Chapter 3: Responding to Transportation Challenges

In response to the transportation challenges facing the region set out in Chapter 2, this chapter discusses the strategies for meeting those challenges. Responses are arranged according to whether they are oriented toward enhancing mobility or managing and improving the existing transportation system and then by element.

A. Moving People and Goods

I. Public Transportation and Passenger Facilities

Federal law requires MRMPO to carry out a multimodal transportation planning process that serves the region's mobility needs while minimizing transportation-related fuel consumption and air pollution. MRMPO accomplishes this, in part, by assessing public transportation needs for the region, programming federal funding for public transit programs and projects, and facilitating regional transit planning studies. MRMPO is working to provide more transportation options in the AMPA and increase the region's transit mode share. These actions will support the MTP goals of *quality of life*, *mobility of people and goods*, and *economic activity and growth*. Transit can be an integral part of increasing public health and safety, providing mobility for all users, and serving as a catalyst for economic development.

There are a variety of benefits to improving public transportation systems; the most crucial is that it provides mobility for people of all ages and abilities. Improving transit is also important for congestion reduction, safety, air quality, economic development and overall quality of life. Not everyone can afford to buy and maintain a car and many are therefore dependent upon public transportation. Others are unable to drive and transit provides them with independence and choice. Finally, some people choose to ride transit because of the economic, environmental and/or personal quality of life benefits it can provide.

From an economic development perspective, cities with better transit systems are more desirable to employers and businesses looking to relocate and to the younger and educated workforce. In addition, transit services are sometimes the only option for the economically disadvantaged, persons with disabilities and seniors. Adequate transit service also helps the region cope with disruptions in gasoline supply and spikes in costs by providing a cost-effective mode of transportation (on average transit use is less expensive than vehicle travel). Finally, a variety of studies summarized by the Victoria Transport Policy Institute on how public transit can help create more accessible and livable neighborhoods have shown that transit-rich areas have lower levels of obesity because riding transit usually involves more physical activity than driving a car.

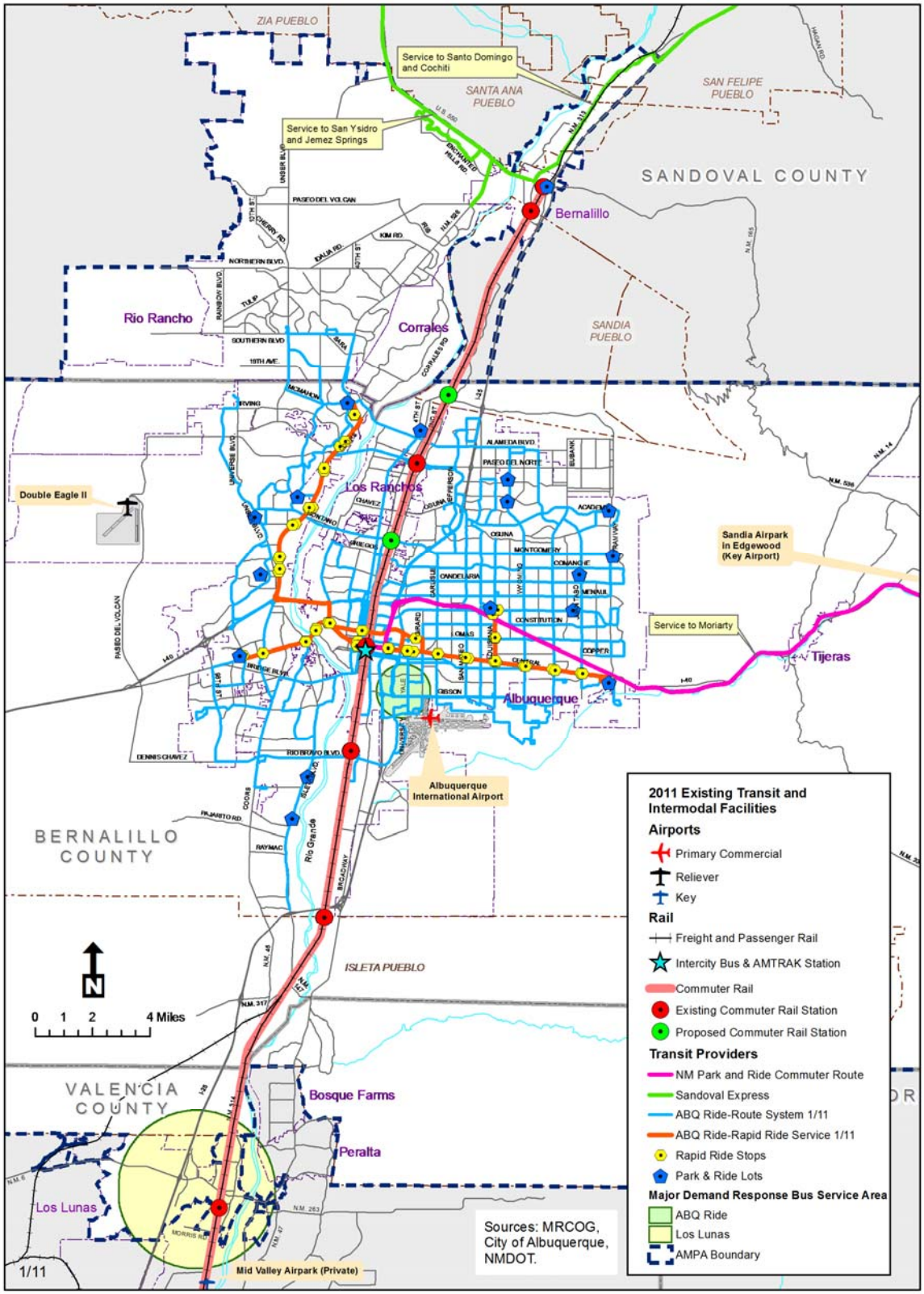
Transit mode share has increased considerably in the region, particularly on specific corridors that have better levels of service. The more frequent, convenient and understandable the transit system is the more comfortable people will feel about using transit and the more likely they will be to choose to ride transit. In fact, according to a 2010 study done by MRMPO, Central Avenue (a Rapid Ride corridor) currently has a mode share of 15 to17 percent between Downtown Albuquerque and the university district. Rapid Ride has high ridership because it provides a direct, frequent system with "real time" information available to riders. In addition, the Rail Runner has become an essential component of the regional transportation network and provides reliable, efficient travel along the I-25 corridor. Ridership continues to steadily grow. Expanding upon these types of connections and services, and coordinating transportation investments with land use plans, will be integral to continuing to improve the mode share for transit in the AMPA.

MRMPO does not operate or plan public transit services or routes. Rather, public transit in the AMPA is provided primarily by the City of Albuquerque's Transit Department (ABQ Ride) and the Rio Metro Regional Transit District (RTD), along with providers of commuter bus routes such as New Mexico Park & Ride and the University of New Mexico. The New Mexico Rail Runner Express provides commuter train service within the metropolitan area to the Santa Fe metropolitan area. Rio Metro operates the Rail Runner, the Sandoval Easy Express, Rio Transit in Rio Rancho, Los Lunas Transit and Belen Transit as well as two ABQ Ride routes that connect to Rail Runner stations.

Long distance public transportation is provided via rail by Amtrak and via bus by several carriers. Air transportation is served primarily through air carriers at the Albuquerque International Sunport. Map 3-1 shows existing transit and intermodal facilities in the region. For its part, MRMPO is able to address regional transit needs through the following activities:

- regional data analyses and transportation planning expertise to help identify benefits and shortcomings of the regional system
- initiating and supporting programs and studies that address long-term public transportation solutions
- continuing to work in a collaborative framework and organizational capacity that brings regional partners together

Map 3-1: Existing Transit and Intermodal Facilities in the AMPA, 2010



Future Transit Corridors and Bus Rapid Transit

A comprehensive, integrated and regional approach to long-range transit planning is encouraged to ensure coordination of the delivery of transit services among local fixed route, express/rapid ride services, circulator routes, demand response service, commuter rail, and between the various transit providers.

Long-range strategies include the development and analysis of corridors and areas for future transit initiatives. Corridors and areas were identified by the Transportation Coordinating Committee to assist in the development of future planned transit service and facilities. Map 3-2 includes the location of Priority Transportation Improvement Corridors, Alternate Priority Transportation Improvement Corridors, Representative Route in Study Corridors for Modeling Purposes, the Northwest Mesa BRT Study Corridor that is underway, Transit Corridor (areas) for Future Study (TCFS), and proposed Commuter Rail Stations.

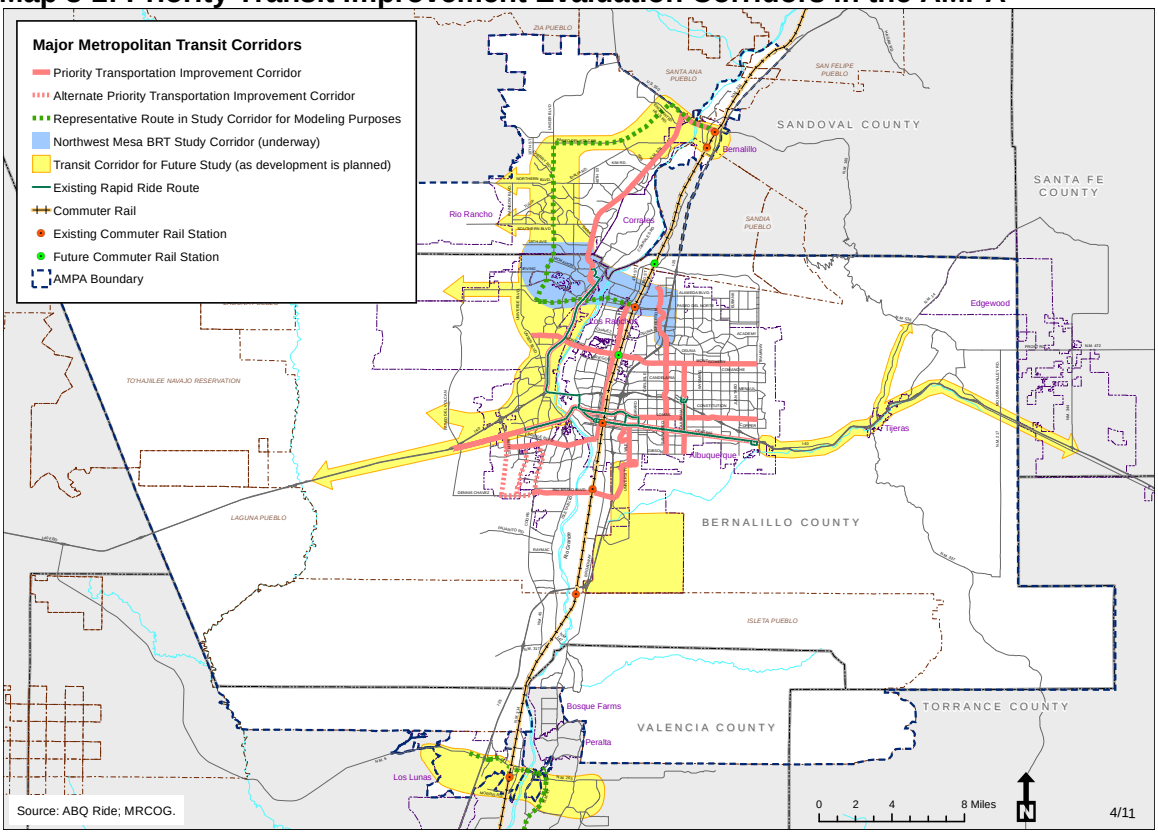
Priority Transit Improvement Corridors are examples of corridors that have been identified as well suited for further evaluation and development of potential high frequency and high volume transit service over the coming decades. Other corridors could be as equally suited or better suited than these example corridors. The selection of the appropriate type of transit service in any area needs to be determined based on existing, planned, and desired land uses, density of development, and their proximity to major activity centers, employment centers, and major destinations such as hospitals, potential ridership and cost effectiveness. Any analysis must also consider connections to other transportation modes to allow for an integrated public transportation system with easy and efficient transfers between modes. Funding for implementation, operations and maintenance of the transit service options must be identified.

Alternate Priority Transportation Improvement Corridors are corridors that need further study to determine which alignment would be best for the area.

Representative Route in Study Corridors for Modeling Purposes are corridors that were used in the transportation demand modeling process to evaluate the effect these corridors would have on future traffic volumes if transit was implemented.

Transit Corridors for Future Study refers to geographic areas where development is anticipated to occur and therefore these corridors require further study regarding new or additional transit service. Studies should include the feasibility of high frequency bus service, express bus service, Bus Rapid Transit (BRT), commuter rail, light rail/streetcars, or other innovative technologies. Implementation plans should identify desired changes to existing land use policies along the selected route(s) that must exist in order to support successful high capacity transit. It is further recommended that local municipalities include these corridors in their area and sector plans, development plan approval processes, other land use planning activities and future capital programs. Consideration should be given to preserving rights-of-way (minimum of 30 feet) dedicated to transit facilities.

Map 3-2: Priority Transit Improvement Evaluation Corridors in the AMPA



Source: ABQ Ride; MRCOG.

Bus Rapid Transit

In order to achieve the regional goal of increasing the mode share for transit along river crossings, new opportunities and services need to be developed. The City of Albuquerque, Rio Metro and MRMPO are in the preliminary stages of planning a Bus Rapid Transit (BRT) system for the metropolitan area. BRT is a high speed, generally high frequency form of transit that is designed to move large numbers of travelers and commuters efficiently along major travel corridors. BRT often features dedicated infrastructure, express service and a high-quality experience for riders, but is considerably less expensive than other forms of mass transit such as light rail and streetcars (for more on Bus Rapid Transit see Appendix B).

A separate BRT network on river crossings could significantly improve travel time, particularly during peak-hour travel, for a greater number of people than could any type of single-occupancy vehicle lane expansion. The current proposed network is in draft form, and the next step is a more in-depth analysis of travel time savings, potential ridership increases and congestion mitigation. Continued study of the BRT system will include a lengthy discussion of current land use and socioeconomic patterns, including the identification of existing and proposed activity centers that contain a large portion of

the jobs (primary destinations for peak hour commutes) that would be served by the service and the identification of BRT stops that would benefit from transit-oriented development. Currently, transit-oriented development efforts in the region include the following:

- Town of Bernalillo Downtown and US 550
- International Sunport/Bernalillo County
- Village of Los Lunas Station Area Plan
- Fourth Street Corridor/Montaño Station Plan
- Downtown Albuquerque Station mixed used developments

Recent Transit Improvements

There have been several recent transit developments in the region since the publication of the last MTP in 2007. In 2008, voters in Bernalillo, Sandoval, and Valencia counties passed a one-eighth of one percent gross receipt sales tax dedicated to transit. Half of the tax revenue is used to operate the Rail Runner and the remaining half is used by Rio Metro for other bus transit purposes. Because there is not a dedicated State fund for transit, this tax has been very beneficial to providing adequate transit services in the region. Other studies and projects important to the region include the following:

- In June 2010, a grant from the U.S. Department of Transportation was awarded to the City of Albuquerque to provide funding for the construction of the Montaño Intermodal Center near the intersection of Montaño Road and Second Street. This center will provide a connection between ABQ Ride buses and the New Mexico Rail Runner Express with a new Rail Runner stop serving the North Valley, Northeast Albuquerque, and the Montaño Road-Montgomery Boulevard corridor.

