

## OTHER FACTORS IN THE PLANNING PROCESS

---

### **AIR QUALITY CONFORMITY ANALYSIS AND DETERMINATION REPORT**

The 2030 LRTP complies with federal air quality standards. In every horizon year for every pollutant in each geographic area, the emissions expected from the implementation of the 2030 LRTP, and several related plans and TIPs, are less than the emissions budgets established in the State Implementation Plan (SIP) or the baseline emissions where no SIP budget is available.

Appendix F is the Executive Summary from the Conformity Analysis and Determination Report for Triangle Area air quality non-attainment and maintenance area. The Report indicates that the 2030 LRTP, and several related transportation plans and programs in the region, comply with the provisions of the Clean Air Act Amendments of 1990 and the Transportation Equity Act for the 21<sup>st</sup> Century of 1998. In order for the MPO areas to comply with these regulations, the conformity analysis must demonstrate that the transportation projects in the fiscally constrained DCHC MPO 2030 LRTP will impact the overall emission of pollutants in a manner that will eliminate or reduce violations of the national ambient air quality standards (NAAQS) in Durham County and Orange County. If the 2030 LRTP did not comply with the air quality standards, the federal government would take measures to force emissions reductions in the area such as the elimination of federal highway funding and freezing permits for new or expanding industrial facilities.

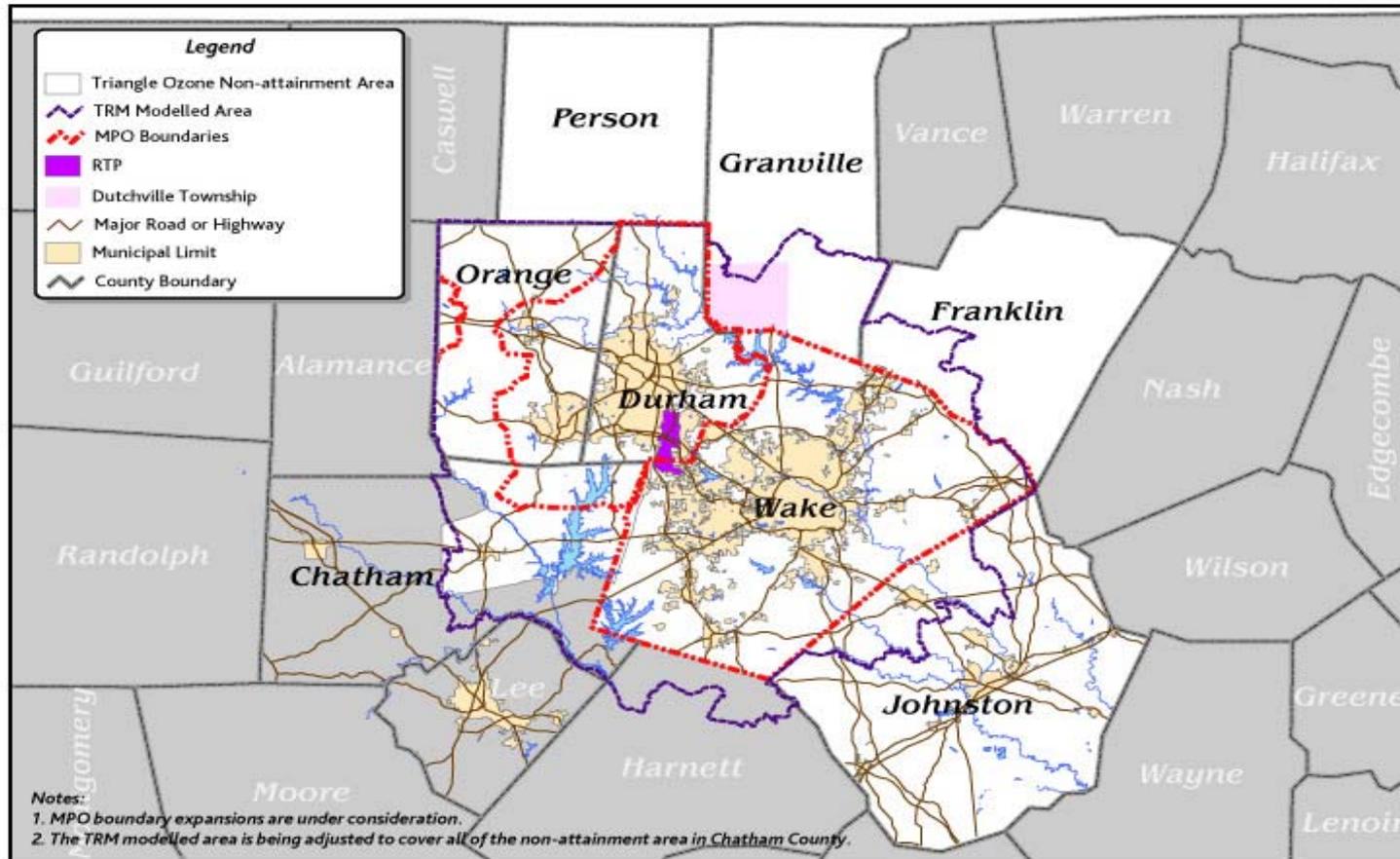
There have been three principal air quality conformity designations that require the planned transportation system to undergo a conformity determination:

