

9.0 Monitoring Performance and Impacts

9.1 Title VI, Environmental Justice, & Social Equity

Title VI of the Civil Rights Act of 1964 and the 1994 President's Executive Order on Environmental Justice (#12898) state that no person or group shall be excluded from participation in, or denied the benefits of, any program or activity utilizing federal funds. Each federal agency is required to identify any disproportionately high and adverse health or environmental effects of its programs on minority and low-income populations. In turn, Metropolitan Planning Organizations (MPOs), are charged with evaluating their plans and programs for environmental justice (EJ) sensitivity, including expanding their outreach efforts to low-income, minority, and other disadvantaged populations, as part of the United States Department of Transportation's certification requirements.

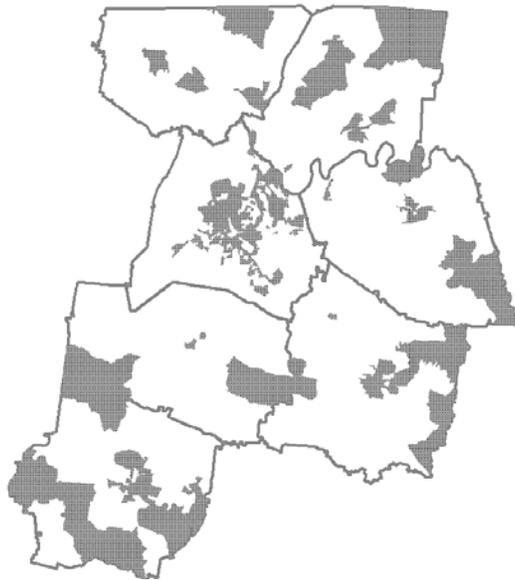
Identifying Disadvantaged Populations

This section summarizes the technical method that the MPO has developed to analyze the cost-feasible projects contained in the 2035 Regional Transportation Plan. EJ analysis is concerned with the impacts of disparate funding and disparate services on defined minority and low-income groups. The MPO currently assesses the following population groups: non-Hispanic minorities, carless households, households in poverty, persons with physical disabilities, female head of household with child, elderly, Hispanic persons, and limited English proficiency. Each population group has specific planning-related challenges. Using U.S. Census data for the year 2000, these groups are identified and located at the census tract level.

Data is gathered at the regional level, combining populations from each of the seven counties that overlap with the MPO planning area, for either individuals or households, depending on the indicator. From there, the total number of persons in each demographic group is divided by the appropriate universe (either population or households) for the seven county region, providing a regional average for that population group. Any census tract that meets or exceeds the regional average level, or threshold, is considered an EJ-sensitive tract for that group.

The following series of maps depict Census tracts with a higher rate of occurrence for each of the EJ factors.

Figure 56. Environmental Justice: Areas of Concern

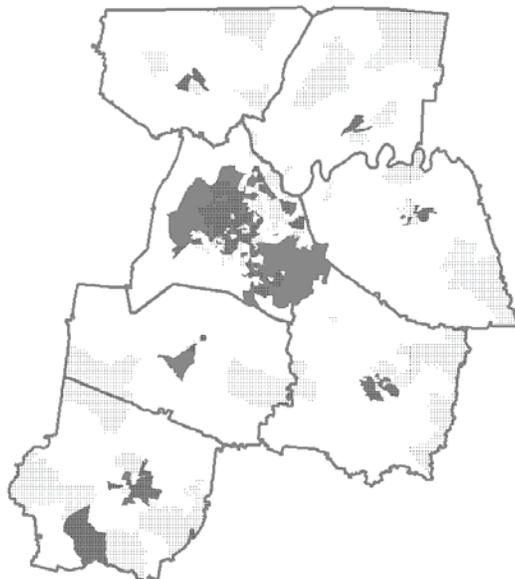


Households in Poverty

Regional Total: 48,492 Households | Regional Threshold: 10.2 percent

Poverty, or low income, is defined as personal or household income at or below the U.S. Department of Health and Human Services (HHS) poverty guidelines, established as a relationship between income and the size of the family unit. These poverty guidelines are updated annually and are used as eligibility criteria for federal programs, such as Community Service Block Grants.

Areas with a higher than average rate of poverty are shown in the map to the left in dark gray, and then again in each of the following maps as Light gray dotted pattern.



Non-Hispanic Minority Population

Regional Total: 238,525 People | Regional Threshold: 19.5 percent

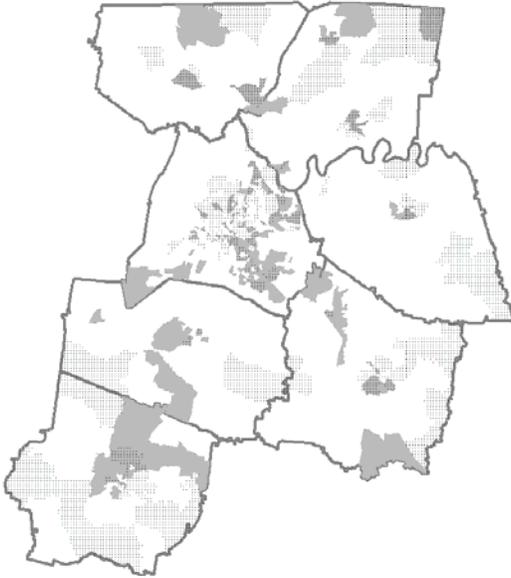
The U.S. Department of Transportation (DOT) Order (5610.2) on EJ defines “Minority” as:

- Black: a person having origins in any of the black racial groups of Africa
- Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands
- American Indian and Alaskan Native: a person having origins in any of the original people of North America who maintain cultural identification through tribal affiliation or community recognition

In addition to the groups mentioned above, the U.S. Census also recognizes two more racial categories: Some Other Race Alone and Two or More Races. All five racial categories have been included in this analysis. The U.S. Census also recognizes a difference between race and ethnicity, creating separate minority categories for Hispanic or Latino and race. The population group recognized in this category is non-Hispanic minorities. Hispanic ethnicity, regardless of race, is recognized as a separate category.

The 2000 U.S. Census question on race differed from the 1990 U.S. Census question by offering respondents the option of selecting

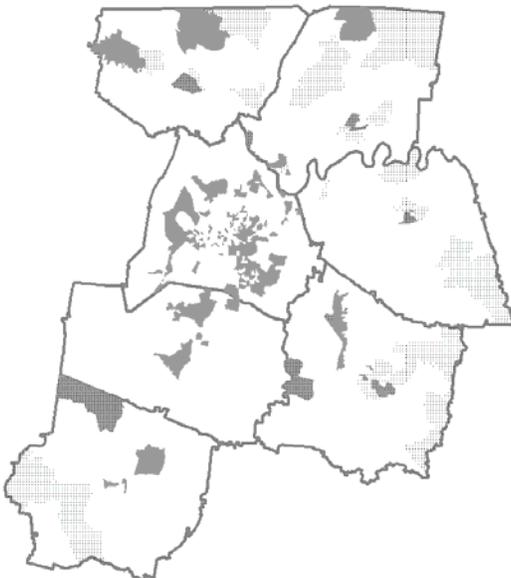
one or more racial categories. There are now 57 possible racial categories. Because of this change, 2000 Census data on race is not directly comparable with data from the 1990 Census. Thus, caution should be used in interpreting changes in racial composition over time. However, the overwhelming majority, 98 percent of the U.S. population, reported only one race.