- In 2010, Rio Metro, with support and assistance from MRMPO, initiated a bus rapid transit (BRT) study that is analyzing potential premium transit service across the river along the Paseo del Norte corridor west of the Rio Grande. The purpose of this study is to explore the feasibility and potential performance of a BRT system between the Northwest Mesa and the I-25 Corridor. Paseo del Norte was chosen because it is the primary highway serving Northwest Albuquerque, is one of only three bridges crossing the Rio Grande in the area, and now runs close to capacity (especially at Coors in the west and at Jefferson/I-25 in the east). Continued growth and development on the Westside means that travel demand to cross the Rio Grande will continue to increase without reduction. Because the prospects for new bridges crossing the Rio Grande are low and there are few opportunities for widening existing roadways, one way to substantially increase capacity is through a transit program using the remaining limited right-of-way available for a high capacity bus system providing express service to Albuquerque job centers. By doing nothing, Northwest residents would be exposed to increasingly severe congestion over extended hours of the day, longer commute times, more serious daily traffic delays, and reduced levels of mobility.

- In October 2010, Bernalillo County received funds to implement their Bridge Boulevard corridor plan. Bridge Boulevard is a three mile-long arterial and river crossing in Bernalillo County's historic South Valley that will help guide development along one of the most congested corridors in the Albuquerque metropolitan area. The plan will focus on improvements to bicycle and pedestrian infrastructure, increased transit service, and re-development that mixes affordable and market-rate housing, retail and employment. It will also study the development of a tax-increment development district (TID) in this rapidly growing section of the city.

In order to plan and prioritize projects as necessary, MRMPO will continue to investigate successful efforts in other cities that integrate transit use with pedestrian and bicycle modes. MRMPO will also support local jurisdictions in their review of public transportation facilities, transit routes, vehicles, pedestrian access and other amenities for full compliance with the Americans with Disabilities Act (ADA).

River Crossing Goals Adopted

During meetings held for the 2035 MTP, the issue of river crossings was discussed extensively with the public and stakeholders. As the AMPA population continues to grow on the west side of the river while employment opportunities are primarily located on the east side of the river, congestion on the existing bridge crossings will worsen. A variety of strategies to address this issue were presented during the MTP meetings. These strategies included expanding bridge capacity, introducing High Occupancy Toll (HOT)/High Occupancy Vehicle (HOV) lanes, increasing transit, land use changes, and operational improvements such as reversible lanes or the use of Intelligent Transportation Systems (ITS). Attendees were asked to award points (representing dollars spent) on these five strategies. Transit and land use changes received the majority of the points. In response, MRMPO adopted mode share goals for river crossings in November 2010. The adopted goals are to increase transit mode share to 10 percent by 2025 and to 20 percent by 2035. In 2009, the public transportation share (includes walking) was 5.8 percent.

Project Prioritization Process

In addition to regional transit projects, mode share goals and studies, MRMPO has incorporated transit as a vital aspect of the Project Prioritization Process that is used to select transportation projects that best meet regional needs. In addition to evaluating the benefits of individual transit projects, the process includes a performance criterion specific to public transit as a part of the MTP mobility goal that assesses the level of integration of transit into roadway or bicycle/pedestrian projects. Incorporating this criterion into the process will allow for the selection of transit projects that best meet regional needs and provide equal consideration of transit projects against other non-transit projects (i.e., roadway and pedestrian/bicycle). The Project Prioritization Process also identifies primary transit facilities to determine which projects meet the geographic

need criterion of the MTP mobility goal. Proposed public transportation projects along these corridors are prioritized and awarded additional points in the prioritization process.

The metropolitan transportation planning process is also required to provide for the consideration and implementation of projects, strategies, and services that enhance the integration and connectivity of the transportation system across and between modes. Consequently, improvements to transit includes providing adequate amenities and informational materials for riders, additional park and ride lots, and the development of convenient, direct, and comfortable pedestrian and bicycle facilities.

Key public transportation projects that have been included in the 2035 MTP include the following:

- the Amtrak building remodel (construction planned to begin in late 2010)
- continued park and ride expansion
- improved bus transit service to commuter rail services
- expansion of new Albuquerque – Rio Rancho Bus Rapid Transit
- expansion of Bus Rapid Transit and Rapid Ride (additional routes and service frequency)
- Montaño Intermodal Center and Rail Runner station
- Sandia Pueblo Rail Runner station
- improve transit service along identified Priority Transit Improvement Corridors (PTIC)

Coordinated Human Services Transportation

In 2010, job access programs for urbanized areas were placed under the organizational structure of the newly formed Rio Metro Regional Transit District. This change centralized transportation support and demand response services among Valencia, Bernalillo, and Sandoval counties. The Rail Runner and ABQ Ride provide a good system for job seekers to access employment centers and free passes are provided to qualified individuals. In some areas, however, there are no adequate fixed-route services and individuals must rely on demand response services, use taxi cab service, or go without access to public transportation. In Sandoval County, the Sandoval Easy Express operates a fixed route service. In Valencia County, demand response services are available to the general public. In Bernalillo County, demand response services are available to qualified individuals. Consequently, future goals for the job access and other human services transportation programs are to continue to coordinate these types of services on a regional level, and, to the greatest extent possible, integrate not only the operations of these programs, but provide seamless customer service to individuals who live in all three counties. This type of arrangement provides a “one stop” shop for people to call and coordinate their transportation services, which, in turn, supports the development of a more efficient transportation system as the region grows.

Land Use and Transit-Oriented Development

Land use planning and transit-oriented development (TOD) must be an integral part of the planning and the implementation process in order to support a cost-effective public transportation system. As development continues, MRMPO encourages local municipalities to review their land use plans and zoning ordinances as part of a comprehensive look at transportation services and development patterns in order to highlight the interdependency between the two. Subsequent to this, local municipalities are encouraged to work with MRMPO to identify areas for transit-oriented development and other concentrated development opportunities that support the use of public transportation to and from current and planned Activity Centers. MRMPO, with the help of local jurisdictions, will increase focus on and implementation of the following strategies:

- transportation demand management (TDM) strategies
- consideration and development of a complete streets policy at the regional and local levels
- continued study and analysis of expanded transit opportunities
- review and expansion of the Bernalillo and City of Albuquerque comprehensive plan activity centers and corridors concept
- review of employment clusters to determine appropriate level of transit service to and from those areas

II. Bicycle and Pedestrian Systems

In a survey conducted as part of this MTP, 36 percent of participants indicated a desire for better bicycling access and 25 percent wanted better walking access[1]. MRMPO strives to provide better walking and bicycle access by supporting the funding of bicycle and pedestrian facilities. MRMPO is beginning, however, to move beyond just focusing on facilities and is working to improve overall accessibility by increasing connections in the bicycle and pedestrian networks that lead to key destinations. Education and encouragement are also key factors needed to effectively increase the use of alternative modes and will also help people who may be interested but are cautious about trying alternative modes.

Access and Destinations

Reaching Destinations by Bicycle

The mileage of official bicycle facilities in the region grew by 42 percent between 2004 and 2010 (see Table 3-1), and this plan includes projects that would more than double the current mileage of bicycle facilities. Nevertheless, people reaching destinations by bicycle often have to be resourceful and creative because of network gaps and obstacles.

Table 3-1: Existing and Anticipated Miles of Bicycle Facilities

Facility Type	2004 Miles of Existing Facilities	2008 Miles of Existing Facilities	2010 Miles of Existing Facilities	2004-2010 % Change	2035 Miles of Anticipated Facilities
Lane	130.8	201.5	218.6	67%	400.0
Route	124.5	142.1	156.3	25%	156.3
Multi-Purpose Trail	145.2	198.4	206.2	42%	337.6
Bicycle Boulevard	0.0	0.0	6.2		6.2
Total Miles of Linear Bicycle Facilities	**400.5**	**542.0**	**587.3**	**47%**	**900.1**

[1] Survey participants were asked what types of transportation they would like better access to: bus, train, auto/car, bicycle, and walk. They were instructed to mark all that apply. The following percentages of participants wanted better access to: bus 60 percent; train 50 percent; bicycle 36 percent; walk 25 percent; car/auto 14%.

Many bicyclists take unofficial, unpaved routes especially through the Rio Grande Valley. Others navigate a variety of gaps and obstacles from figuring out how to safely traverse busy intersections to finding ways to get to business centers with little or no bicycle facilities. In response transportation professionals are also coming up with creative ways to make space for bicyclists. In 2009 the region's first bicycle boulevard was put into place, connecting downtown Albuquerque to the University area. The "sharrow" is also a creative retrofit. A "sharrow" is a type of street stencil used in constrained right-of-ways to indicate that motorists and bicyclists share the lane. Both Albuquerque and Rio Rancho have roadways with sharrows.

Whereas miles of network facilities are an important factor, these facilities also need to connect to desirable destinations and overcome gaps in order to provide an effective transportation network. There are a variety of gaps in the network including, for example, busy intersections "dropping" bicycle lanes (to make way for right turn lanes) and larger geographic areas such as a neighborhood or a business district where there are few or no bikeways.

Reaching Destinations by Walking

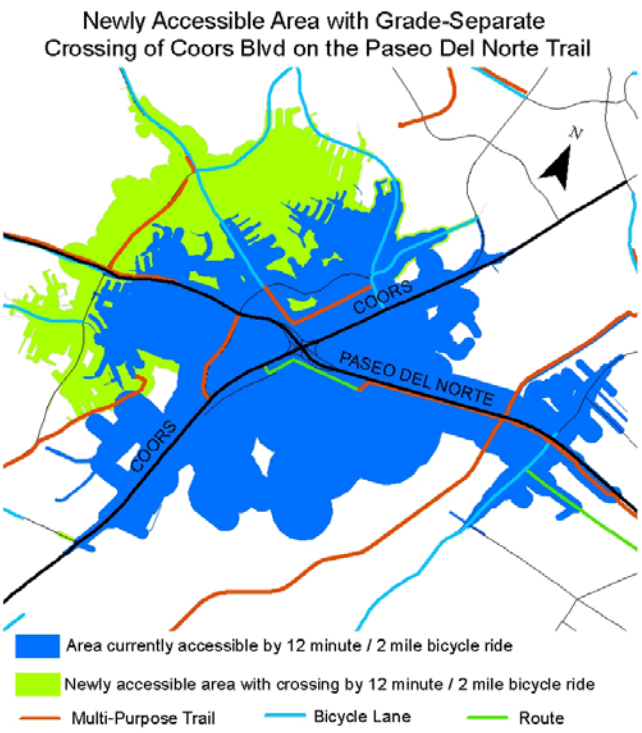
Walking is a part of every commute and used to be the primary means of getting to school. Fortunately, there is increasing interest in walking as the primary mode of transportation to nearby destinations and a growing awareness of how walking improves public health and reduces congestion. However, determining how to make pedestrian improvements has been challenging at the regional level. There are several ways to determine where pedestrian improvements are needed. A walking audit is a common pedestrian improvement tool. This method involves creating an inventory of existing conditions and proposing detailed improvements. Walking audits are conducted as part of Safe Routes to Schools programs. On the regional level, walking audits are not practical due to the size of the network. Other analyses are based on pedestrian crash statistics with areas having large numbers of pedestrian crashes targeted for improvements. Although the number of pedestrian crashes is an important statistic, and available region-wide, these data also require other inputs such as the number of pedestrians and traffic volumes at crash locations to make the raw crash numbers more meaningful. MRMPO has developed a planning tool to prioritize roadways for pedestrian improvements at the regional level that uses a variety of data. This tool, called the Pedestrian Composite Index, is discussed in more detail later in this section.

Closing Gaps

MRMPO examines proposed grade-separated crossings which would close gaps over large physical barriers. The current system has a total of 20 existing grade-separated bicycle-pedestrian crossings and 25 planned for the future. The importance of closing gaps is reflected in the Project Prioritization Process. For instance, where a project makes a connection between two existing links of the network, that project receives more points than a project which only extends the network.

MRMPO measures how well a planned crossing will serve the surrounding community by looking at how many people would served and how many jobs would be accessible if the connection existed today, and then compares that to the community currently served without the crossing. This method provides a general way to examine how a proposed crossing will improve accessibility in an area. A grade-separated crossing over Coors Boulevard along Paseo del Norte is the MTP crossing project that provides the best accessibility to the surrounding area using this analysis. Figure 3-1 and Table 3-2 show the area, people, jobs and households accessible in 2008 if the crossing were in place.

Figure 3-1: Bicycle Accessible Areas with a Paseo del Norte Crossing over Coors Boulevard



The most effective planned crossing not yet built is the crossing of I-25 along the Bear Canyon Arroyo. This project is in its final stages before construction and therefore it is not part of this MTP. Appendix D includes a list of all planned crossings not yet built with their summary accessibility analyses.

The Rio Grande is the predominant transportation barrier in the AMPA for all modes. Currently, there are two bicycle-pedestrian bridges over the Rio Grande, one of which was completed in 2010. By contrast there are 11 motor vehicle bridges over the Rio Grande in the AMPA. Two of these bridges – NM 6 in Los Lunas and US 550 in the Town of Bernalillo – are particularly problematic for bicyclists and pedestrians as neither provide safe crossing conditions and these facilities are the

Regional Example

A regional gap that has no proposed grade-separated crossing (nor is it directly associated with the river or an interstate) is the area around the intersection of Alameda Boulevard and Coors/Corrales Road. This section is a key gateway between Albuquerque, Rio Rancho and Corrales. It is very popular with bicyclists not only for its geographic location, but also because it is west of the pedestrian-bicycle Alameda bridge over the Rio Grande River and east of a major employment center. Experienced bicycle commuters navigate this major intersection and others go around it through a parking lot. MRMPO has worked with local jurisdictions and stakeholders extensively to see how to provide a safe and effective means to provide this connection. Unfortunately, no solution has been reached at this time nor are there substantial future plans to improve the bicycle connectivity in the area beyond the addition of proposed bicycle lanes along Alameda Boulevard and Corrales Road.

only river crossings in their respective communities. The Village of Los Lunas is currently studying a second river crossing. If a second crossing is chosen, it will be designed and built to accommodate both bicyclists and pedestrians.

Table 3-2: Population, Households and Jobs Accessible if Crossing Existed

	No Crossing	If Crossing Existed	Difference	% Change
2008 Population	6,688	11,720	5,032	75%
2008 Jobs	2,338	3,236	898	38%
2008 Households	2,462	4,273	1,811	74%

The I-40 and I-25 interstates cross near the geographic center of the City of Albuquerque. These two interstates provide another major barrier for bicycle and pedestrian travel. I-40 generally has good connections with 32 roadway crossings over the interstate. For bicyclists, there are 20 crossings that are either grade separated, have bicycle facilities or are local roads. I-25 by comparison is much harder to cross; there are 26 roadway crossings and only eight crossings that are suitable for bicyclists across the interstate.