1. United States Environmental Protection Agency (USEPA) originally declared Durham County non-attainment for ozone (O<sub>3</sub>) and carbon monoxide (CO) on November 15, 1990.
2. USEPA redesignated Durham County for ozone maintenance on June 17, 1994 and for CO on September 18, 1995. In other words, Durham County met both the ozone and CO standards but must continue to monitor the pollutants in long-range transportation plans to ensure compliance.
3. USEPA designated the Triangle area as a Basic non-attainment area for ozone pollutants on June 15, 2004. The parts of this area that overlap the DCHC MPO include part of Chatham County, and all of Durham County and Orange County. This designation was based on the new 8-hour ozone standard. The new standard is more stringent than the previous standard under which Durham County had come into conformity (and, thus Durham County was operating under a maintenance program).

Figure 48 is a map showing the Triangle 8-hour ozone non-attainment area in relation to Triangle counties, cities, and MPOs.

Figure 48

## Triangle Ozone Non-Attainment Area



The AQ conformity for the 2030 LRTP is analyzed for the years 2007, 2009, 2010, 2012, 2020, and 2030. The analysis is to show that Durham County meets CO standards, and that Chatham County, Durham County and Orange County meet the new ozone standards, which require the monitoring of the volatile organic compounds (VOC) and Nitric oxide (NOx) that spur ozone formation. The analysis has four basic steps:

1. Population and employment data and the proposed roadway and transit projects for each analysis year are prepared for each forecast area.
2. The TRM is used to compare anticipated vehicle miles of travel (VMT) and vehicle travel speeds.
3. Emissions factors developed by the North Carolina Department of Environment and Natural Resources (NCDENR) are prepared using the MOBILE 6.2 emission model based on the VMT and vehicle speeds. National sales, data, the NCDOT and the N.C. Department of Motor Vehicles (DMV) provide data for the mix of vehicle types (sedan, SUV, truck, etc.), models, and vehicle age.
4. The emissions are compared to an emissions budget for the air quality shed. The forecasted emissions must be below the budgeted amount, which is determined in the State Implementation Plan (SIP).

There are several other important points to this process, some of which are required by the air quality standards, 40 CFR Part 51 and 93:

1. The DCHC MPO has not identified any Transportation Control Measures (TCM). The TCMs are programs, projects and policies that an area must implement in order to reduce emissions to a level that is under budget, and must be included in the SIP. Examples include intersection improvements and grade separations, High Occupancy Vehicle (HOV) lanes, travel demand management, vanpools and park-and-ride lots.
2. The population and employment forecasts used in the TRM are based on the most recent comprehensive land use plans of the various municipalities and counties that comprise the DCHC MPO.
3. The latest emissions model, MOBILE 6.2, was used for emissions calculations. This model uses output data from the TRM (VMT and vehicle speeds) and vehicle fleet data from several sources to calculate the amount of emissions.
4. The 2030 LRTP is fiscally-constrained. In other words, reasonably expected revenue sources have been identified to finance all the highway, transit, fixed-guideway and non-highway transportation projects in the plan. This fiscal requirement ensures that projects that do not have a reasonable expectation of being implemented are not biasing the emissions calculations.
5. The Conformity Analysis Report and Conformity Determination met the public review and hearing requirements of the DCHC MPO Public Involvement Policy. The TAC:
  - released this report for public comment on January 28, 2005;
  - conducted a public hearing on February 9, 2005; and,
  - adopted the final report on April 13, 2005.
6. A number of projects in this urban area could not be modeled with the existing regional travel model. The effect of these Mobile Source Emission Reduction Strategies is accounted for by off-model calculations. FHWA Region IV's Off-Model Air Quality Analysis: A Compendium of Practice provided guidance on estimating emissions effects. The off-model projects include park-and-ride lots,

vanpooling, Transportation Demand Management (TDM), Intelligent Transportation Systems (ITS), transit improvements, and land use changes.