Hispanic Population

Regional Total: 40,585 people | Regional Threshold: 3.3 percent

Though often included in many minority definitions, Hispanic or Latino is an ethnicity, not a racial category. Hispanics are defined by the U.S. Census as “persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.” Persons in the 2000 U.S. Census were asked, “Is this person Spanish, Hispanic, Latino?” Thus, persons of Hispanic origin can be of any race. Hispanics should have indicated their origin in the Hispanic origin question, not in the race question, because in federal statistical systems ethnic origin is considered to be a separate concept from race. This interpretation is based on changes made by the Office of Management and Budget in October 1997, requiring all federal agencies that collect and report data on race and ethnicity to follow these new standards.



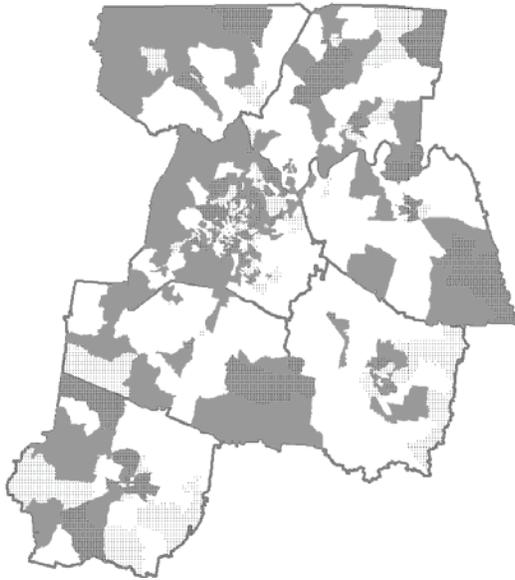
Limited English Language Proficiency Population

Regional Total: 20,858 people | Regional Threshold: 1.8 percent

Executive Order 13166 of 2000 on limited English proficiency (LEP) charges all federally funded agencies to make services more accessible to eligible persons who are not proficient in the English language. LEP is defined in the U.S. Census as “primary language spoken at home other than English and speak English not very well.” This captures the populations with a primary language other than English spoken at home, including Spanish, Asian and Pacific Island languages, Indo-European languages, and other languages. The Census universe for this category includes only the population aged five years and older.

It is assumed that an inability to speak English well can be a barrier to accessing goods and services, including transportation. In addition, identifying these populations and their locations is important to MPO’s outreach efforts, particularly in assessing the

need to make the agency’s publications and written materials available in additional languages.



Senior Population

Regional Total: 123,749 People | Regional Threshold: 10.1 percent

Mobility barriers and age are linked together. Not every elderly individual has mobility challenges, but the likelihood of a challenge increases as an individual ages. Seniors aged 75 years qualify for most, if not all, mobility programs that have an age requirement.

In 1900, seniors aged 65 years and older accounted for less than five percent of the total population of the United States. Now numbering over 35 million, seniors currently account for over 12 percent of the nation’s population. By 2030, the senior population will double to more than 70 million, or 20 percent of the U.S. population.

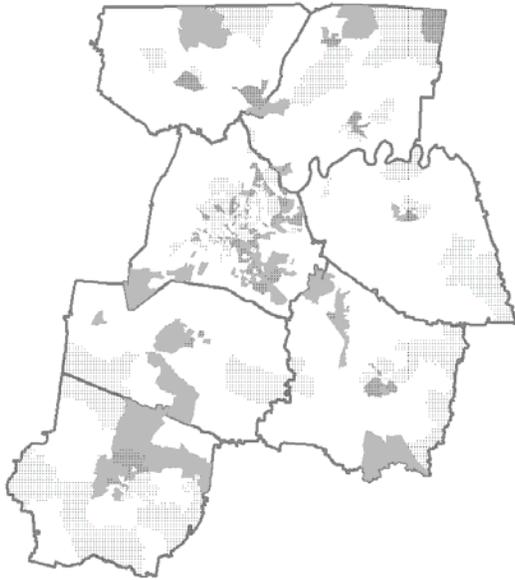


Physically Disabled Population

Regional Total: 91,802 People | Regional Threshold: 8.2 percent

Definitions for “people with disabilities” vary from agency to agency. The U.S. Census identifies six disability categories: sensory, physical, mental, going outside of the home, self-care, and employment. The Americans with Disabilities Act (ADA) provides comprehensive civil rights protection for “qualified individuals with disabilities.” An individual with a disability, according to the ADA, is a person who has: (A) a physical or mental impairment that substantially limits one or more of the major life activities of such individual; (B) a record of such impairment; or (C) being regarded as having such impairment.

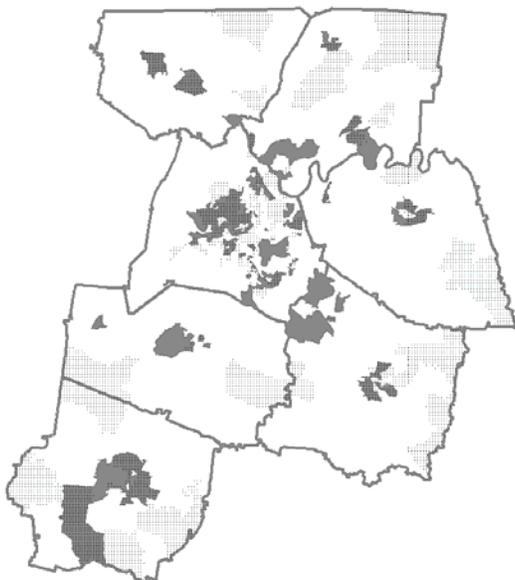
The MPO has decided to identify persons with a physical disability for the disability indicator, but recognizes that each disability type has specific challenges. This analysis of the distribution of persons with physical disabilities relies on data from the U.S. Census, which defines a physical disability as “a condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying.” The Census universe for this category includes only the population five years and older.



Carless Households

Regional Total: 31,341 Households | Regional Threshold: 6.6 percent

Carless households are defined in the U.S. Census as having zero vehicle availability. This population is often referred to as “transit dependent,” i.e., those who must rely on public transit for their daily travel needs and who have limited mobility. It is recognized that not owning a personal automobile may be a lifestyle choice for some, but for others automobile ownership is unattainable due to various constraints, including income or disability. Additionally, many carless individuals may take transit to one destination, and then continue their trip as a pedestrian.