Table 3-3: Crossing I-40 and I-25

Interstate Crossings	I-40	I-25
At-Grade Road with Bicycle Facility Crossing	7	7
Grade-Separated Non-Motorized Crossing	8	1
Local Road Crossing	5	0
Total Bicycle Interstate Crossings	**20**	**8**
AMAPA Interstate Roadway Crossings	**32**	**26**

Pedestrian and Bicycle Projects Analysis

MRMPO uses the Project Prioritization Process to evaluate pedestrian and bicycle projects for federal funding. In general, projects are either pedestrian or bicycle specific projects or roadway projects that include pedestrian or bicycle improvements. Pedestrian and bicycle projects are evaluated by using mode-specific criteria to ensure they are assessed appropriately and can be effectively compared. For instance, rather than award points based on traffic volumes and congestion conditions as is done with roadway projects, pedestrian and bicycle projects are instead scored based on their proximity to schools or activity centers. The Project Prioritization Process also encourages agencies in the region to include pedestrian and bicycle improvements in

their roadway projects. This is done by allocating points to roadway projects that include treatments to accommodate alternative modes. This incentive encourages jurisdictions in the region to improve mobility for all modes. The Pedestrian Composite Index is specifically incorporated in the Project Prioritization Process's evaluation of pedestrian projects' safety impacts. In the future, MRMPO will investigate ways in which to incentivize pedestrian and bicycle projects themselves to ensure more funding is directed to those projects. Doing so can enhance walking and biking in the region, improve pedestrian safety, promote more active transportation options and improve public health.

Long-Range Projects

Several of the most effective crossings are included in this plan only as "long-range" uncommitted projects, meaning that they are not included in the fiscally constrained plan and therefore are projects that might not be implemented by 2035. Long-range projects tend to be more physically complex, expensive and require coordination from more than one jurisdiction. Long-range projects are included in this MTP in the Long-Range Bicycle System map. This map is updated every two years by staff from member agencies and is available on the MRCOG website. It includes all projects that the various jurisdictions would like to complete when the system is fully built out with both linear facilities and grade-separated crossings. The Long-Range Bicycle System map also acts as an important tool to remind agencies and developers to take into consideration planned facilities as areas develop.

In order to help people better navigate the bicycle system, MRMPO has developed a long-distance facility network. The long-distance facility network consists of proposed and existing bikeways that will provide a means for bicyclists to travel across and between jurisdictions in the region. This network will also include way-finding signage to help those new to traveling longer distances navigate their route. The signage for the long-range system is expected to be similar to the types of signage used in San Francisco and Portland that informs and encourages people to travel to new destinations by bicycle (a map of existing bicycle facilities and the Draft Long-Range Bikeway System are available in Appendix D and online at www.mrcog-nm.gov).

Pedestrian Composite Index

The Pedestrian Composite Index (PCI) works by integrating elements that generate pedestrian travel with those that discourage pedestrian travel, with the ultimate goal of helping local agencies pinpoint locations where facility improvements and demand intersect. The PCI is not intended to serve as the sole means of selecting pedestrian projects, nor does the PCI solve the problem of encouraging more pedestrian projects to be brought forward and implemented in the region. Rather, it is intended to systematically and objectively highlight locations that would benefit most from improvements. The PCI can help justify the selection and promotion of high-scoring

pedestrian projects and help inform decision makers about the benefits of the selected projects.

The PCI uses two sets of data: pedestrian generators and pedestrian deterrents. Places with both high generator and deterrent scores are locations where pedestrian improvements would likely have the greatest impact. These are locations with higher numbers of pedestrians but also with characteristics that deter pedestrian travel. In other words, these locations have both the greatest room for improvement combined with the potential to affect the most people. The pedestrian generators are mostly determined by adjacent or nearby land uses and transit availability, however socioeconomic characteristics and the roadway/trail network are also considered (see Table 3-4).

Table 3-4: Pedestrian Generators

Pedestrian Generator	Spatial Units	Area in Region with Highest Data Element
Schools and high volume bus stops	Quarter mile and half mile distances from destinations	All schools and high volume bus stops assigned equal values
Parks and recreational facilities, cultural centers, community centers, libraries, and all bus stops	Quarter mile distances from destinations	All destinations assigned equal values
Restaurants, coffee shops, grocery, entertainment and retail (retail includes clothing, jewelry, novelty) per square mile	Per data analysis sub zone	Uptown, Downtown and Cottonwood Mall areas
Number of true intersections per square mile (true intersections do not lead to dead-ends or cul-de-sacs)	Per data analysis sub zone	Area that includes Downtown Albuquerque
Percent of population 16 years and older that walk or take transit as means of transportation to work	Census 2000 tract	Area around UNM Main Campus
Percent of households with no motor vehicle ownership	Census 2000 tract	Area around UNM Main Campus

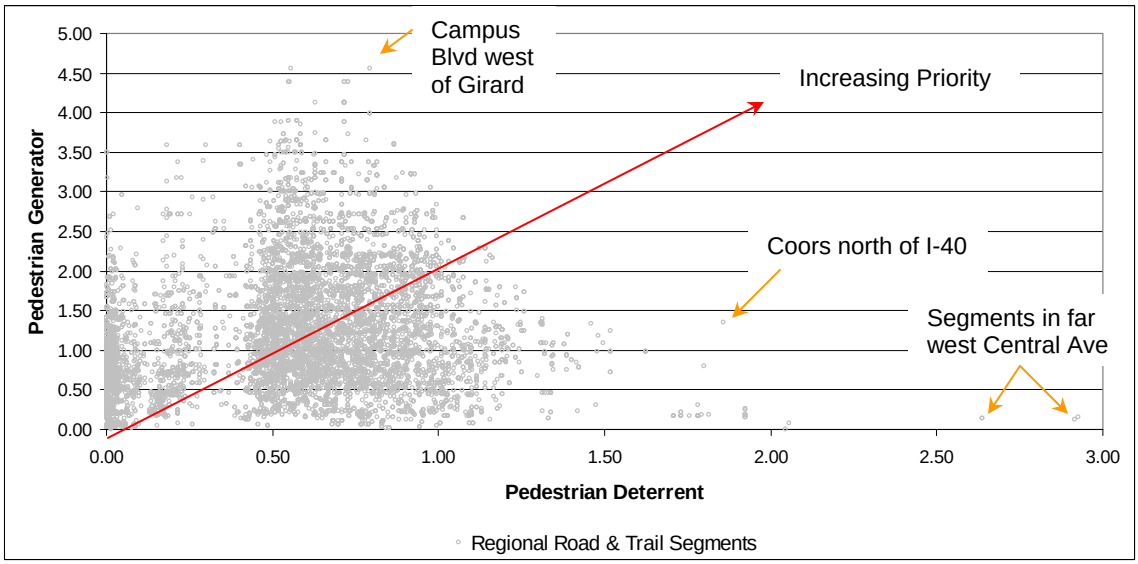
Pedestrian deterrents are determined according to levels of automobile traffic and rates of pedestrian crashes with automobiles because high traffic roadways and dangerous conditions are characteristics likely to discourage walking. All deterrent data is related to automobile traffic because there is no deterrent data for trails or roadways not yet built. Pedestrian generator data can be collected on these facilities, but without deterrent data there is no composite score.

Table 3-5: Pedestrian Deterrents

Pedestrian Deterrent	Spatial Units	Area in Region with Highest Data Element
Pedestrian crash rate (pedestrian crashes/pedestrian counts by data analysis sub zone)	Per data analysis sub zone	Area that includes the Bernalillo County Detention Center
Average weekday daily traffic	Roadway segment	Paseo del Norte east of Rio Grande Blvd
Observed off-peak speeds	Roadway segment	NM 47 in the South Valley

The results from the PCI are shown in the graph below. Each point represents a roadway or trail segment in the region. Only roadways that have a functional class of collector or above are considered since these roadways are eligible for federal funding. Multi-purpose trails are included, but interstates are not represented because it is illegal to walk on them.

Figure 3-2: Regional Roadways Mapped by Pedestrian Deterrents and Generators

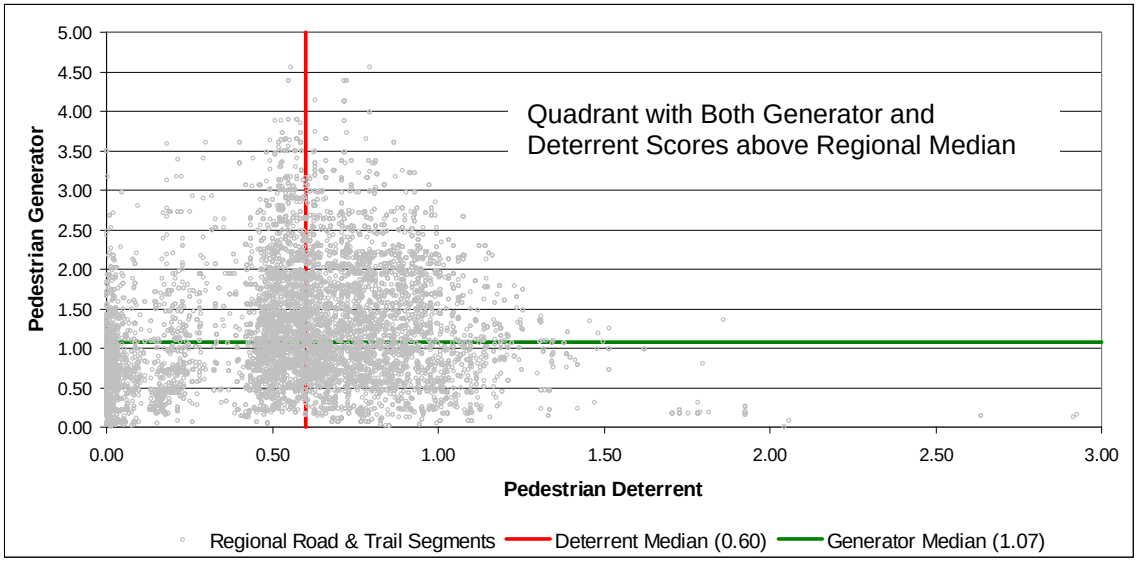


The intense cluster of points between 0.00 and 0.12 for pedestrian deterrents represent multi-purpose trails and some outlying roadways in the AMPA. The second, less intense cluster, between 0.12 and 0.30 for pedestrian deterrents, is a mix of roadways mostly in communities outside of the Albuquerque area. Most facilities have a pedestrian deterrent score of 0.50 or higher.

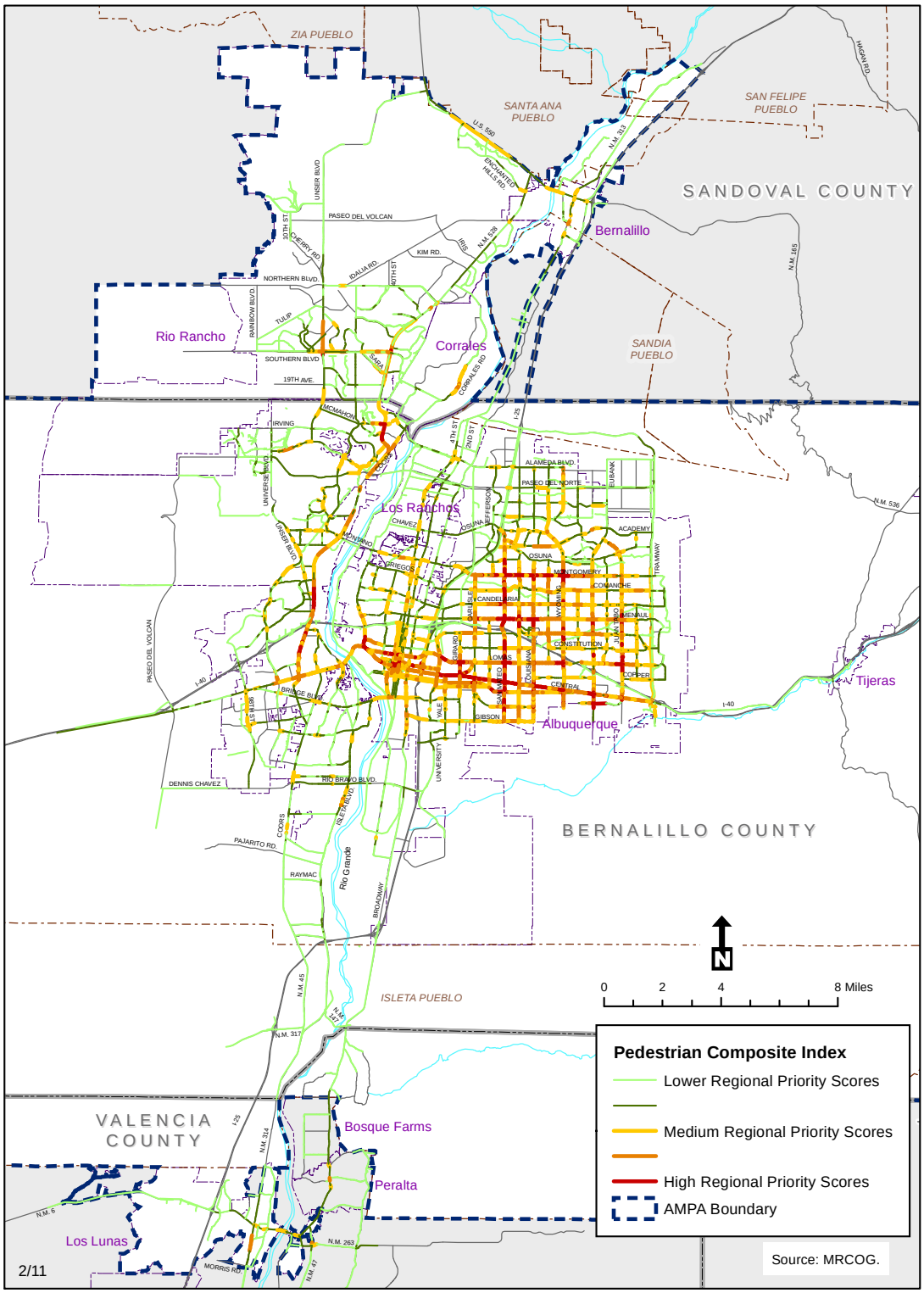
Project areas that have both a high generator score and a high deterrent score indicate a roadway segment that needs improvement to make it more conducive to pedestrian travel. In general, a high deterrent score is one that is above the regional median of 0.60 and a high generator score is above the regional median of 1.07. These medians are

based on roadway and trail segments in the region. The following figure shows these two statistics in relation to regional data.