## **ENVIRONMENTAL JUSTICE AND SCREENING**

A very detailed, comprehensive environmental analysis and public participation process occurred during the development of the 2025 LRTP. Given that the 2030 LRTP is an update to the 2025 LRTP and the short time period between development of the two plans, the 2030 LRTP development process did not substantially update the environmental justice analysis from the previous plan. The 2030 LRTP presents the same major highway, transit and fixed-guideway projects as the previous plan, and overall demographic and environmental factors have not changed significantly in the timeframe between the development of the two plans. Nonetheless, appropriate updates to the 2030 LRTP environmental justice analysis process occurred to account for some changes in demographics, environmental sites, and plan projects.

This section briefly discusses the need for environmental justice analysis and screening, and then summarizes the related activities completed during the development of the 2025 LRTP and 2030 LRTP.

### **What is Environmental Justice?**

Environmental justice addresses fairness toward the disadvantaged and often addresses the possible exclusion of racial and ethnic minorities, low-income people, the elderly, and persons with disabilities from decision-making. The concept has been extended to prevent discrimination, as well. The federal government has identified environmental justice as an important goal in transportation, and local and regional governments must incorporate environmental justice into transportation planning. DCHC MPO goals that relate to the public transportation system, the protection of the natural environment and social systems, and the public involvement process each have objectives that support environmental justice. This support must be evident throughout the transportation planning process, including those processes for the long-range transportation plan, transportation improvement program, and specific project planning.

Even though the term “environmental justice” is not in federal legislation, the concept and its application have been developed through a succession of court cases, transportation regulations, agency memoranda, and Executive Orders. Much of the legal application is based on Title VI of the Civil Rights Act of 1964 that provides protection from discriminatory actions or results from federal, or federally assisted or approved, actions. In terms of transportation planning, environmental justice seeks to ensure that the disadvantaged:

1. Have access to the decision-making process;
2. Realize benefits from transportation investment that are commensurate with the population as a whole;
3. Do not shoulder a disproportionate share of the negative effects and burden resulting from the implementation of transportation projects; and,
4. Do not incur a disproportionate share of the financial cost.

### **Environmental Justice Activities**

The DCHC MPO has carried out a comprehensive and thorough set of activities to ensure that disadvantaged persons, as characterized in federal regulations, do not suffer discrimination in the transportation planning and implementation process. These activities have been in the area of both plan analysis and public participation. Throughout the tier analysis process, in which the MPO developed and analyzed sets of different alternatives for the 2025 LRTP, special analysis was conducted to ensure that the benefits, burden, and cost effects of transportation projects did not discriminate against disadvantaged persons. Additional analysis was conducted on the final set of project alternatives for the 2025 LRTP, and

the final set of projects in the 2030 LRTP. This analysis was completed using the following three methodologies.

### Map Analysis

Maps provide an easy-to-read format, and a broad overview that helps to identify where possible impacts might occur. For the 2025 LRTP, the MPO staff, with the assistance of a specialized consulting firm, used maps to conduct three key analysis tasks.

- a) First, staff used census data to identify those TAZs that have a high concentration (i.e., greater than 50%) of low-income households, minorities, and Hispanics. This TAZ information and the proposed roadway improvements (e.g., widenings, new alignment, upgraded intersections) from the various alternatives were depicted on a single map to help assess the effects and benefits that the proposed projects might have on the disadvantaged population.
- b) Second, staff analyzed access to public transportation. The TAZs were categorized according to their number or percent of low income households, minority population, persons with mobility impairments, and elderly.
- c) Finally, staff analyzed potential roadway impacts on community and natural resources using a similar mapping process. Community resources included parks, historic and heritage districts and sites. Natural resources (including critical watershed, natural areas, wetlands, regional hydrology, and endangered species) were depicted on the same map to assess potential roadway impacts on these resources.