Single Mother Households

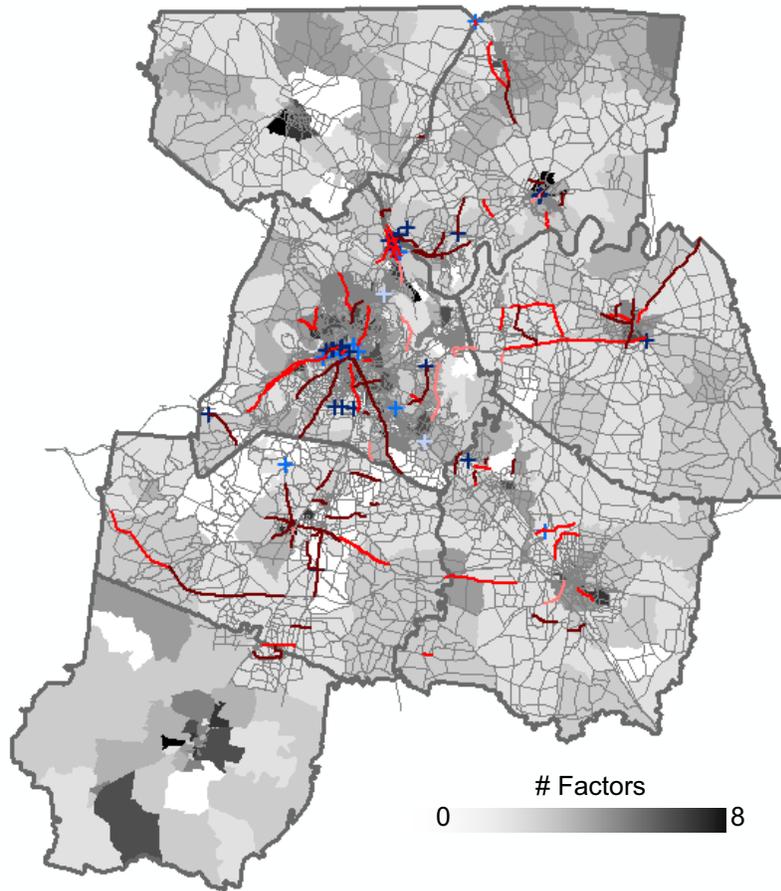
Regional Total: 35,175 Households | Regional Threshold: 7.4 percent

“Female head of household with child” is defined in the 2000 U.S. Census as a “female maintaining a household with no husband present, and with at least one child under 18 years old who is a son or daughter by birth, marriage (a stepchild), or adoption, residing in the home.” This factor was chosen to add gender and children into the analysis, as well as to acknowledge the strong correlation between female heads of household with child and poverty status. In addition, this group exhibits different travel patterns and needs.

Degrees of Disadvantaged

Each census tract can contain a concentration greater than the regional average for each individual population group previously discussed, and any census tract can contain zero to eight categories that have been recognized as regionally sensitive. The number of sensitive groups in each census tract is referred to as its degree of disadvantage (DOD). The following map provides a comparison between the proposed roadway improvements contained in the MPO’s 2035 Regional Transportation Plan and the DOD by census tracts. A list of projects that overlap with areas with at least three degrees of disadvantage is provided in Appendix D.

Figure 57. Planned Projects in Title VI/ EJ Areas



9.2 Impacts on Environment & Health

Environmental Mitigation

The SAFETEA-LU legislation requires that the Nashville Area MPO consult with Federal, State, and Tribal land management, wildlife, and regulatory agencies to develop a general discussion on possible environmental mitigation activities that should be incorporated into transportation projects identified in this plan.

As part of this requirement, TDOT established a consultation process with state and federal agencies responsible for environmental protection, land use management and natural resource and historic preservation. Through this process, the MPO was able to seek comment and compare available plans and maps with planned transportation improvements.

Since the transportation planning activities of the MPO are regional in scope, this environmental mitigation discussion does not focus on each individual project within the Regional Transportation Plan but rather offers a summary of the environmentally sensitive areas to be aware of regionwide, the projects that most likely will have an impact on these environmentally sensitive areas, and mitigation strategies that should be considered to reduce the impact of projects.

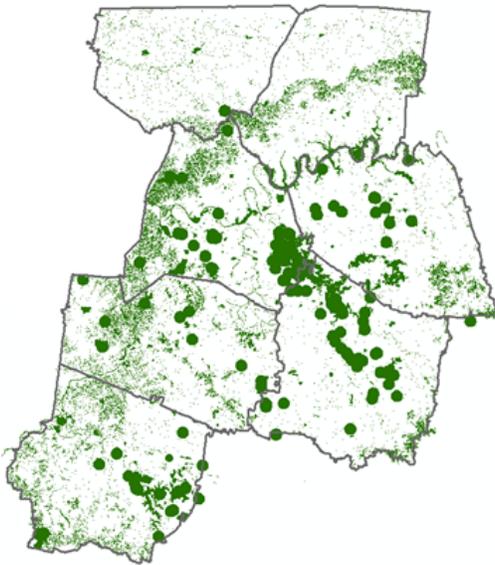
This environmental mitigation discussion was developed through a three step process. First, the MPO developed a list of environmentally sensitive areas that should be identified. Geographic Information Systems (GIS) was then used to map these areas. Second, the highway projects from the regional plan were overlaid. A query was performed to determine which projects would have an impact on an environmentally sensitive area. Finally, a discussion of general mitigation efforts that should be utilized is included to minimize the potential impacts any project in this plan has on an environmentally sensitive area.

Defining Environmentally Sensitive Areas

There are numerous environmentally sensitive areas found throughout the Nashville area. Many areas are too small or too numerous to map at a regional level and can only be clearly identified through a project level analysis. Some areas are yet to be identified and will only become known once a project level analysis is completed, such as caves, sinkholes, and wetlands. When a project is ready to move from the regional plan into construction phases, a complete analysis should be completed to determine the type and location of environmentally sensitive areas within the project study area. Typically, such analysis is part of the federally-required NEPA process.

In defining environmentally sensitive areas for the regional plan, the MPO identified two types of areas throughout the region where proposed improvements would either 1) pose a potential threat to the environment (areas of environmental conflict) or 2) potentially cost more to implement as a result of environmental features (areas of environmental challenge). The following environmentally sensitive areas are included in that analysis.