Figure 3-3: Regional Roadways Mapped with Median Deterrent and Generator Scores



Map 3-3: Pedestrian Composite Index Map



The PCI scores for projects in the MTP are found by first gathering all the roadway segments in the scope of the project. Next, the deterrent and generator scores for these roadway segments are averaged. These averages are weighted by the lengths of the roadway segments, therefore the longer the segment, the more influence it has on the project's average score. The composite score is then created by multiplying the average generator score with the average deterrent score.

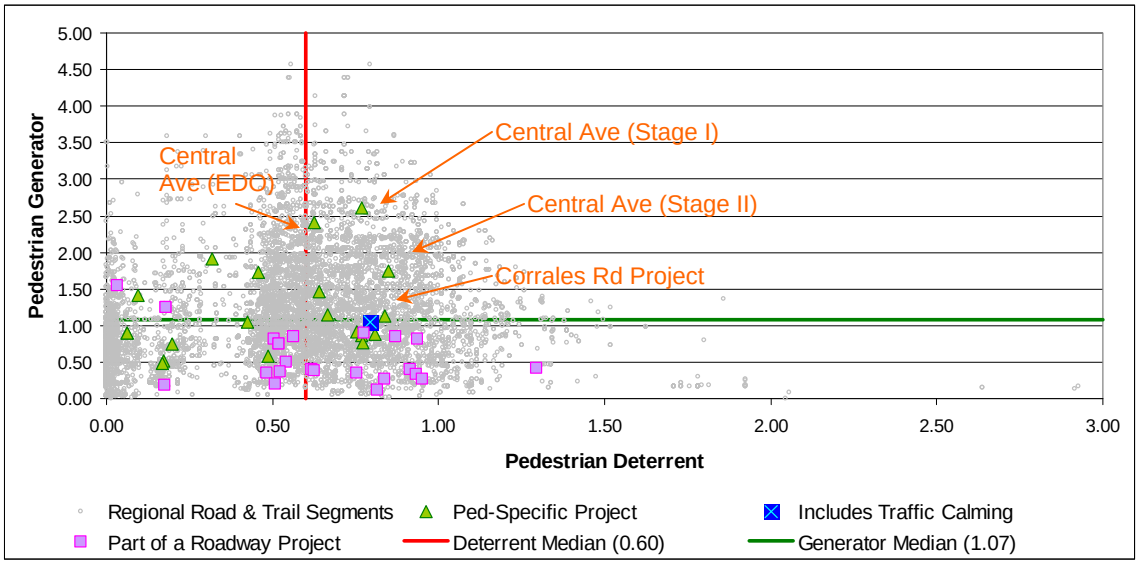
The following table shows four highest ranking MTP pedestrian projects along existing roadways ordered by their Pedestrian Composite Index score. The higher the PCI score the greater the need for pedestrian improvements. A complete table ranking pedestrian projects and roadway projects that include pedestrian improvements in the MTP can be found in Appendix D.

Table 3-6: Pedestrian Composite Index Score of Four Highest Ranking Projects

Project Title	Average Pedestrian Deterrent Score	Average Pedestrian Generator Score	Pedestrian Composite Index: Average Generator * Average Deterrent
Central Ave (East Central) Streetscape - Stage I	0.768	2.605	**2.000**
Central Ave (EDO) Streetscape	0.625	2.415	**1.509**
Central Ave (East Central) Streetscape - Stage II	0.850	1.752	**1.490**
Corrales Rd Bike & Ped Pathway	0.839	1.130	**0.948**

The following figure shows the project averages of MTP pedestrian-related projects with scores for the roadway segments in the AMPA.

Figure 3-4: MTP Pedestrian Projects



There are 60 pedestrian related projects in this MTP. Of these 60 projects, 46 are along existing roadways. These 46 projects are mapped above. Of these 46 projects, six fall into the high priority quadrant. In some cases, even though the project is not in the high priority quadrant, it has a very high deterrent or generator score that boosts the composite score. In other cases projects represent a worthwhile improvement for a smaller community, or a project with a large project area includes high priority segments and segments with lower priority which results in the overall project average not falling into the high priority quadrant. This analysis reveals there is still a need for more pedestrian projects in high priority areas.

Education and Encouragement

Access to Education and Encouragement

The importance of educating people about bicycle and pedestrian travel is often overlooked. Although the region has fairly good bicycle and pedestrian networks, people often need some encouragement or more information to start using these modes for transportation. The primary bicycle education program in the region is run by the City of Albuquerque's Parks and Recreation Department. This program serves children and has had an average of 8,500 participants per year over the last three years. Pedestrian safety is also included in the program. Bicycling classes for adults are expected to increase because of a new federally funded staff position for that purpose. Staff from the education program not only hold classes, but also give presentations at defensive driving classes (for employees) and drivers' education classes (for those learning to drive). Safety elements are integral to all of these classes.

The City of Albuquerque's Department of Municipal Development, ABQ Ride, and Rio Metro participate each year in Strive Not to Drive Week. Each day of this week is designed to get commuters to try alternative modes of transportation. Typically, Monday is Walk to Work Day, Tuesday is Carpool, Wednesday is Take the Train, Thursday is Take the Bus and Friday is Bike to Work Day. There are a host of other programs and projects to help people use walking and bicycling for transportation such as Safe Routes to School, bicycle maps and bicycle lockers. Programs that target trips to school and trips to work receive more priority points in the Project Prioritization Process.

Future Strategies

There are several future initiatives MRMPO has planned to enhance data collection and encourage agencies to include pedestrian and bicycle facilities in their roadway projects. The first is an effort to collect pedestrian and bicycle counts on trails. In the past MRMPO collected bicycle and pedestrian counts with intersection turning movement counts, but this program has been phased out and new methods to count bicyclists and pedestrians are being investigated. The second initiative is the development of a roadway design document that incorporates complete streets principals and context sensitive design solutions with right-of-way and access guidelines. This document will include a detailed look at roadways, transit corridors, park and ride facilities and regional

walkability. Lastly, MRMPO is interested in looking at the issue of school siting because of the impact the location of a school has on the ability for children to walk and bike to it. This initiative will most likely be addressed on a policy level.

III. Roadway Expansion and Performance

As discussed throughout the 2035 MTP, rapid growth in the region will place tremendous demands on the roadway network over the next 20 years, requiring a well-thought out response from MRMPO and all member agencies involved in the collaborative transportation planning and programming process.

To address these demands, locations where roadway expansion will be needed to serve areas of new growth and address existing and projected capacity deficiencies have been identified by MRMPO using its transportation demand model. Modeling scenarios were generated using future year roadway networks with future year socioeconomic data to assess how the roadway network will perform in 2035. The roadway scenarios modeled included *build* and *no build* scenarios. The *build* scenario includes projects programmed in the MTP and therefore represents how the network would perform with planned improvements, while the *no-build* scenario does not include any transportation projects programmed after 2015 and therefore shows what would happen to the network without any future year investments. Such model-based analysis allows for better understanding of future transportation needs and is an important consideration in determining which projects should be funded.

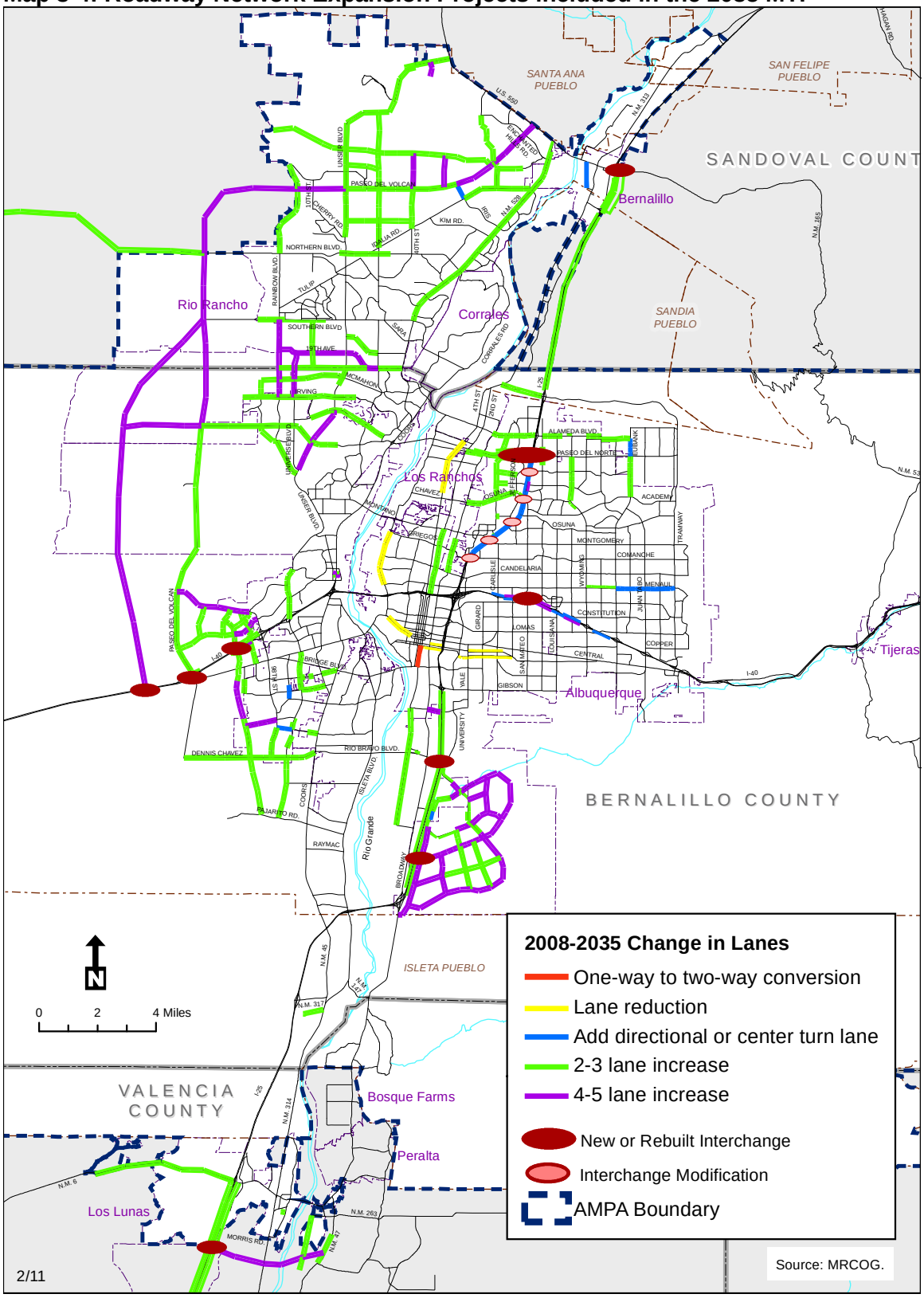
Network Expansion

An effective measure of the extent of the roadway network for any given analysis year, as well as growth between years, is the number of total “lane miles” for the region (see Table 3-7). This table also includes anticipated population growth. New roadway expansion projects including new facilities and the expansion of existing facilities programmed for the 2035 MTP are depicted in Map 3-3.

Table 3-7: Roadway Network Lane Miles in the MTP

Year	2008	2035	Percent Increase (2008 - 2035)
Network Lane Miles	3,409	4,009	18%
Population	766,738	1,329,208	74%

Map 3-4: Roadway Network Expansion Projects included in the 2035 MTP



When compared to the geographic distribution of socioeconomic growth projections, it is clear that roadway projects programmed in the 2035 MTP are generally planned for areas where growth is expected and network expansion needs are greatest. Notable projects include:

- A significant number of north/south capacity enhancement/widening and network connectivity projects including:
    - the completion of Unser Boulevard as a minimum 4-lane facility between Pajarito Road on the Southwest Mesa and US 550 on the Northwest
    - the completion of Paseo del Volcan between I-40 and US 550
    - the connection of 118th Street from Pajarito Road north to the growth area north of I-40
    - the widening of NM 528 in Rio Rancho between Southern Boulevard and US 550
- Major east/west facility expansion projects include:
    - a new river crossing and interchange connection to I-25 to serve the southern boundary of Los Lunas
    - the widening of NM 6 west of I-25
    - improvements to Dennis Chavez Boulevard, Paseo del Norte Boulevard, Irving Boulevard, McMahon Boulevard, 19th Avenue/Montezuma Road, Progress Boulevard, and portions of Idalia Road and Northern Boulevard in Rio Rancho
- Fourteen new or reconstructed freeway interchanges located throughout the AMPA
- Significant area roadway network expansion for:
    - Mesa del Sol in southeast Albuquerque
    - the lands of Westland/Atrisco Land Grant north of I-40, east of Atrisco Vista Boulevard
    - the Southwest and Northwest Mesa areas of incorporated and unincorporated Bernalillo County
    - the North I-25/Jefferson Corridor
    - the majority of the area of Rio Rancho north of Northern Boulevard and serving the new City Center

Build and No-build Scenarios

Roadway infrastructure needs for the 2035 horizon year were developed in response to congestion levels in previous years, future year scenarios, anticipated growth, and in response to available federal, state, and local funding mechanisms.

As mentioned above, the travel demand model is used to determine the adequacy of the set of planned projects in serving anticipated travel needs. This scenario is referred to as the *build* scenario since it includes the programmed roadway projects. Table 3-8 below summarizes this information using PM peak hour data for the 2008 base year and the 2035 *no-build* and *build* scenarios. Table 3-8 shows that although vehicle miles of travel

increase under the 2035 b*uild* conditions, vehicle hours traveled and vehicle hours of delay are significantly reduced. These improvements indicate that programmed investments for 2035 will be effective in terms of improving mobility over the *no build* conditions. Results for the 2015 and 2025 *build* and *no-build* scenarios, as well as for the 2035 *no-build* scenario, are presented in Appendix C.

