 298 million tons of freight originate, terminate, flow through, or move within the Nashville region on an annual basis and that number is expected to increase up to as much as 402 million tons by 2035. 82% of that freight is carried by truck and by 2035 that percentage is expected to increase to 83%, thus having a major impact on our regions roadway network. Perhaps even more intriguing is the fact that 77% of all freight carrying trucks never stop inside the Nashville region, with that number expected to increase to 78% in 2035. The two maps at right indicate the current directional flow percentage of trucks in the Nashville region. The first map is the directional percentage of trucks that either originate from or are destined for the Nashville region. The second map is the directional percentage of trucks that pass through the Nashville region, but neither originate from nor is destined for the region.

The current expansion of the Panama Canal, which will be completed in 2014, will double the capacity of the canal. This expansion will increase cargo ship travel to ports in the Gulf of Mexico as well as on the Atlantic coast. However, at this time, many of these ports are not yet able to accept the post-Panamax ships that will be able to pass through the canal because the port channels are not deep enough, bridges in the travel path are too low, the proper equipment for loading and unloading the ships is not available, etc. Currently, numerous ports in the Gulf of Mexico and on the Atlantic coast are in various stages of projects to ready them for the larger ships. However, some ports may decide to forego expansion for various reasons. At this time, it is unclear exactly how the completion of the expansion of the Panama Canal will affect freight flow into, out of, and through the Nashville region.