Environmental Conflicts

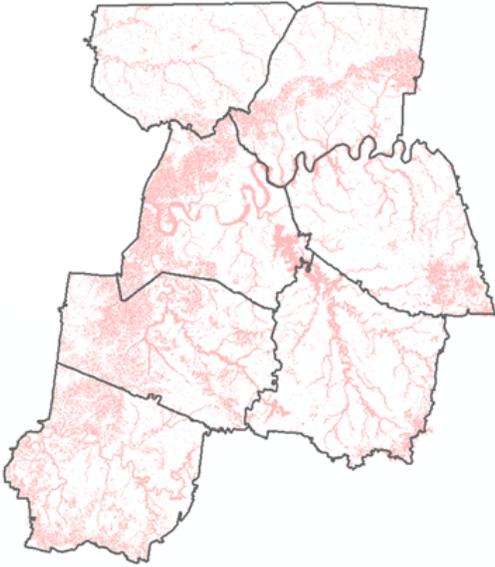


Areas of Environmental Conflict

Includes things that could be harmed or threatened by the proposed improvement including:

- Wetlands,
- Floodways,
- Hillsides with greater than a 25 percent slope,
- Water bodies,
- Protected lands, and
- Habitat of rare or endangered species.

Environmental Challenges



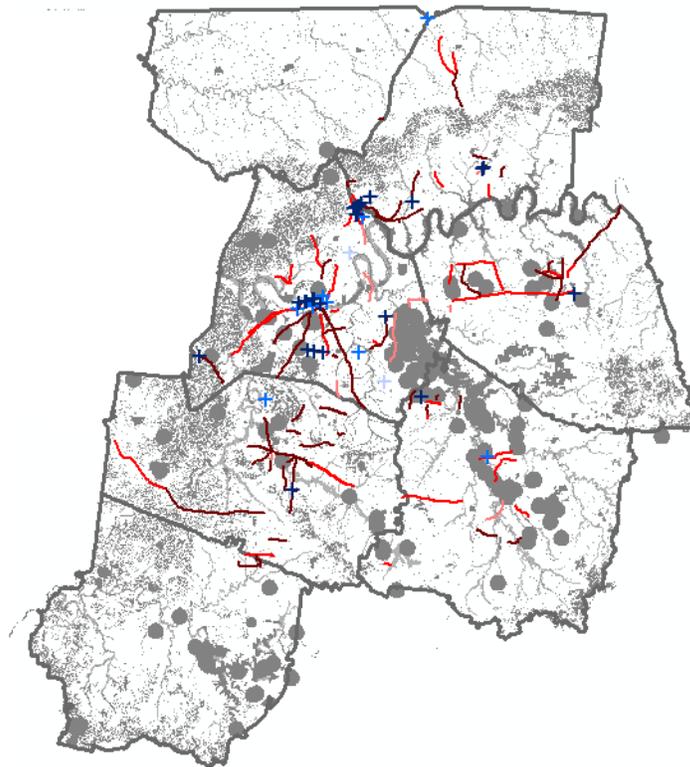
Areas of Environmental Challenge

Includes things that could be harmed or threatened by the proposed improvement including:

- Wetlands,
- Floodways,
- Hillside with greater than a 15 percent slope,
- Water bodies,
- Floodplains, and
- Environmentally Sensitive Areas.

The following map provides a comparison between the proposed roadway improvements contained in the MPO's 2035 Regional Transportation Plan and the combined areas of the environmental conflicts and challenges. A list of projects that overlap with areas of environmental concern is provided in Appendix D.

Figure 58. Planned Projects in Areas of Environmental Concern



Environmental Mitigation Strategies

While some sort of mitigation effort should be included in every project that has an impact on an environmentally sensitive area, it is recognized that not every project will have the same level of impact and thus different levels and types of mitigation should be utilized. Some projects involve major construction with considerable earth disturbance, such as new roadways and roadway widening projects. Other projects involve minor construction and minimal, if any earth disturbance, such as traffic signal, street lighting, and resurfacing projects. The mitigation efforts used for a project should be dependent upon how severe the impact on environmentally sensitive areas is expected to be. In determining which mitigation strategies to utilize, each project identified as having an impact on an environmentally sensitive area should follow the three step mitigation planning process prior to construction:

- Identify all environmentally sensitive areas throughout the project study area;
- Determine how and to what extent the project will impact these environmentally sensitive areas; and,
- Develop appropriate mitigation strategies to lessen the impact these projects have on the environmentally sensitive areas.

All projects shall minimize off site disturbance in sensitive areas and develop strategies to preserve air and water quality, limit tree removal, minimize grading and other earth disturbance, provide erosion and sediment control, and limit noise and vibration. Where feasible, alternative designs or alignments should be developed that would lessen the project's impact on environmentally sensitive areas. The three step mitigation planning process should solicit public input and offer alternative designs or alignments and mitigation strategies for comment by the MPO and local government.

For major construction projects, such as new roadways, or for projects that may have a regionwide environmental impact, a context sensitive solutions process should be utilized in which considerable public participation and alternative design solutions are used to lessen the impact of the project.

National Environmental Policy Act of 1969 (NEPA)

The National Environmental Policy Act of 1969 (NEPA) established a national policy to promote the protection of the environment in the actions and programs of federal agencies. The FHWA and FTA act as lead Federal agencies, and are responsible for implementing the NEPA process and working with state and local project sponsors during transportation project development. The FHWA and FTA NEPA process is designed to assist transportation officials in making project decisions that balance engineering and transportation needs with the consideration of social, economic and environmental factors. This process allows for involvement and input from the public, interest groups, resource agencies and local governments. The FHWA and FTA NEPA process is used as an "umbrella" for compliance with over 40 environmental laws, regulations, and executive orders and provides an integrated approach to addressing impacts to the human and natural environment from transportation projects.

NEPA Documentation

A good decision based on an understanding of environmental impacts is the objective of the NEPA process and a thorough analysis of these impacts as presented in the NEPA document is essential in meeting that objective. NEPA documentation serves several purposes: to disclose the analysis of benefits and impacts to the human and

natural environment; to get input from the public and other stakeholders on the proposed project and the environmental consequences; and to inform the final decision.

Different types of transportation projects will have varying degrees of complexity and potential to affect the environment. Under NEPA, the required environmental document depends on the degree of impact. FHWA and FTA, in coordination with the project sponsor, prepare one or more of the following documents for a proposed project:

- **Notice of Intent (NOI)** - a notice that an environmental impact statement (EIS) will be prepared and considered.
- **Categorical Exclusions (CE)** - apply to projects that do not have a significant impact on the human and natural environment.
- **Environmental Assessments (EA)** - prepared for projects where it is not clearly known if there will be significant environmental impacts. If the analysis in the EA indicates the proposed project will have significant environmental impacts, an EIS is prepared.
- **Finding of No Significant Impact (FONSI)** - If there is not a significant impact, this conclusion is documented in a separate decision document, the FONSI.
- **Environmental Impact Statements (EIS)** - prepared for projects that have a significant impact on the human and natural environment. Draft EIS (DEIS) and Final EIS (FEIS) documents, with input from the public, provide a full description of the proposed project, the existing environment, and the analysis of the beneficial and adverse impacts of all reasonable alternatives.
- **Record of Decision (ROD)** - presents the selected transportation decision analyzed in an EIS, the basis for that decision, and the environmental commitments, if any, to mitigate for project impacts to the human and natural environment.