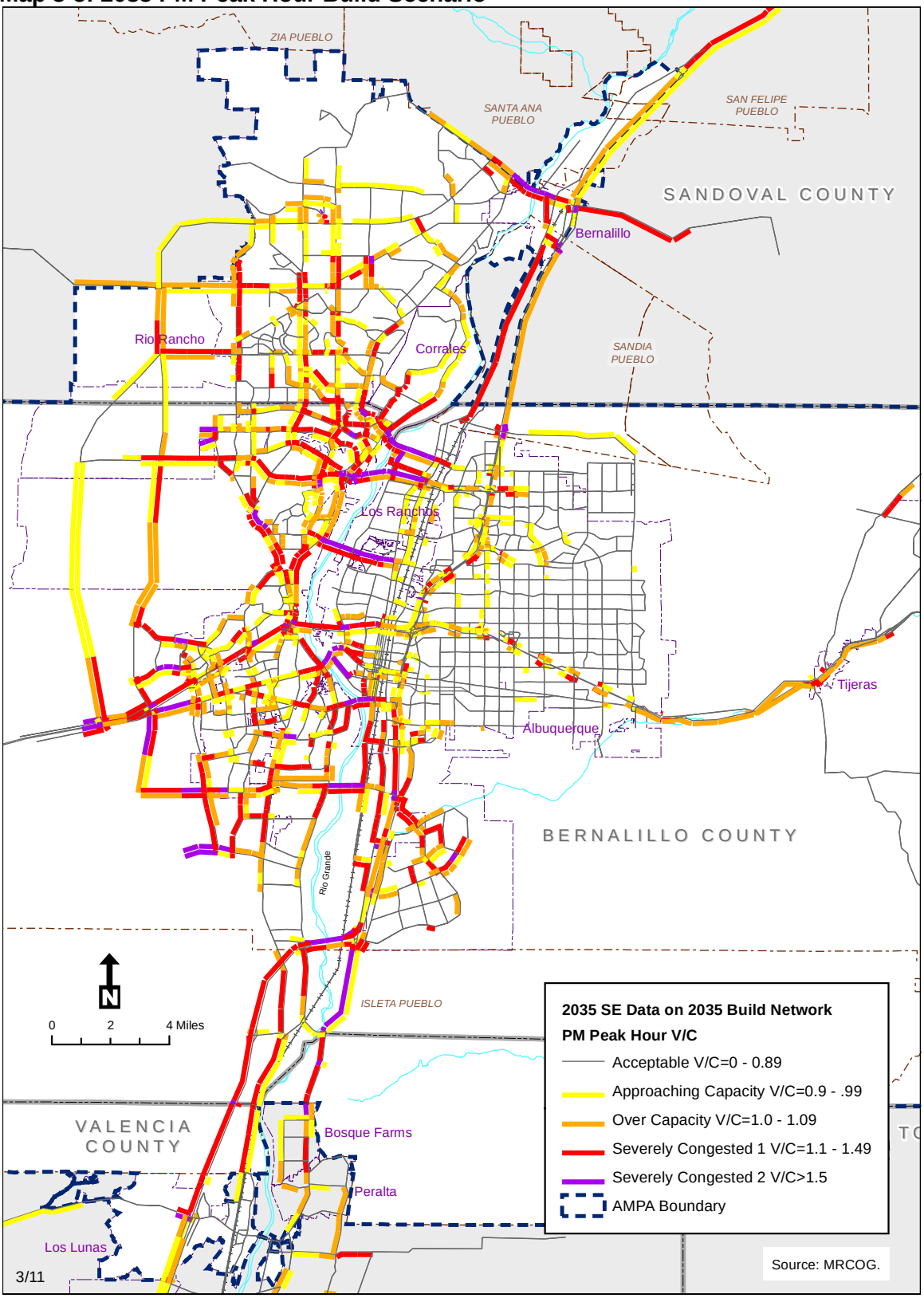
Table 3-8: Roadway Performance for 2035 Build and No-build Scenarios

PM Peak Hour	2008	2035 No-build	2035 Build	Percent Difference (between 2035 Build & No-build)
Vehicle Hours Traveled	42,232	396,485	205,570	-48%
Vehicle Miles Traveled	1,551,285	2,955,605	3,065,101	3.7%
Vehicle Hours of Delay	8,919	331,208	137,618	-58%

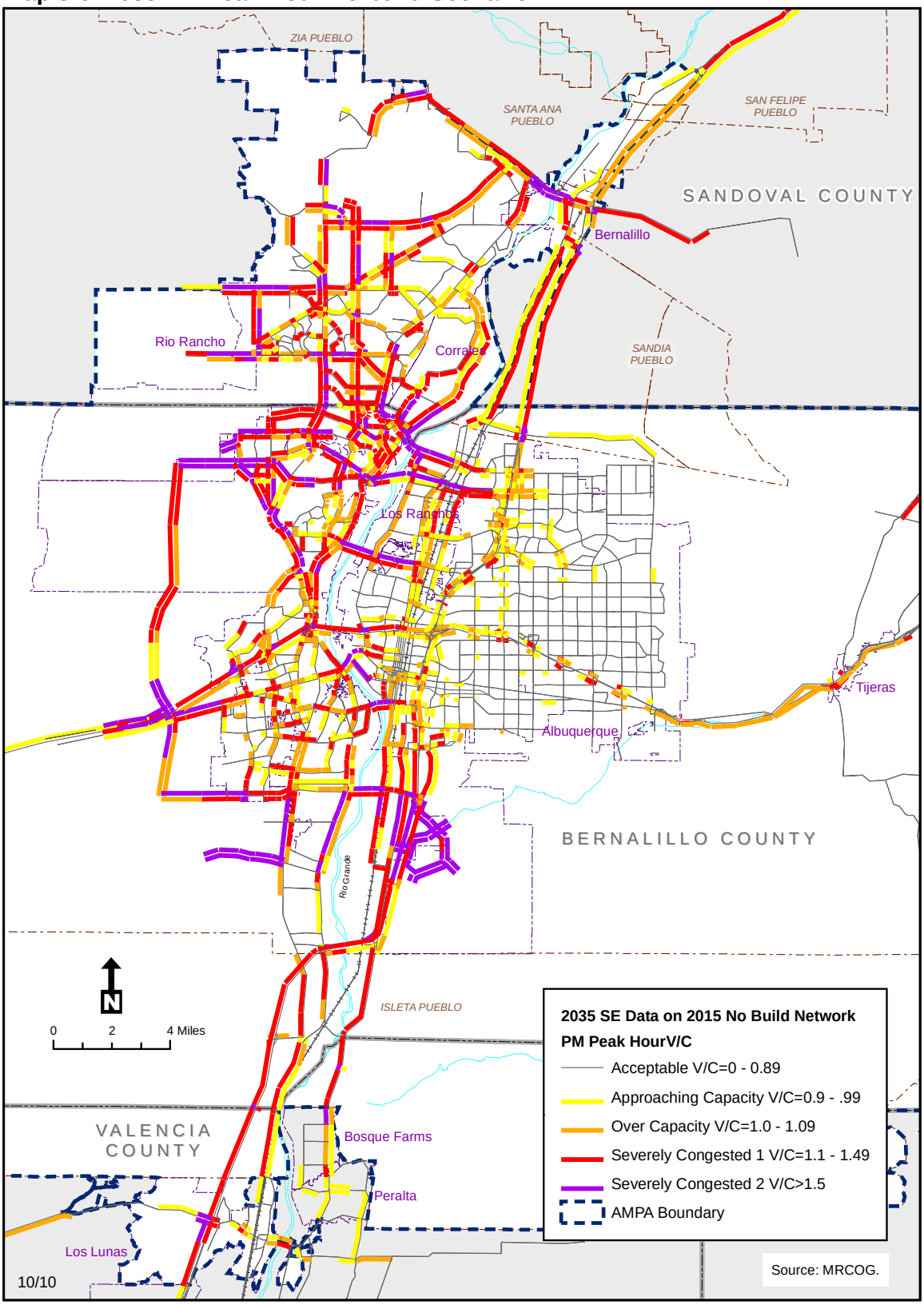
Roadway performance depicting congested conditions for the PM peak hour in the 2035 *build* scenario is shown in Map 3-4 and should be compared to the 2035 *no-build* map shown in Map 3-5.

Differences between the 2035 *build* scenario and the 2008 base year conditions are also remarkable and highlight the demands placed on the transportation system by anticipated regional growth. The out-pacing of population growth over the amount of transportation infrastructure supplied is most notable on the Westside and particularly on the river crossings. It is clear that in order for the region to successfully sustain itself under the MTP goals for promoting *quality of life*, *mobility*, and *economic activity and growth*, other travel options beyond roadway expansion must be fully explored and implemented.

Map 3-5: 2035 PM Peak Hour Build Scenario



Map 3-6: 2035 PM Peak Hour No-build Scenario



As the modeling results show, the roadway network will not fully be able to meet the region's mobility needs. In other words, despite programmed roadway projects, there will still be areas of congestion. Because growth will continue to outpace the amount of roadway expansion that can be funded and built under our financially constrained program, there is no practical way the region can build its way out of congestion. As a result, MRMPO will continue to address roadway congestion and mobility in the region through multiple means, including the following:

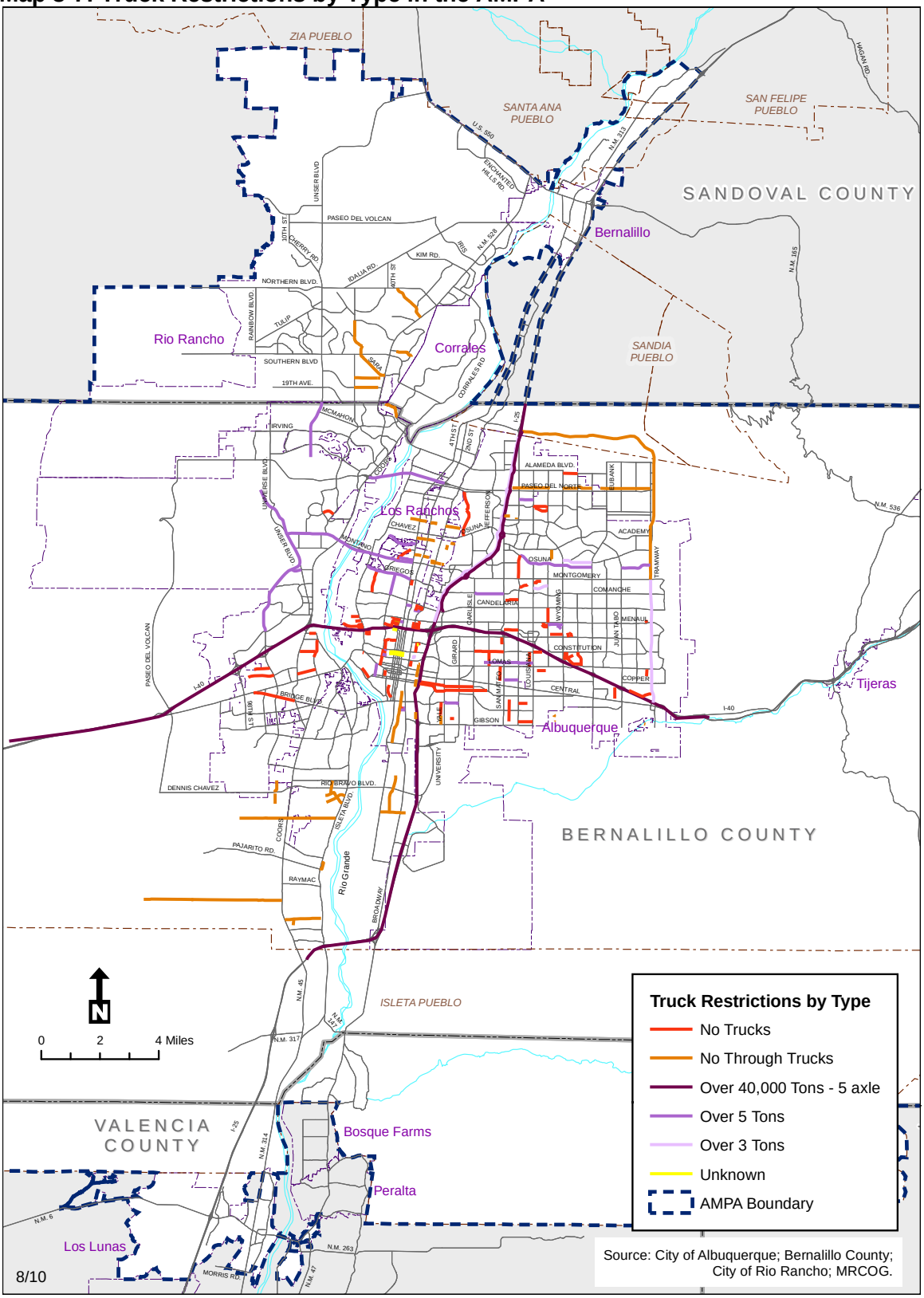
- operational improvements (Intelligent Transportation Systems and Transportation Systems Management)
- multimodal solutions
- travel demand management strategies
- working with member agencies on regional growth initiatives and land use solutions
- continual refinement of the Project Prioritization Process to ensure projects which most benefit the region are selected

Freight Priorities

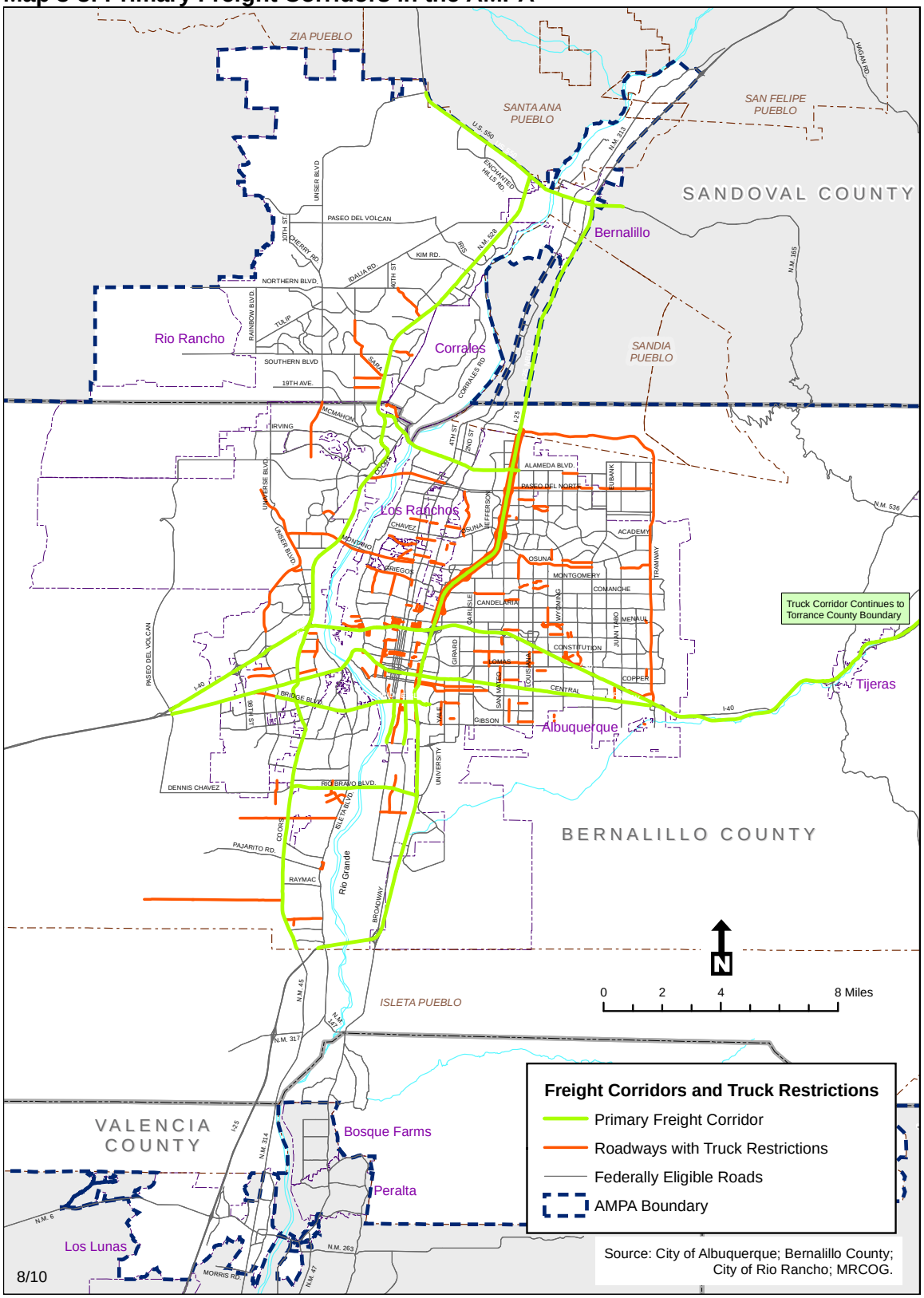
Freight has to move on the customer's timeline. However, shippers acutely feel the impacts of congestion on their own bottom line. In order to increase efficiency, shippers and their customers are increasingly relying on off-peak delivery of goods to businesses by allowing regular vendors after-hours access to businesses. This strategy has the beneficial side-effect of helping to keep trucks off the highway system during peak commute hours. In addition, shippers and haulers are responding to changing consumer demand; "bricks and mortar" stores are yielding sales to internet companies, making local deliveries an ever greater share of the regional economy. Unfortunately, downtown or "urban core" areas pose their own set of challenges. Inconsistent parking enforcement within delivery zones imposes additional cost on freight. Stakeholders in the freight community have suggested that lifting the ban on alley deliveries could help shippers both stay within the law and help keep the roadways clear. In addition, greater consistency in size and weight restrictions across the region would simplify and thereby lower the cost of large-item shipping (see Map 3-7 for restrictions). Modifying these restrictions to allow weekend and after-dark travel would help keep large trucks off the road during peak periods where their presence could disrupt traffic flows. The freight hauling community has suggested that were Paseo del Norte Boulevard to open to truck traffic, time-of-day restrictions on truck operations could be implemented to mitigate the impacts of truck traffic.