### Detailed Project Impacts

For the 2025 LRTP, further analysis was conducted to determine the potential project impacts for those TAZs that had a high concentration of disadvantaged persons and proposed road improvements. MPO and consulting staff identified the various neighborhoods that comprised the affected TAZ, determined whether these were minority, Hispanic or low-income neighborhoods, and assessed whether these particular neighborhoods could potentially be affected by the roadway project.

### Plan Targets

The TAC adopted a set of targets that included an environmental justice target. These targets were the same for both the 2025 LRTP and 2030 LRTP, and were designed to assess and compare the overall efficiency and effectiveness of the baseline and alternatives. These targets are related to the six evaluation criteria presented in the “Quantitative – By the Numbers” section of this report, which includes Mobility, Transit, TDM, Air Quality, Financial/Economics, and Environmental Justice/Land Use. Modeling and financial information produces a set of performance values for each alternative and the baseline option that are compared to the adopted plan target values. This comparison produces evaluation criteria points – the more favorably an alternative compares with the plan targets, the more points it receives. In the overall evaluation, the evaluation criterion associated with environmental justice has a weighted factor of 0.21 (i.e., 21 out of 100 total weight points). Figure 48 provides section six from the plan targets.

**Figure 48**  
**Environmental Justice/Land Use Targets**

Number	Target	Low	Middle	High
6.1	Population within ½ mile of transit	40%	60%	75%
6.2	Employment accessibility by transit (jobs within 30 minutes via transit)	55%	65%	80%
6.3	Ratio of average travel time in minutes (low-income/general population)	1	1.1	1.2

### **FHWA PLANNING FACTORS**

This section of the report specifically addresses the seven planning factors to be considered in the development of transportation plans and programs, as mandated by TEA-21, which is the principal federal legislation regulating transportation programs and funding. Treatment of each planning factor is highlighted in three sections:

1. The first section broadly addresses the factor;
2. The second section describes how the MPO transportation planning processes and the Transportation Plan specifically relate to the factor; and,
3. The third section provides a future outlook.

**Factor # 1 - Support the economic vitality of the Metropolitan Area, especially enabling global competitiveness, productivity and efficiency.**

**Response:** The intrastate highway system, airport access, multi-modal facilities, as well as freight transportation have been included in this plan. Transportation access to inter-modal facilities has been identified as a regionally significant need. All types of public and private transportation, including transit, bikes, and rail, have been included in the multi-modal components of this Long Range Plan. Additionally, the transportation network used in the technical analysis of the system includes projects regardless of the funding source. The MPO has received alternatives from the development community that were tested in the alternative analysis in order to ascertain their economic effect on the area and on transportation efficiency.

**Relationship to the MPO Planning Process and Transportation Plan:** The MPO recognizes the need to ensure connectivity and access in the transportation system. Additionally, the inclusion of private facilities in the overall transportation system creates opportunity for the market place to seek and have input.

**Prospects:** The MPO has demonstrated a firm commitment to support and fund all transportation modes. This plan continues that commitment. The plan recognizes economic opportunity within the development community by widening the available mode choices.

**Factor # 2 - Increase the safety and security of the transportation system for all users.**

**Response:** The safety and security of the transportation system are goals of the MPO. Goal One calls for a "safe" overall transportation system. Goal Two calls for a "multi-modal street and highway system that allows people and goods to be moved safely." A review of the approved Goals and Objectives reveals a desire and commitment to provide safety and security through a variety of transportation choices.

**Relationship to the MPO Planning Process and Transportation Plan:** The MPO planning process and transportation plan address safety and security not only by reviewing the safety of major projects, but by using STP-DA and enhancement funds to improve intersections, add noise barriers, bike lanes, lighting, and by implementing the regional ITS system.

**Prospects:** Transit systems within the MPO are constantly looking at better ways to increase security systems for their clients. They will continue to do so and work through the MPO process to obtain funding for such projects. The expansion and continued use of STP-DA and enhancement funds toward addressing safety issues will continue to be a priority

**Factor # 3 - Increase accessibility and mobility for people and freight.**

**Response:** NCDOT, with input and support from the MPO, is developing six management systems (pavement, bridge, safety, congestion, public transportation, and inter-modal transportation).