Regardless of the type of NEPA document prepared, final selection or approval of a proposed project alternative by FHWA and FTA allows the project to be eligible for federal funding of subsequent project activities such as final design, right-of-way acquisition, and construction.

Vehicle Emissions & Air Quality

The Environmental Protection Agency (EPA) sets national standards for pollutants such as volatile organic compounds (VOCs) and nitrogen oxides (NOx), which are precursors of ozone formation. EPA designates areas that exceed the set pollutant levels as "non-attainment." In the Middle Tennessee region, a large portion of ozone causing pollutants comes from automobiles and trucks.

Transportation conformity is a mechanism to ensure that federal funding is given to transportation activities that are consistent with the air quality goals of the State Implementation Plans (SIP) for Tennessee. According to the Clean Air Act Amendments of 1977 and 1990, transportation plans and programs must be coordinated with, and conform to, local air quality budgets in the local SIP in geographic areas designated by the EPA as non-attainment or maintenance for any of the criteria pollutants.

The MPO counties of Davidson, Rutherford, Sumner, Williamson and Wilson were designated non-attainment in 1978 and declared maintenance areas in 1996 for the ozone precursor pollutants of NOx and VOC. In April, 2004, EPA developed new regulations for air quality conformity and established an 8-hour standard overwriting



the existing 1-hour standard in most areas including Nashville. This 8-hour standard established a longer period of sustained clean air than the previous standard.

On December 29, 2004, the region entered into an Early Action Compact (EAC) in order to defer a non-attainment designation for the 8-hour ozone standard long enough to “fast-track” towards air quality attainment. As of April 15, 2009, the counties of the Nashville Area MPO are considered by the EPA to be in compliance with National Ambient Air Quality Standards and, as such, the MPO is no longer required to demonstrate conformity with established motor vehicle emissions budgets. The region does remain part of Tennessee’s State Implementation Plan, and as such, continues to be eligible to receive Congestion Mitigation Air Quality funding from the Federal Highway Administration, at the discretion of the Tennessee Department of Transportation.

Transportation’s Impact on Health

The United States is experiencing an epidemic health crisis of diseases related to obesity. The increasing rates of people, both children and adults, who are either overweight or obese is increasing rapidly. According to the Centers for Disease Control, in 2008 33 percent of American children and 67 percent of adults were overweight or obese (2008 National Health and Nutrition Examination Survey, NCHS). As of summer 2010, of all 50 states Tennessee ranked 1st in adult inactivity, 2nd in highest rate of overweight adults (over 68%), third highest for number of obese adults (over 30%), 4th highest in extreme obesity and 5th highest for percentage of children ages 10 to 17 who are overweight or obese at 37 percent, with 17 percent obese.

Research demonstrates that the rise in obesity is related to food intake and physical inactivity. Food consumption may be influenced by food availability, especially in ‘food deserts’. Food deserts are areas in which the population is typically low income, the rate of personal vehicle ownership is low, there is a lack of a full-service grocery store that offers fresh fruits and vegetables, and there is no direct transit route to access the closest full-service store. Many factors influence the presence of a full-service grocery store including zoning and parking requirements, economic conditions and crime. A recent Canadian study show that when a full-service grocery store is located within a neighborhood, there is a 50 percent increase in consumption of fresh fruits and vegetables and customers arrive on foot or bicycle up to 50 percent of the time.

In addition to consumption of food, physical activity plays a major role in overall health. The Surgeon General and American Heart Association recommend that children get 60 minutes of moderate to vigorous physical activity every day, but in Tennessee elementary school students receive only 90 minutes per week of physical education time. Health professionals recommend that adults get at least 30 minutes of exercise a day. Some people get physical activity by visiting a gym or a community center. Not everyone has access to these facilities, and using them creates an extra trip or outing.

Built Environment and Health

The opportunity to get physical activity as part of travel is available through facilities such as sidewalks, bike lanes, greenways and transit. These facilities have no membership fees or hours of operation, and combine the purposes of traveling and getting physical activity.

With the rise of the automobile and the construction of the Interstate system in the 1950’s, Americans have increasingly relied on the car. Interestingly, the increase in obesity follows a similar trend line to the increase in personal vehicle miles. The more roadways that were constructed without accommodations for bicycles or

pedestrians, the more car trips were made, and obesity rates rose accordingly. Several studies have also shown that areas with more suburban land uses patterns (residential separated from commercial, for example) also have higher rates of obesity than more traditionally urban areas with mixtures of land uses. In fact, one study shows that compact development will reduce the need to drive between 20 and 40 percent, resulting in a reduction in Vehicle Miles Traveled (VMT) by 30 percent.

Health Care Costs

According to an article in the October 14, 2009 American Bicyclist Update, the U.S. government spends approximately \$60 billion per year on transportation infrastructure. This outlay is dwarfed by the costs to our country resulting from the negative health impacts of transportation. Americans spend \$168 billion a year on obesity, \$76 billion a year on health care costs related to physical inactivity, partly because many individuals cannot safely walk, bicycle, or access public transit; \$164 billion a year on health care costs associated with traffic injuries and deaths; and between \$40 and \$64 billion a year on health care costs associated with asthma and other health conditions related to high rates of air pollution.

The cost of obesity in 2008 in Tennessee was \$1.84 billion and 50 percent was covered by tax payers (\$433 million by Medicare, and \$488 by Medicaid). According to America's Health Rankings, produced by Emory University, the 2008 financial burden of obesity on Tennessee for Medicare and TennCare was \$1.57 billion is predicted to increase to \$2.81 billion in 2013 and \$7.08 billion by 2018. According to America's Health Rankings from the United Health Foundation, if the rates of obesity in Tennessee could be leveled out by the year 2013, health care expenditures could be reduced by \$719 million a year (almost half of what the state spends on treating obesity).

The problem is not unique to Tennessee. According to an article in USA Today, "if Americans continue to pack on pounds, obesity will cost the USA about \$344 billion in medical-related expenses by 2018, eating up about 21 percent of health-care spending. These calculations are based on the projection that in 10 years 43 percent of Americans adults may be obese, which is roughly 30 or more pounds over a healthy weight, if obesity continues to rise at the current rate. Extra weight increases the risk of diabetes, heart disease and many types of cancer." "Obesity is going to be a leading driver in rising health-care costs," says Kenneth Thorpe, chairman of the department of health policy and management at Emory University in Atlanta. Thorpe did this special analysis on obesity for America's Health Rankings, the 20th annual assessment of the nation's health on a state-by-state basis.