MRMPO has identified several facilities as "Primary Freight Corridors" for the purpose of project prioritization. These include Coors Boulevard from I-40 to its junction with NM 528; Alameda Boulevard from I-25 to NM 528; and several other relatively low-volume facilities that maintain connections between intermodal facilities and the interstate system. The Project Prioritization Process awards points to projects that are on these Primary Freight Corridors as shown in Map 3-7 to promote freight mobility.

Map 3-7: Truck Restrictions by Type in the AMPA



Map 3-8: Primary Freight Corridors in the AMPA



Freight Network TRAM Analysis

MRMPO planners modeled freight network performance in the Transportation Accessibility Model (TRAM) to assess the driving-time delays imposed on freight movements due to truck restrictions on several key arterials. The origins used in the analysis are I-25 and Candelaria Road (adjacent to several large commercial shippers and distribution centers) and the rail-truck intermodal facility at 2nd Street and Woodward Avenue in Albuquerque's South Valley. Destinations included the intersection of Paseo del Norte Boulevard and Coors Boulevard and the City Center of Rio Rancho. All runs were modeled during the PM peak hour. Travel times for trucks from I-25 and Candelaria to Paseo del Norte and Coors take 44 percent longer than a passenger vehicle in 2010. However, the time penalty for that route does not change appreciably in 2035. Routes originating at the intermodal facility at 2nd and Woodward are more greatly affected by the compounded burden of truck restrictions and congested river crossings than the I-25 and Candelaria routes. The percentage penalties to truck travel times are presently six percent to the intersection of Paseo del Norte and Coors Boulevard and 14 percent to Rio Rancho's City Center. By 2035, those penalties increase to 33 percent and 37 percent, respectively. The analysis shows that maintaining weight restriction policies on key corridors will combine with increasing congestion to cause goods to move much more slowly than passenger vehicle traffic.

B. Managing and Improving our Transportation System

IV. Transportation Systems Management and Operations

With population in the AMPA expected to surpass 1.3 million by 2035, significant travel demand will be placed on the transportation infrastructure. This presents an opportunity for the region to employ creative systems management and operational strategies that increase the efficiency of the existing transportation system and enhance options for travelers in the region. Systems management and operations strategies are important because they maximize the efficient use of existing transportation infrastructure which helps reduce the far more costly option of building new infrastructure. The AMPA has several such management strategies deployed in the region and planned in the MTP. These management strategies are described below.

Transportation Systems Management (TSM) is an approach to congestion mitigation intended to enhance the capacity of the transportation system through improved management and operation of existing facilities. TSM projects can be deployed as stand-alone projects, at a systemwide level or included as part of other capacity improvements and infrastructure projects to complement their effectiveness.

TSM strategies are relatively low-cost and have been demonstrated to be very effective in improving traffic operations. TSM strategies planned in the AMPA as part of the 2035 MTP include, but are not limited to:

- signal timing optimization
- controller/cabinet and signal head upgrades
- vehicle detectors repair/replacement
- turning lanes
- grade separations
- pavement striping
- lane assignment changes
- improved signage and lighting
- other geometric deficiency improvements

Successful implementation of systems management strategies requires close coordination among the member agencies with transportation system ownership responsibilities. MRMPO has a role in supporting the coordinated development and deployment of these systems by providing the forum for interagency project planning as well as through prioritized project programming through the coordinating efforts of the TIP, MTP and Congestion Management Process (the Congestion Management Process is described separately in this chapter).

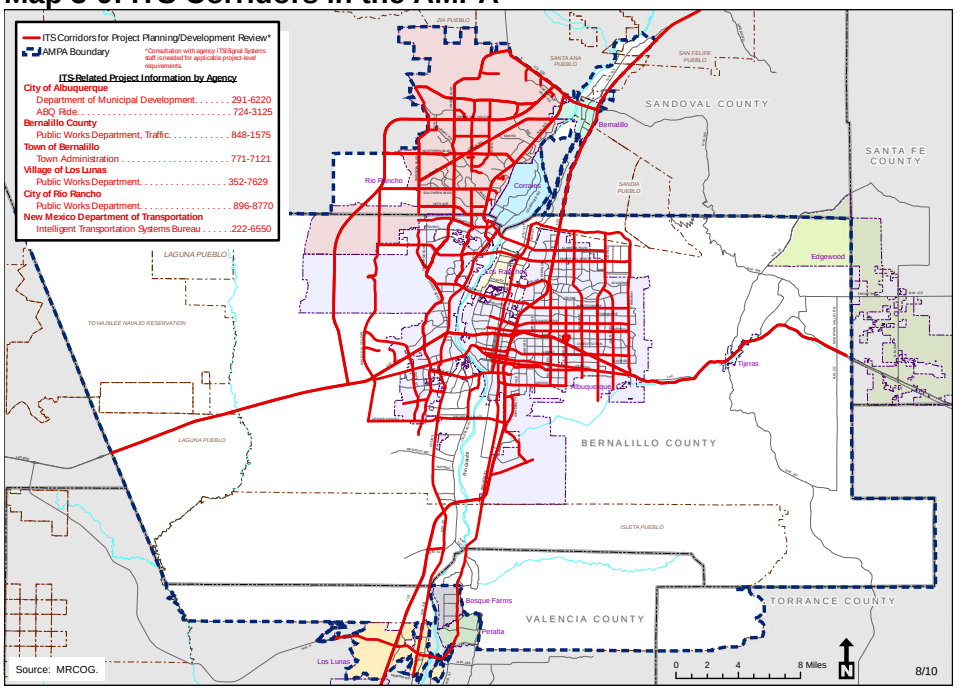
Intelligent Transportation Systems

TSM strategies or other congestion mitigation measures that involve data collection and communications using advanced electronics or centralized monitoring to manage the operations of the transportation system are referred to as Intelligent Transportation Systems (ITS).

The focus of ITS is to promote the coordination and integration of monitoring and communication devices to ensure their optimal effectiveness in managing congestion and improving traveler information. Individual ITS installations can improve local traffic operations greatly, however even greater benefits are realized when ITS strategies are combined to form an “intelligent infrastructure” where travel data is shared among those managing the operations of the system.

MRMPO coordinates and leads an ITS Subcommittee that includes all ITS stakeholders within the AMPA. The primary mission of the group is to promote and coordinate ITS deployment in the AMPA as well as to manage and maintain the AMPA Regional ITS Architecture explained later in this section. For the first time since its inception, the ITS Subcommittee played a larger role in the determination of ITS projects included in the MTP by sponsoring individual projects submitted for TIP and MTP project selection. The intent is for the group to work closely with the Congestion Management Process Committee to integrate ITS project planning in congested corridors with a stronger focus on multi-agency and multi-modal operations. It is envisioned that this new approach to project programming will reduce hurdles that may be caused by cross-jurisdictional coordination issues and will encourage a focus on “traffic operations” for projects in these larger congested corridors.

Map 3-9: ITS Corridors in the AMPA



The Intelligent Transportation Systems Corridors map (Map 3-9) is a product of the ITS Subcommittee and is updated periodically based on agency and regional ITS priorities. The map identifies specific ITS Corridors planned for deployment, making the information accessible to planning and development review communities within the AMPA. This approach has proven effective in broadening awareness of ITS planning in the AMPA and identifying implementation opportunities for a broader range of transportation projects. ITS strategies being planned in the AMPA as part of the 2035 MTP include:

- traffic management centers - individual agency and joint/shared use
- coordinated signal deployments for transit and general purpose lanes
- arterial management systems
- incident detection and response
- traveler information dissemination
- courtesy patrols
- incident management
- special event traffic management
- roadway access control
- managed lanes/HOV

Regional ITS Architecture

In order for an MPO to deploy ITS as part of its federally funded transportation program, a *Regional ITS Architecture* must be developed with local stakeholder input that is consistent with National ITS Architecture standards. This federal requirement ensures consistency and interoperability among all elements whether deployed locally or nationally and establishes the framework for ITS planning in the region. In 2008 the *AMPA Regional ITS Architecture* was updated to supersede the *ITS Implementation Plan* from 2004 and has refined the ITS project implementation process to be fully integrated with MRMPO's transportation planning process.

Periodic updates ensure that the *Architecture* remains current with regional and agency projects and priorities as well as with national standards. This "Maintenance Plan" is performed in-sync with the TIP two-year programming cycle with the ITS Subcommittee involved in the TIP/MTP project review process. All projects submitted for the TIP and MTP are reviewed to determine if they include ITS elements and are then mapped to the *Architecture* accordingly. This step provides an important integration between projects in the TIP and MTP and guidance set forth in the *AMPA Regional ITS Architecture*. The current version of this document is available on the MRCOG website.

ITS project implementation must also follow a Systems Engineering process in order to be "certified" by NMDOT and the Federal Highway Administration. To assist member governments in meeting this requirement, MRCOG along with the NMDOT ITS Bureau and Federal Highway Administration have developed online training resources available through the MRCOG and NMDOT websites.

Incident Management

National statistics have shown that as much as 60 percent of all traffic delays are related to traffic accidents and that for every minute an accident remains in a traffic lane, traffic is delayed up to an additional five minutes. In response to this issue, a Freeway Courtesy Patrol program was implemented in the AMPA. The Courtesy Patrol is tied in to area dispatch and 911. Roadway information is disseminated to NMDOT roadway dynamic message signs, providing on-scene support to first responders and to drivers.

The City of Albuquerque Police Department (APD) in coordination with the Mayor's office and the City of Albuquerque Department of Municipal Development (DMD) has developed a regional Incident Traffic Management Plan. Upon full deployment of NMDOT's centralized Traffic Management Center, it is anticipated that further integration of the AMPA's incident management procedures for all ITS Stakeholders will be realized.

Special Event Traffic Management

In addition to incident management activities, the importance of coordinated special event traffic management is recognized within the AMPA as being critical to ensuring that many of the special event activities held annually within the AMPA go as smoothly and safely as possible. Specific special event traffic management plans for events such as the International Balloon Fiesta, the New Mexico State Fair, large sporting events and concerts are being used to improve delivery of visitors and patrons to these events. Shuttle busses, reversible lanes, and parking management strategies are among the tools used for this purpose.

Systems Preservation

Another important consideration for the management of the transportation system involves the physical condition of existing roadways. Maintenance is important because roads in poor condition result in increased occurrences of congestion, delay and vehicle damage as well as increased fuel consumption and travel time.

Although roadway conditions in the AMPA appear to be better than conditions nationally—one-third of all roadways in America are in poor to mediocre condition and more than a quarter of all bridges are either structurally deficient or functionally obsolete according to the American Society of Civil Engineering's 2009 *Report Card on America's Infrastructure*—system preservation is nonetheless a high regional priority (comparable data for the state of New Mexico from the 2009 *Report Card* indicate that 22 percent of all major roads and 19 percent of all bridges in the state are in poor condition or are structurally deficient). Local agencies must work cooperatively to monitor the transportation network and find cost-effective strategies for maintaining the roadway system in a safe and serviceable condition. A summary of AMPA roadway mileage by agency and condition is shown in Table 3-9.

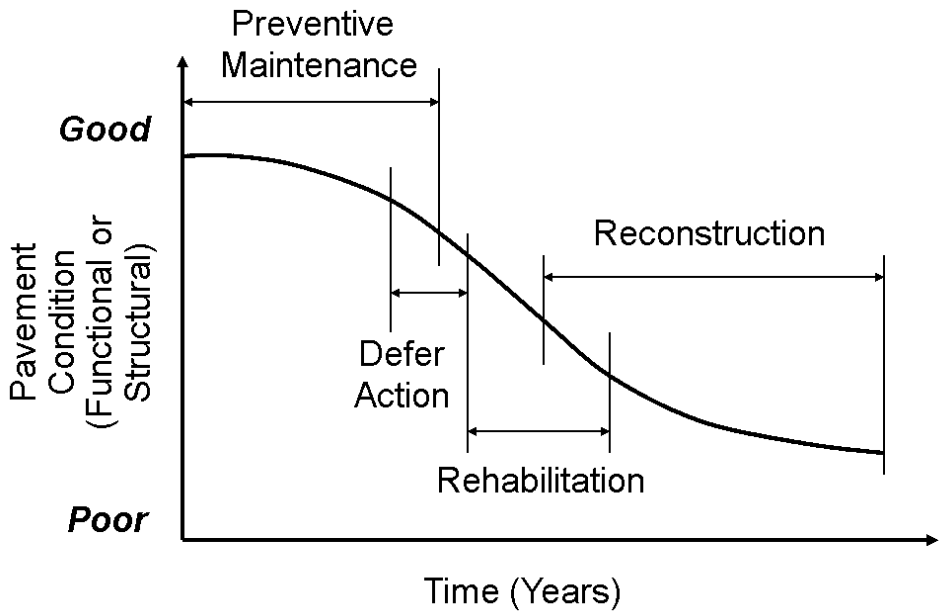
Table 3-9: Centerline Mileage Breakdown by Agency and Condition

Agency	Centerline Mileage Paved	% Fair and Above	Centerline Mileage Gravel or Dirt
Bernalillo County	540	100%*	185
City of Albuquerque	1983	71%	10
City of Rio Rancho	484	56%	517
NMDOT, District 3	141 Interstate/ 408 Non-Interstate	98%/ 94%	n/a

**Note that Bernalillo County ranks all of its roadways as "Fair" or "Good"*

A common approach undertaken by MRMPO member agencies with roadway infrastructure responsibilities has been the establishment of Pavement Management Systems. Pavement Management Systems have typically been established within agency public works departments to monitor conditions and ensure that timely maintenance treatments can be deployed to avoid roadway deterioration. A pavement life-cycle curve is shown in Figure 3-5. The graphic shows how maintenance enhances the performance as well as lifespan of roads. Indeed, deferring roadway maintenance is usually more expensive in the long run while resurfacing is always cheaper than reconstructing a road. Because of the importance of preservation, the 2035 MTP encourages maintaining the existing transportation system in a state of good repair. For its part, the Project Prioritization Process awards points to projects that incorporate preservation.