The MPO planning process has included not only planning for construction of new facilities but also the application of Transportation System Management (TSM) and Travel Demand Management (TDM) techniques. TDM strategies can alleviate congestion and prevent future congestion from occurring. Flex time, compressed workweeks, and the use of transit all function towards reducing congestion. In addition, public transportation increases the average vehicle occupancy rate, reduces the number of cars on the road, and, thus, reduces and/or prevents congestion. Chapel Hill Transit (CHT), the Durham Area Transit Authority (DATA), and the Triangle Transit Authority (TTA), as public transit operators, perform this role. Finally, the Regional Rail Project Phase I is a major component of the new plan. The MPO continues to look at future growth and transportation options that will lead to the most efficient regional transportation system.

In their respective plans, CHT, DATA, and TTA address ways to expand and enhance service to increase ridership. In addition, several jurisdictions are promoting Transit Oriented Developments in their land use plans in order to increase the usage of the existing and potential future transit service.

The MPO is striving to develop a transportation system that ensures connectivity and enhances the efficient movement of freight. The National Highway System (NHS) and improvements scheduled for the system ensure that freight as well as automobile travel is maintained at a reasonable level to provide for the safe and efficient movement of goods and people.

**Relationship to the MPO Planning Process and Transportation Plan:** State and local cooperation is necessary to ensure that these management systems reflect responsibilities for both planning and implementation.

Transit development is an integral part of the MPO's long-range transportation plan. In the planning process, the MPO recognizes the differences between freight and passenger transportation in needs and usage patterns.

**Prospects:** The MPO will continue to support TSM, TDM, and transit development. The regional model will further enhance the region's ability to understand travel patterns and predict and solve congestion

problems. Additional work will be required to better meet the growing demand of freight in the regional transportation environment. In addition, the MPO has designated STP-DA funding to develop a collector street plan for all of Durham County and part of the Town of Chapel Hill.

**Factor # 4 - Protect and enhance the environment, conserve energy and enhance the quality of life.**

**Response:** In making transportation decisions, the MPO considers the social, economic, and environmental effects of the facilities. The public hearing process allows the public a chance to respond to the impacts of planned facilities.

A review of the MPO's Goals and Objectives reveals that a majority of objectives deal with the interaction between transportation and protection of the environment.

Although the MPO has not formally adopted a local energy policy, transportation system elements have always been reviewed relative to the opportunities for minimizing energy consumption. In addition, transportation planning programs and recommendations have implicitly recognized energy conservation by promoting balanced transportation and control measures that are geared towards the reduction of single occupant vehicles. The MPO and member jurisdictions are a part of the Air Awareness Program created by NC DENR. Furthermore, the DCHC urban area, as a non-conforming area for ozone, is required by federal law and regulations to take actions to improve air quality. Most of these actions to encourage the reduction of auto dependence are being carried out by member jurisdictions in some fashion.

The link between land use and transportation policies needs to be strengthened. The move towards compact development can be led by transportation initiatives. Well-served transit corridors can focus new compact growth along transit corridors and prevent the continued sprawling of the region.

**Relationship to the MPO Planning Process and Transportation Plan:** Social, economic, energy, and environmental considerations are integrated into the planning process.

In making transportation decisions, TEA-21 requires an analysis of the land use effects on transportation choices. In this process, the MPO has not taken land use patterns as a given, but has recognized that these patterns result, at least in part, from the accessibility created by the transportation system.

Energy conservation is an integral component of the long-range transportation plan strategy and is included in the performance indicators with which each alternative was evaluated.

**Prospect:** The MPO and/or local jurisdictions should adopt explicit policies defining the social, energy, and environmental values that will guide transportation decisions in the urban area and which the planning process will address. The regional model allows for the incorporation of environmental data and evaluation of energy consumption.

The MPO will continue to support the use of TDM strategies and Transportation Control Measures (TCM), which encourage less reliance on the single occupant vehicle and encourage the use of alternate modes of transportation.

The MPO will support regional and local land use plans that provide for the protection of environmentally and socially significant areas.

**Factor #5 - Enhance the integration and connectivity of the transportation system across and between modes for people and freight.**

**Response:** In their respective plans, CHT, DATA, and TTA address ways to expand and enhance transit service to increase ridership. In addition, Transit Oriented Developments will increase usage of existing and potential future transit service.

In conjunction with the State, the MPO uses the thoroughfare planning process to evaluate the connectivity of roads. Local land use plans also promote connectivity and trip reduction.