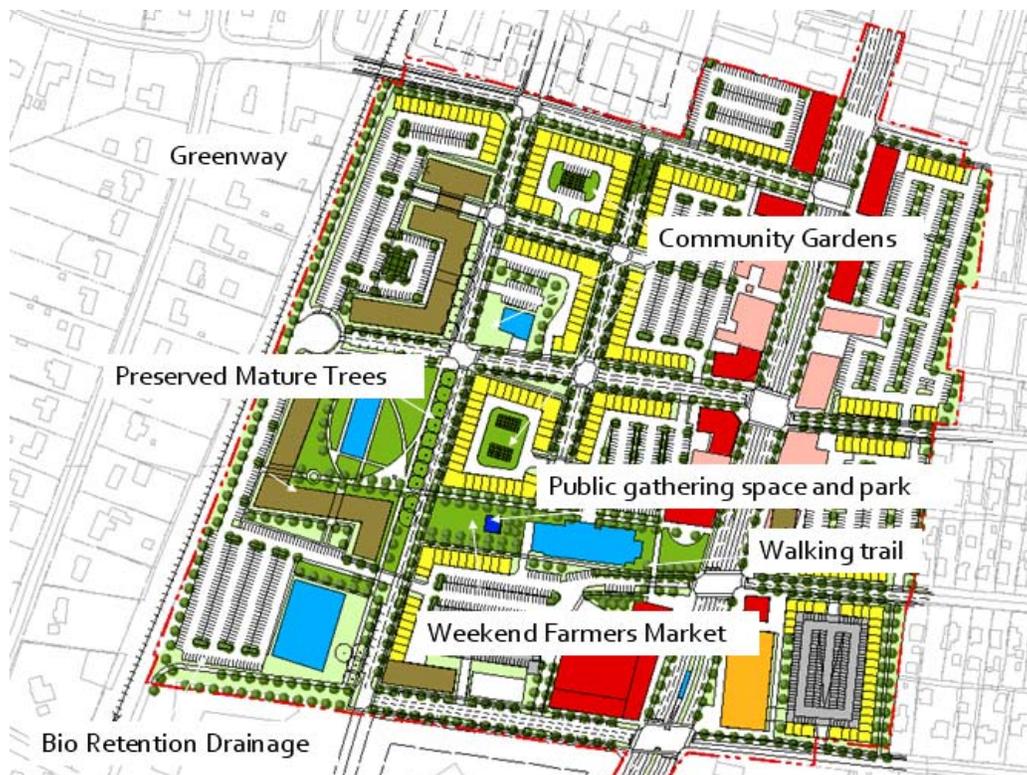
Looking at the numbers, for every \$1 the United States spends on transportation infrastructure, we spend \$5 treating diseases like obesity related to physical inactivity. Perhaps our goal should be to reverse those numbers and create more walkable, bikeable and transit-oriented communities so that for every \$5 spent on transportation infrastructure, only \$1 was needed to treated diseases related to physical inactivity. According to many studies, 'prescriptions' for physical activity yield better results in overweight study participants than diet medications or weight-loss programs. The benefit of the built environment for weight loss is that it is free to the participant, will be around for a long time, and can be used by the whole family and community.

Diseases such as asthma and heart disease, often related to obesity are also exacerbated by worsening air quality, yet another product of many cars on the roadway. There are an estimated 20,000-50,000 deaths per year due to air quality in the U.S. New studies also show that some pollutants not only cause respiratory

illnesses such as asthma in children and adults, but pollutants also increase deterioration of the heart muscle in heart-related diseases.

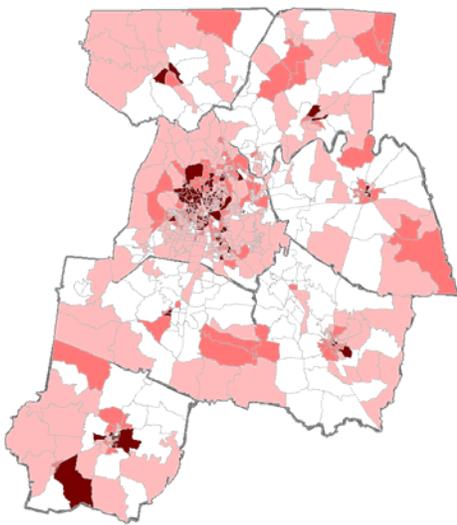
In response to the need to integrate considerations of health into transportation planning and other projects of the built environment, Health Impact Assessments (HIAs) were created about a decade ago and until recently, were used primarily in European countries. An HIA is “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population” (1999 Gothenburg consensus statement). As of 2009, approximately 60 HIAs had been conducted in the United States, with approximately 4 involving a major transportation component such as a transit center. A Health Impact Assessment (HIA) pilot project was conducted in coordination with the Nashville area MPO to intercept and alter health outcomes such as obesity, physical inactivity, asthma, injuries, and social equity in conjunction with the Northeast Corridor Study proposed Transit Oriented Development (TOD) sites. The Centers for Disease Control has formalized six “steps” to conduct a Health Impact Assessment. These six steps are categorized in the following way: screening, scoping, assessing risks and benefits, developing recommendations, reporting, and evaluating. The first phase of the HIA was completed in the Spring of 2010 and resulted in design considerations that were included in the landscape and architectural renderings for one TOD site and included elements such as senior housing, community gardens, walking paths, a community gathering space and public art. The second phase of the HIA is currently being conducted, and involves focus groups and surveys centered around the public’s perception of the relationship between the built environment and health. For more information about the MPO Health Impact Assessment, please contact MPO staff.

Figure 59. Example of Health Impact Assessment on Potential TOD



Recommendations from the Madison Transit Oriented Development (TOD) Health Impact Assessment, Phase 1

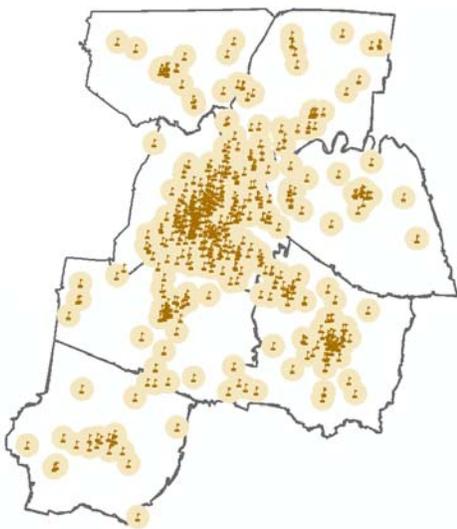
In addition to conducting a Health Impact Assessment, the MPO conducted other data analysis to consider the incorporation of health outcomes into transportation planning. A few examples include the High Health Impact Areas from the Regional Bicycle and Pedestrian Study which looked at areas with higher rates of impoverished, elderly and minority populations; analyzing projects in relationship to proximity to schools; as well as analyzing projects in relationship to grocery stores, farmers markets and emergency food sources. By considering transportation corridors as links to community amenities such as schools, food, religious centers, parks and community centers, the MPO was able to highlight the importance of transportation corridors for the economic, personal and environmental health of the community, and went beyond looking at transportation corridors as opportunities to move motor vehicles as quickly as possible from Point A to Point B. Transportation corridors must serve a variety of users, modes and destinations efficiently and safety.