Figure 3-5: Typical Pavement Preservation Curve with Relationship between Timely Maintenance and Optimal Roadway Preservation



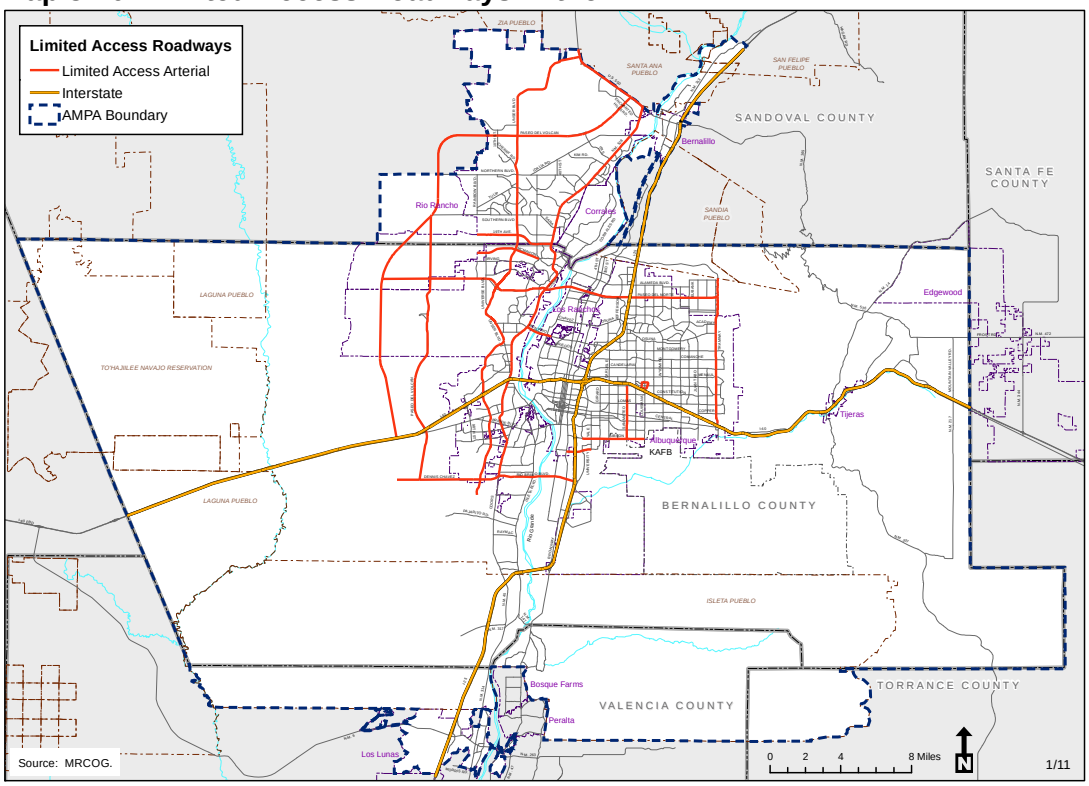
Source: Southern Slurry and Micro Surfacing Inc.

Access Management

Roadway access management is another system management and operations strategy that can benefit the performance of the overall transportation system. MRMPO member agencies have designated certain facilities as “limited access roadways” with prescribed access limitations to increase roadway throughput and control the number and frequency of driveways (see Map 3-9). Recommendations within this framework are to be consistent with National Highway System (NHS) and supported by local and state agency street standards and policies.

In order for any limited access designation to be effective, it is critical that local land use and access decisions be coordinated. Therefore, it is intended that each member agency with jurisdiction over these roadways should coordinate access to lands along the facility. It is important to strike a balance between the needs associated with the adjacent land uses and the overall performance of the roadway. Corridor studies and other planning efforts are the typical mechanisms to identify and plan for these corridors. MRMPO has established roadway access policies as a guide to be used by local agencies within their planning and development review activities to promote coordination and ensure consistency with this policy.

Map 3-10: Limited Access Roadways in the AMPA

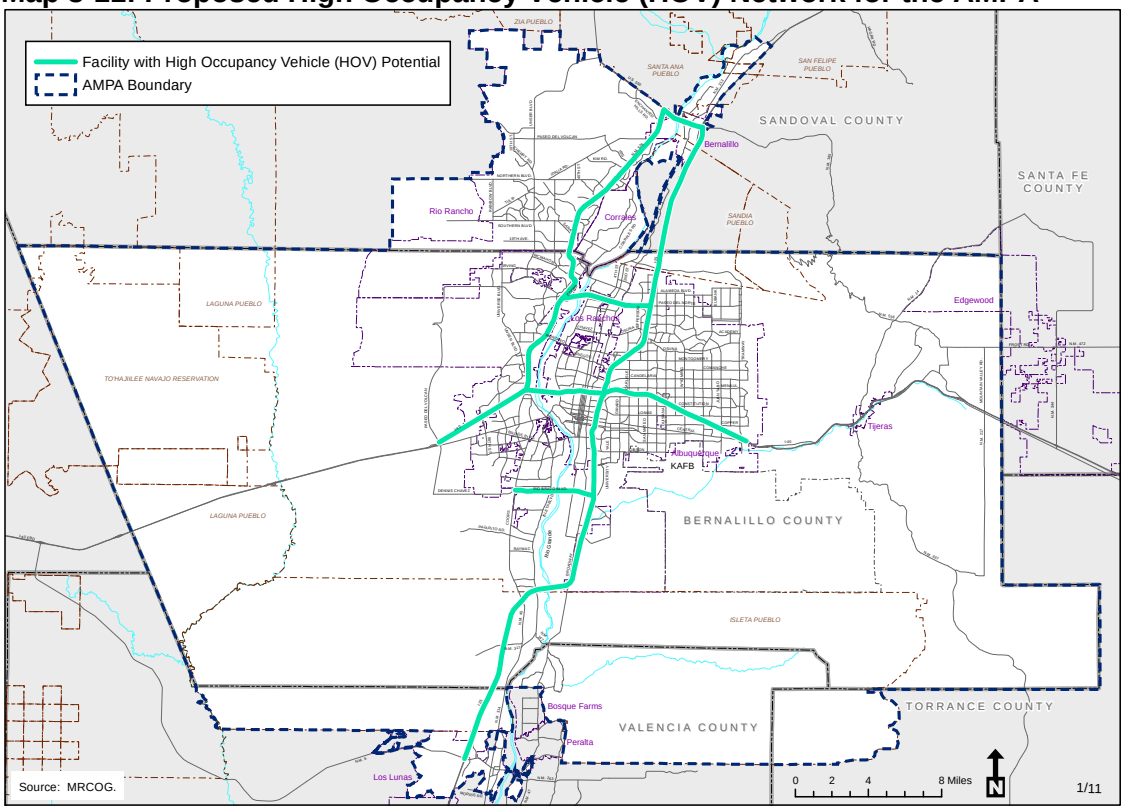


Source: MRCOG.

Managed lanes and facilities dedicated to high occupancy vehicle (HOV) or truck traffic can be effective in mitigating congestion, increasing traffic safety and encouraging increased carpooling and transit use. Facilities with high potential for HOV implementation have been identified through a previous study conducted by MRMPO and NMDOT (see Map 3-10). The managed lanes/HOV element of the AMPA roadway system will work hand in hand with the ITS Implementation Plan to allow for simultaneous ITS deployments. As part of its near-term ITS deployment strategy, the ITS Subcommittee has identified elements to be implemented along river crossings. Current deployments include NMDOT's fiber interconnect across US 550 at the northern boundary of the AMPA.

MRMPO has a role in supporting the development and deployment of all the systems described in this section by providing a forum for interagency project planning and development as well as through prioritized project programming through coordination efforts for the TIP and MTP. MRMPO will continue in this capacity and seek new ways in which systems management and operations can be further utilized to make the most of the region's transportation infrastructure.

Map 3-11: Proposed High Occupancy Vehicle (HOV) Network for the AMPA



V. Transportation Demand Management

Transportation Demand Management (TDM) is a comprehensive approach to handle travel demand issues for all modes and address regional congestion issues. For the AMPA, the key themes and measures revolve around expanding transit and alternative modes of transportation, connecting land use and transportation planning, and maximizing the efficiency of the existing infrastructure by reducing overall traffic volumes and peak-hour demand in particular. As a result, the performance targets to monitor the progress of the plan (Chapter 5) include, among others, reducing vehicle miles traveled (VMT) and increasing transit mode share. Achieving these performance targets can result in reduced emissions and the more efficient movement of people and goods.

More specifically, TDM is the use of strategies to reduce the number of miles people travel. Strategies include: ridesharing, public transportation, programs that promote bicycling and walking, and value pricing (i.e., High Occupancy Toll (HOT) lanes, regular toll lanes, and congestion pricing). These strategies can be implemented at a neighborhood, municipal, county or regional level. Indeed, many TDM programs are administered by MPOs. TDM efforts can also be undertaken by the private sector through providing employees with incentives to carpool or commute via transit or bicycle, or by offering flexible schedules that can reduce the number of peak-hour commuters. Considering the recent population growth in the region and the continuation of this trend despite difficult economic times, TDM offers a diverse set of solutions to manage expected growth and the resulting transportation challenges.

When utilizing TDM, these issues are examined through the lens of why, when, where and how people travel for each mode. The ‘why’ addresses a person’s purpose for travel, the ‘when’ addresses the time of travel (particularly comparing peak and off-peak hours), and the ‘where’ addresses whether the travel destination is local or regional. The ‘how’ addresses the mode and combination of modes that people use to reach their destination.

Reducing Vehicle Miles Travelled

A key measurement in transportation demand management is the overall use of the region’s roadways, as measured in vehicle miles traveled (VMT). Changes in vehicle miles traveled are therefore an indicator of a region’s success or failure in reducing vehicle travel. Several factors contribute to vehicle miles traveled including the distances people drive (influenced by factors such as land use and the jobs-housing balance) and how often people drive (influenced by available transportation choices, among other things). Single-occupancy vehicles are the greatest source of congestion and responsible for the majority (62 percent) of transportation-related greenhouse gas emissions. Reducing passenger trips and VMT also has dramatic air quality benefits.

Transit and Alternative Modes

To make serious strides in the reduction of vehicle miles traveled, all efforts to provide more transportation options should be pursued. The more viable transportation choices that are offered the more likely people will choose alternatives to driving alone. The challenge lies in creating and ensuring such options exist. TDM strategies for increasing bicycle and pedestrian trips, ridesharing, and telecommuting work to reduce VMT by providing more transportation options and alternatives to driving. However, the greatest reductions in VMT are derived from increased transit usage.

Trips changed from single-occupancy vehicle to transit not only reduce VMT, but carbon dioxide (CO_2) emissions per passenger mile for transit produce on average less than half of private auto CO_2 emissions, even when nearly empty buses are factored into the equation. Transit has other beneficial effects. A 2008 study conducted by ICF International estimated the annual national CO_2 reductions from transit to be about 37.2 million metric tons (mmt)[2] of CO_2 (after factoring in the energy used by transit). This calculation included the CO_2 reduction from land use effects spurred by the existence of transit as well as the congestion mitigation effects of transit. In other words, transit provides benefits other than just replacing vehicle trips; it also encourages positive land use changes and mitigates congestion. Transit can further minimize its CO_2 impact by using efficient vehicles, alternative fuels and green building materials. For example, a park and ride station presents a perfect opportunity for installing solar panels over the parking lot, providing a renewable energy source for the station and doubling as a shade structure for vehicles.

Land Use Strategies

Another critical piece in TDM strategies and reducing vehicle miles traveled is land use. Land use affects not only the demand for transportation but also the length of trips and modes used. Low density, single-use land use patterns often make single-occupancy vehicle travel the preferred mode since distances between uses and activities are greater and transit cannot be easily supported in these areas, and distances are often too far to make walking and bicycling practical. By contrast, more compact land uses result in shorter distances between destinations, allow for more walkable neighborhoods, and make transit usage more viable due to higher densities. A recent study by the Urban Land Institute, *Moving Cooler*, found that compact development reduces driving approximately 20 to 40 percent. Benefits of compact land use extend beyond greenhouse gas emissions and would likely include the following: reduced energy use, preserved open spaces, improved water quality and availability, improved public health, increased physical activity, lower infrastructure costs, more housing choice and increased feasibility of public transit.

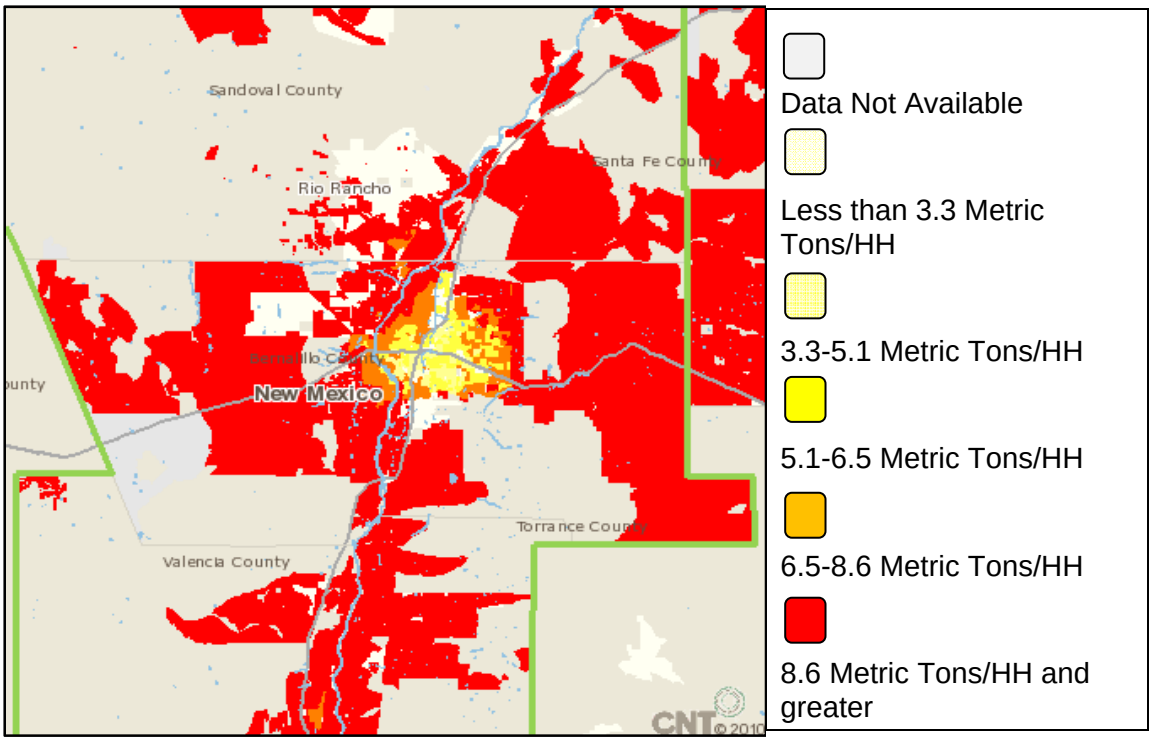
Land use strategies also have the benefits of reducing the number of trips taken per household; by creating higher-density mixed use neighborhoods, a person can

[2] One mmt of CO2e (carbon dioxide equivalents) is equivalent to about 2.4 million barrels of oil.

accomplish more tasks without having to rely on a car. Land use strategies can also help the region develop in a more compact form and address the existing jobs-housing imbalance, both of which have contributed to greater geographic distances between uses and thus greater vehicle miles traveled rates. In a compact development land use scenario for the AMPA region, MRMPO found that increasing density not only reduces VMT, but can reduce delay and improve overall speeds as well (see Appendix A).