The development of a transportation system that ensures connectivity and enhances the efficient movement of freight is a goal of the MPO.

**Relationship to the MPO Planning Process and Transportation Plan:** Transit development is an integral part of the MPO's long-range transportation plan. As stated above, the thoroughfare planning process is used as a tool in evaluating the connectivity of transportation services.

In the planning process, the MPO recognizes the differences between freight and passenger transportation in needs and usage patterns.

**Prospect:** The MPO supports the development of regional modeling and transportation planning to ensure adequate future connectivity and access. The MPO will continue to plan and support the most efficient and effective methods and strategies for the movement of goods and people. A plan to consolidate the CATS (Raleigh), TTA and DATA public transportation systems has received support from the appropriate boards and elected bodies, and is progressing toward implementation.

**Factor # 6 - Promote efficient system utilization and operation.**

**Response:** The link between land use and transportation policies needs to be expanded. The move towards compact development should be led by transportation initiatives. Planning transit corridors can help focus new compact growth along these corridors and can prevent the continued sprawling of the region.

In 1990, the MPO passed a resolution calling for the preservation of existing rail corridors. Both local and state rail corridor preservation policies address this factor. The MPO currently works with NCDOT to ensure that life cycle cost analysis is used in the design of all transportation projects for the urban area.

In their respective plans, CHT, DATA, and TTA address ways to expand and enhance service to increase ridership. In addition, Transit Oriented Developments will increase the usage of existing and potential future transit service.

**Relationship to the MPO Planning Process and Transportation Plan:** In reaching transportation decisions, TEA-21 requires an analysis of the land use effects on transportation choices. The MPO does not simply take land use patterns as a given, but recognizes that these patterns result, at least in part, from the accessibility created by the transportation system.

Presently used right-of-way (ROW) and ROW not currently used for transportation should be considered in planning for future transportation needs. The MPO recognizes the value and need to preserve ROW for future facilities. This option can be less expensive than acquiring new ROW and less disruptive to the natural environment and established communities. Also, existing transportation corridors may be able to focus future land use patterns in a sound and efficient manner.

Investment decisions should take into account not just the initial capital costs of a facility, but also operating and maintenance costs during the period the facility will be in use.

Transit development is an integral part of the MPO's long-range transportation plan.

**Prospect:** The MPO will continue to work with NCDOT to discover, test, and utilize new and improved technologies in construction techniques for all types of projects in the comprehensive plan.

**Factor # 7 - Preserve and optimize the existing transportation system.**

**Response:** The urban area has a long tradition of seeking to maximize existing transportation facilities, as evidenced in the emphasis given to this factor in the MPO Transportation Improvement Program (TIP) Project Priority List. In addition, an integral element of the NCDOT thoroughfare planning principles, employed in the development of the urban area plans, is the "maintenance of safe and efficient existing roadway facilities" as well as the improvement of their operational efficiency through TSM strategies.

The transit plans for both Orange and Durham Counties contain recommendations to improve existing service, not simply to expand service. The urban area transit providers also have preventive maintenance plans for buses and other capital equipment. Finally, the consideration of TDM strategies, such as flex time, compressed work weeks, and transit subsidy programs, reveal strong support of a more efficient use of existing and future transportation facilities.

**Relationship to the MPO Planning Process and Transportation Plan:** As mentioned above, the MPO is cognizant of both the financial prudence of maintaining and preserving existing and future transportation facilities and the benefits of utilizing those facilities in meeting multi-modal mobility needs. Subsequently, over the years, the TIP projects have reflected this objective. The MPO's Transportation Advisory Committee (TAC) has adopted a preamble along with FY 2002 - 2008 TIP project priorities, which states that the Durham-Chapel Hill-Carrboro urban area is "committed to developing a balanced transportation system within the region..." Perhaps the best illustration of the ways that the MPO has taken steps "to meet transportation needs by using existing transportation facilities more efficiently" is the incorporation of bicycle facilities and sidewalks in the widening of existing roadways. This strategy not only improves the operational efficiency of the existing system, but also promotes alternative modes of transportation as stipulated by TEA-21.

**Prospect:** The urban area is committed to exploring new and innovative ways to maximize the use of existing transportation facilities. The long-range transportation plan offers many opportunities to develop the framework for implementing this strategy in an integrated fashion.