Health Impact Areas

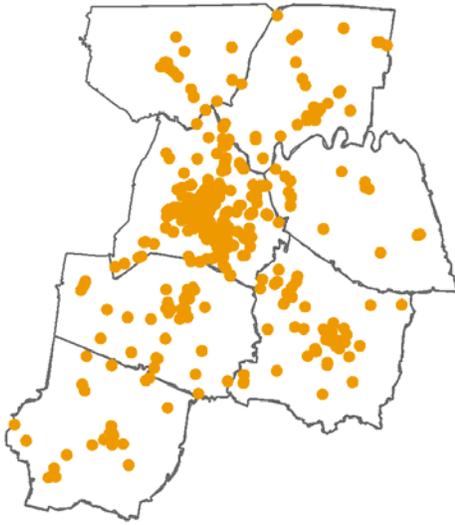
In evaluating projects, the MPO took into consideration the location of those projects in proximity to health impact areas (HIA). HIAs are defined by Census Tracts that have a higher than average rate of poverty, minority populations, and zero-car households.

Those areas of the map with the deepest reds include multiple HIA populations.



Areas within 2-Miles of Schools

The location of schools was an important consideration in the evaluation of projects – particularly in evaluating how well that project addressed connectivity between schools and adjacent residential areas. This type of analysis is particularly useful in prioritizing walking and bicycling projects, as well as in establishing priorities for specialized pots of funding such as Safe Routes to School program funds.

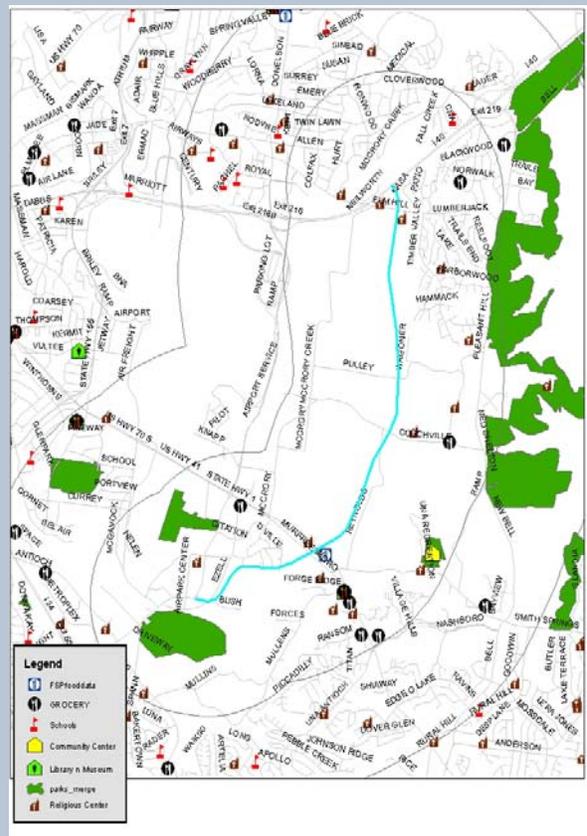


Areas within 1-Mile of Grocery Stores

Another important factor considered in project evaluation is the proximity of grocery stores to proposed roadway improvements. Similar to the goal of increasing multi-modal access to schools, the MPO is interested providing increased multi-modal access to fresh foods, particularly in areas of poverty.

Analytical Example: Access to Fresh Food

The MPO is able to use land-use data to look at how well a transportation corridor serves a community, not just how efficiently it moves traffic. The above map shows a potential transportation project that was submitted for the plan. Based on the community land data, there are ten grocery stores and one emergency food source located within one mile of the proposed project. In addition, there are twelve schools located within two miles of the project, as well as a community center and several religious centers. Looking at the surrounding uses in addition to the High Health Impact data provides information to help staff determine the potential and need for active transportation trips in this region to destinations like schools and grocery stores. Staff's recommendation is that this corridor provides transportation options such as transit, sidewalks and bike lanes so that users have choices in how they travel.



9.3 Ongoing Congestion Management

The ability to reach one's destination in the Nashville area in a timely manner, whether it is for work, shopping, school, social purposes or a delivery of goods, is a critical component in the quality of life for local residents and visitors. The problem of traffic congestion can threaten this aspect of quality of life, especially if it is not managed and is allowed to increase over time. The Nashville Regional Congestion Management System (CMS) plan adopted on in 1995, originally set in place a mechanism for identifying congestion in the MPO planning area, and for choosing appropriate solutions to deal with traffic congestion. MPO staff subsequently completed an update to the CMS plan in 2007, which is now known as a Congestion Management Process, or CMP, in order to comply with new requirements of SAFETEA-LU. Since then, the MPO has worked to fully integrate the CMP into the regional transportation planning process, including 2035 Regional Transportation Plan, so that a separate document is no longer needed to communicate the region's congestion management process. This section of the plan is intended to provide an overview of how the Congestion Management Process is conducted and implemented in the MPO planning area.

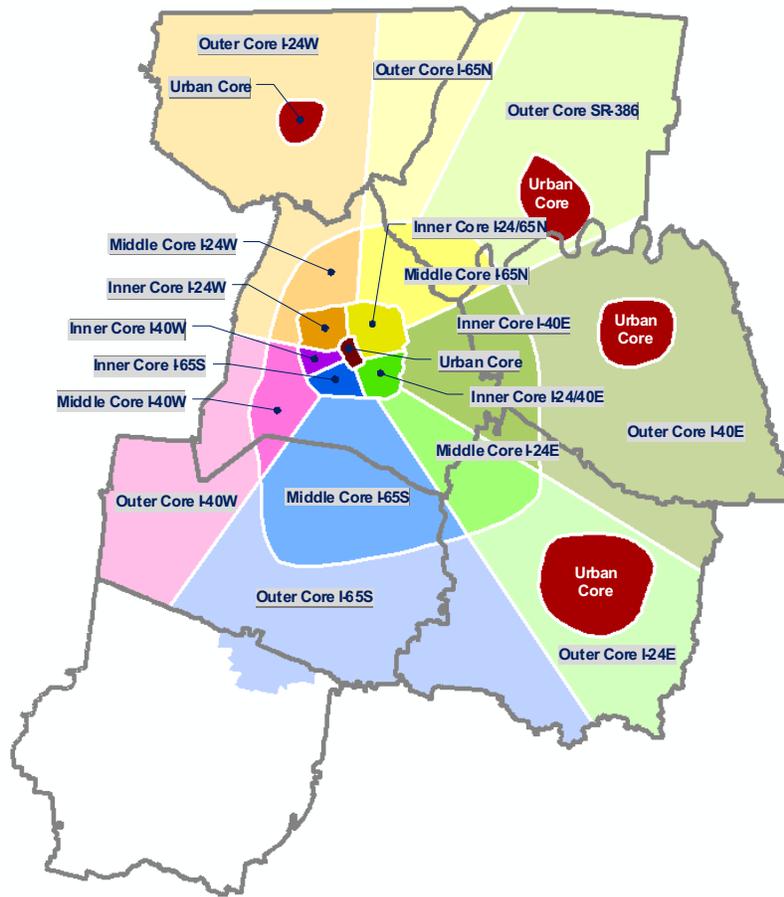
Required Elements of a CMP

The requirement for a CMP originated with the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) legislation in 1991, and was carried forward unchanged in its successor, the Transportation Equity Act for the 21st Century (TEA-21). With the passage of SAFETEA-LU in 2005, the Congestion Management System requirement was changed to a Congestion Management Process. Much of the language in the federal regulations remains the same between a CMS and a CMP, however, as the name suggests, there is more emphasis on making congestion management an ongoing process. The new regulations strengthen the tie between a CMP and the transportation plan, stating that the regulations reflect the goal that the CMP be an integral part of developing a long range transportation plan and TIP for MPOs. Furthermore, the CMP should not be developed as a stand-alone product of the planning process, but rather fully integrated into the operations, management and other planning processes of the metropolitan transportation system such that there are a common set of goals and objectives that provide a seamless selection process for projects to be included in the TIP. One of the key methods to insure the complete integration of the CMP with all other planning processes is to provide for stakeholder involvement with others in the Region including public transportation operators and State and local operations staff. The following paragraphs provide an overview of the individual elements of the required CMP.

Identify methods to monitor and evaluate the performance of the multimodal transportation system

The MPO has determined that the CMP should monitor, on some level, all facilities that are included in the MPO's travel demand forecasting model. While congestion is monitored on individual routes, analysis of congestion as it relates to regional mobility is typically performed at an aggregate level, looking at the system-level performance of parallel facilities within each of the major regional corridors. Each regional corridor is further divided into one of four distinct character areas (e.g., town center, urban, suburban, exurban/ rural) to allow for more appropriate definitions of congestion and to identify the most suitable solutions to manage that congestion. The following map depicts the areas of analysis used in the MPO's CMP.

Figure 60. Congestion Management Corridor Areas



Identify Mechanism for Selection of Appropriate Performance Measures.

This element involves the definition of parameters used to measure the extent of congestion based on locally determined thresholds for system performance. The primary performance measure for determining congestion in the Nashville region is the travel speed comparison between observed or modeled flows and the expected free flow, or ideal, speed for the facility. Free flow speed is based on the facility type and posted speed limit. Generally speaking, a roadway is considered congested if the observed or modeled travel speed is 70 percent or less of the expected free flow speed. In addition, third-party analysis provided by academia (e.g., Texas A &M’s Texas Transportation Institute) and the private-sector (e.g., INRIX) are often monitored and cross-checked with local analysis. MPO forecasts for congestion are provided in section 4.3 of this plan.

Establishment of Program for Data Collection and System Monitoring

This component includes the development of a data collection program that provides for adequate system monitoring in order to identify the causes of congestion. The MPO periodically collects travel time data on the system’s roadways and has found that vehicle-based GPS units provide the most efficient and accurate means of travel time data collection. Other transportation data such as hourly traffic volume counts feed into the CMP and are provided by various agencies in the area. Using the data that is collected and performing technical analyses based on the performance measures that were identified above, the roadway corridors and segments that qualify as being congested can be identified.

In addition to first-hand observation of traffic flows, the MPO also conducts periodic surveys of users (e.g., commuters, transit users, truck drivers, etc.) to measure vehicle occupancy levels, mode split, self-reported travel times and distances, and individual perceptions of levels of congestion.

Identification of Appropriate Congestion Mitigation Strategies

There are several strategies that are available in the transportation planner’s “toolbox” that can be used to reduce congestion. This component of the CMP attempts to identify the most appropriate mitigation strategy on a case-by-case basis. The intent of the CMP regulations is to first investigate mitigation strategies that focus on improving transportation operations and managing the existing system more efficiently, as well as reducing travel demand as a means to reduce congestion before resorting to new roadway construction or widening projects that serve only single occupant vehicles (SOV). The Nashville CMP identifies a menu of congestion mitigation strategies (described in Section 7.3 of this plan) that provide for methods of dealing with congestion other than the construction of additional roadway lanes. In fact, the three major policy initiatives that have shaped the 2035 Regional Transportation Plan – a bold new vision for mass transit, support for active transportation and walkable communities, and preservation and enhancement of strategic roadway corridors – each place a strong emphasis on providing multi-modal options and the use of operations and management techniques to make our roadway system more efficient.

Identification of an Implementation Schedule

One mechanism for implementing the mitigation strategies that are identified by the CMP is through the project selection process of the MPO’s Regional Transportation Plan and Transportation Improvement Program. Projects that are identified in the planning process are given points based on how well they address the goals and objectives of the region, of which congestion is a major factor. Coordination with operations and management partners throughout the region is another mechanism being pursued by the MPO in order to identify congestion issues and solutions that can be implemented more quickly than a major construction project. A description of the evaluation criteria used to identify projects for implementation is presented in Section 8.4 and Appendix B of the plan.

Implementation of a process for periodic assessment of the effectiveness of implemented strategies

A process for periodic assessment of the efficiency and effectiveness of implemented strategies is a key component of a fully operational CMP, although it can prove very challenging. Since certain congestion mitigation strategies take long periods of time to fully implement and others may be taking place simultaneously, it can be difficult to measure the effectiveness of the specific measure that was taken. An example of this may be where a major interstate widening is occurring during the same time that an ITS project is being implemented through the same corridor. The MPO plans to continually update the CMP through regular data collection that should provide information about the change in conditions over time and whether the mitigation strategies that are being employed are keeping pace with the congestion.

The MPO will publish an annual “regional indicators report” that provides the public and interested stakeholders with information about the state of congestion in the region, along with other key metrics related to regional growth and development trends.

CMP Interaction with the Overall Planning Process

The CMP is not intended to supersede the other elements of the transportation planning process, nor is it intended to prioritize all transportation projects. The primary purpose of the CMP is to provide for a more informed decision-making process that can be used to make the most effective use of limited resources to address congestion problems.

The project selection criteria for the Regional Transportation Plan and the Transportation Improvement Program have been modified to address results from the CMP. The scoring system used provides a direct mechanism for the CMP to be considered in the project selection process, which ultimately determines the projects that are to be implemented.

Appendix D of this document provides the list of projects that propose improvements to congested corridors.