The impact of distance and segregated land uses on household vehicle use and CO_2 emissions is shown in Figure 3-7. Areas shown in red have annual average household CO_2 emissions of 8.6 metric tons or more and are found mostly in outlying communities. Only two neighborhoods, directly south and west of the University of New Mexico, have annual average household CO_2 emissions of less than 3.3 metric tons.

Figure 3-6: Average Annual Household CO2 Emissions for the Region



Source: Center for Neighborhood Technology, CO_2 per Household from Auto Use

Addressing VMT is increasingly important for limiting vehicle emissions because, historically, vehicle use has far outpaced improvements in vehicle technology and energy efficiency, which can also reduce emissions. Although reducing VMT is something local governments have some control over, there are still significant challenges in doing so. Integrated land use and transportation planning is an effective and essential component for accomplishing the region's goals, yet true integration remains elusive for this region. Achieving this connection could have tremendous benefits in terms of addressing regional mobility issues and mitigating harmful environmental impacts, as well as improving economic activity.

Travel Demand Management Study

The Mid-Region Council of Governments is currently conducting a travel demand management study to explore transportation needs for the University of New Mexico (UNM) and Central New Mexico Community College (CNM). These institutions collectively form one of the largest activity centers in the region and are the source of tens of thousands of daily trips. The study will identify opportunities for transportation efficiency, reducing traffic congestion, reducing traffic-related environmental impacts, addressing parking issues and lowering travel costs.

Some key findings from the study include:

- almost half the people living in neighborhoods near UNM/ CNM are either employed or attend school there
- more than 75 percent of UNM employees and students who live within two miles of campus report their primary mode of transportation to campus is walking, biking, or ABQRide (bus)
- while many employees and students live close to the institutions, almost two-thirds live more than six-miles away

VI. Reducing Emissions

No new air quality violations of federal standards for any of the six criteria pollutants regulated by the U.S. Environmental Protection Agency (EPA) have occurred in the AMPA region since the region was found in violation of carbon monoxide (CO) standards in the early 1990s. However, ozone levels in the region are monitored closely in response to the more stringent standards proposed by the EPA. The region is likely to be designated as a nonattainment area for ozone pollutants which will create many changes ahead for federally-funded transportation projects in the region. In the meantime, MRMPO is taking steps to limit concentrations of pollutant emissions, including consultation with regional agencies regarding the air quality impacts of transportation projects and the consideration of air quality as a performance measure in its newly implemented Project Prioritization Process.

Congestion Mitigation and Air Quality

The Congestion Mitigation and Air Quality (CMAQ) program provides funds to regions for transportation projects designed to improve air quality and reduce traffic congestion in areas that do not meet National Ambient Air Quality Standards (NAAQS) or in maintenance areas that have had previous air quality problems. CMAQ was created by transportation legislation in the early 1990s and has been reauthorized over the years to assist in transportation investments that reduce emissions. Because Bernalillo County is still classified as a limited maintenance area for carbon Monoxide (CO), the County is eligible to receive CMAQ funding for air quality and congestion enhancements. CMAQ projects reduce motor vehicle emissions in three ways:

1. By encouraging changes in travel behavior that reduce vehicle miles traveled (VMT), such as shifts to ridesharing, transit, bicycling, or walking;
2. By improving traffic flow, which reduces vehicle idling and stop-and–start driving conditions that are associated with higher levels of emissions; and
3. By implementing technologies to reduce the rate of emissions, such as conversion to alternative fuels for buses, or retrofits of diesel vehicles.

Projects being implemented must serve as alternatives to added roadway capacity and must mitigate air quality and congestion. Recently implemented projects in the region include new park and ride facilities, bicycle and pedestrian paths/programs, improved public transit and service expansion and traffic signalization improvements.

MRMPO must calculate the impact of transportation projects that receive CMAQ funds. CMAQ analysis involves both “on-model” and “off-model” methodologies using the MRMPO Travel Demand Model, the Environmental Protection Agency’s Mobile 6.2 Air Quality Model, and MRMPO designed “off-model” calculations. The MRMPO travel demand model and Mobile 6.2 Air Quality model are essential tools for collecting variables for the MRMPO “off-model” calculations such as emission factors for various pollutants, vehicle miles traveled (VMT), and average trip lengths. The off-model analysis then evaluates annual emissions (kg/year) and cost effectiveness (annual value

of reduction/kg) for three different types of pollutants: carbon monoxide (CO), nitrogen oxides (NOx), and volatile organic compounds (VOCs).

Fuel Economy

Improvements in the fuel economy of vehicles over the last decade have helped reduce emissions although this has been offset by increases in VMT, caused in part by a growing population and also by increases in trip length. Since every gallon of gasoline consumed results in about 19 pounds of CO_2 emissions, improvements in vehicle fuel efficiency and fuel type are also critical for addressing air quality and climate change. Unfortunately, encouraging fuel efficiency and clean fuel types present a significant challenge because MRMPO has no authority over the development or regulation of either. MRMPO could, however, help coordinate at the regional-level the development of alternative fueling infrastructure which could include plug-in stations for electric cars and alternative fuel pumping stations.[3] MRMPO could also work with member agencies and other partners to institute region-wide incentives for alternative fuel vehicles such as permission for those vehicles to drive in HOV lanes and receive priority or free parking.

Idling Trucks and Air Quality

To address idling emissions, some rest areas for trucks in Albuquerque have been supplied with flexible conduit to provide climate control, AC power, internet, and cable television signals to drivers resting between shifts. These systems—known as Truck Stop Electrification or TSE—allow long-haul operators to shut off their trucks altogether, rather than having them idle overnight or during breaks. As a result, air-quality and noise impacts to adjacent communities and the region are greatly mitigated. As the MRMPO area faces the likelihood of exceeding the National Ambient Air Quality Standard for ozone, increased deployment of these systems may be one strategy in reducing emissions.[4]

Project Prioritization Process

The Project Prioritization Process (PPP) also serves as an important tool for evaluating and incentivizing projects that address air quality. The air quality criterion measures the effects individual transportation projects have on the AMPA through the same rigorous model analysis used for CMAQ evaluation. Emissions factors with and without the projects as well as cost-benefit analysis are calculated. The PPP will help improve air quality by prioritizing projects that result in reduced VMT and reduced emissions. Presently, MRMPO and the AMPA region are not required to perform project-level air quality analysis. The inclusion of an air quality criterion as a performance measure under

[3] Although electric cars would reduce consumption of petroleum-based fuels, they would still require electricity as a power source, and in this state electricity is primarily produced by greenhouse gas-emitting coal-fired power plants. As a result, although mobile emissions from the vehicles themselves would decrease, emissions caused off-site from the electric energy production might increase, merely moving the problem from one source to another.

[4] Freight and Air Quality Handbook, Federal Highway Administration, 2010

the MTP's *quality of life* goal recognizes its importance and contribution to regional quality of life. The air quality criterion is therefore a proactive measure that prepares MRMPO for future ozone non-attainment in the AMPA region.

Conformity Determination

Each MTP must demonstrate conformity with the current State Implementation Plan (SIP). Conformity indicates the plan will not jeopardize air quality standards, that it was developed using proper analysis and interagency consultation, and demonstrates fiscal constraint. As Bernalillo County is considered a limited maintenance area for carbon monoxide (CO), the region must demonstrate that current CO levels are below NAAQS requirements. Current CO levels are in fact well below the allowable thresholds and MRMPO is not required to conduct any further emissions analysis. The current design value for CO, based on the latest quality-assured data available at this time, is 2.6 ppm for the 8-hour CO NAAQS and 3.6 ppm for the 1-hour CO NAAQS[5]. These values represent 29 percent and 10 percent of the relevant standards, respectively. Therefore, the design value for Albuquerque/Bernalillo County is well below the NAAQS threshold and in accordance with this criterion of the conformity rule. The Environmental Protection Agency has confirmed the design values and all indications are that Bernalillo County is not likely to exceed the CO thresholds in the near future.

Upon the likely scenario that the National Ambient Air Quality Standards (NAAQS) for ozone are changed by the U.S. Environmental Protection Agency, MRMPO along with partner air quality agencies will need to develop a revised State Implementation Plan (SIP) to achieve needed levels of emissions reductions. Different pollution control measures will require approval at several levels of government. The New Mexico Department of Transportation, MPOs, air quality agencies, transit agencies, and local governing bodies cannot individually create or implement control measures. Therefore, the State Implementation Plan revision will be considered a collaborative process to achieve desired air quality standards. The MTP must demonstrate consistency with motor vehicle emissions budgets or with appropriate emissions tests identified in the SIP. This is done by means of a conformity determination, which is the affirmative written documentation declaring conformity with the applicable implementation plan (SIP). An affirmative conformity determination means that the transportation plan conforms to the SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving prompt attainment of such standards.

To help with this process, MRMPO is taking steps to implement MOVES 2010 to model air quality in the region. MOVES (Motor Vehicle Emissions Simulator) is the Environmental Protection Agency's latest model software for estimating emissions. The migration to MOVES 2010 from Mobile 6.2 will be a vast improvement towards

[5] These design values have been confirmed by the U.S. Environmental Protection Agency, as stated in a letter addressed to the FHWA Division Administrator and dated February 15, 2011.

estimating regional inventories of criteria pollutants, greenhouse gas emissions, and some mobile source air toxins from highway vehicles.

VII. Congestion Management Process

Whether it is the result of population increases, overburdened infrastructure, or land-use patterns that increase reliance on vehicles for transportation needs, roadway congestion is increasingly a fact of life in American cities. The result is diminished air quality, losses in economic activity, and increased travel times for individuals. These realities create a series of transportation challenges which need to be addressed in order to ensure that individuals, goods, and services move efficiently throughout a metropolitan region.

Federal regulations require that all Transportation Management Areas (TMAs), such as MRMPO, incorporate an "objectives-driven performance-based" Congestion Management Process (CMP) into the regional transportation planning process. In practice a CMP is intended to assess the performance of the regional transportation system, identify the sources and extent of congestion, recommend appropriate strategies to manage congestion and improve mobility, and consider the benefits of proposed transportation projects and travel demand management (TDM) programs.

Figure 3-7: CMP Requirements

- Identify congested locations
- Determine the causes of congestion
- Develop and propose mitigation strategies
- Evaluate te impact of congestion management strategies on recently implemented projects

A wide range of congestion management strategies may be called upon to address both recurring and non-recurring congestion. For example, an Operations and Management approach incorporates multi-modal travel options, technology, and other components to maximize system performance and efficiency while ensuring safety and reliable conditions for travelers. Other strategies include properly located capacity expansion projects, incident response, access management, and travel reduction programs. The ongoing challenge for the CMP is to integrate those strategies into the regional planning process and encourage local governments to implement congestion management techniques in appropriate locations.

Data Collection

The backbone of the CMP is a series of transportation data that MRMPO collects which are designed to measure recurring and non-recurring congestion. The three principal data elements for the CMP include: 1) **volume-to-capacity (V/C)** ratio, which compares the observed traffic volume on a roadway segment to the intended roadway capacity; 2) **speed differential**, which compares the difference between observed speeds and posted speed limits; and 3) **crash rates** at individual intersections compared to the regional average. The data is collected for the 30 corridors and two Interstate facilities that comprise the CMP congested network. The initial list of corridors was developed by the CMP Committee based on qualitative and quantitative criteria. Data is collected on a recurring basis and results are listed in a rankings table that indicates the facilities that

experience the highest overall levels of congestion. It should be noted that the corridor network may be subject to change as conditions change in the AMPA area.

Congestion Analysis

The detailed analysis conducted on the congested network sheds light on the nature of congestion for the segments of each corridor. For instance, if congestion is the result of volume then appropriate strategies may include reduced roadway demand through transit, alternate modes, or other travel demand management techniques. By contrast, if congestion is the result of slow speeds, then roadway inefficiencies may be addressed through operations improvements such as signal timing and coordination, or access management which can reduce the number of vehicles or turning movements on a roadway.

Figure 3-8: CMP Efforts Undertaken

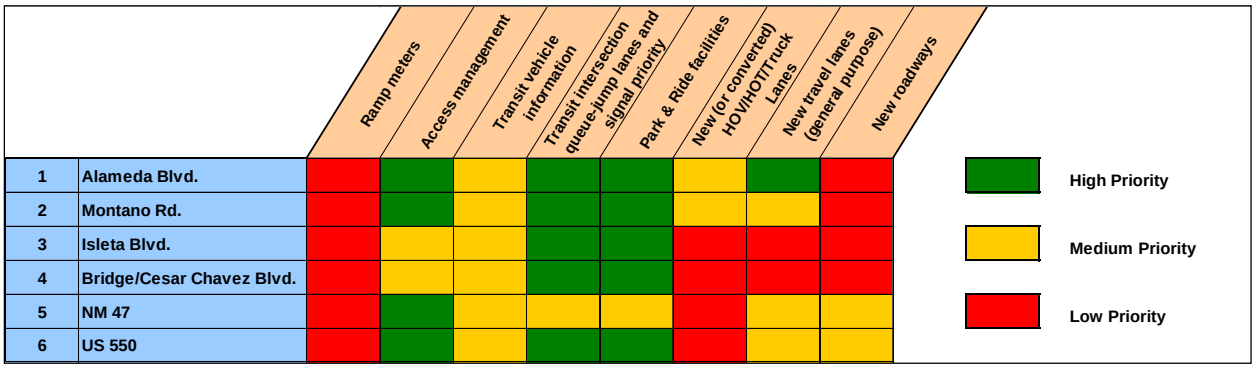
- Refinement of data collection and congestion scoring methodologies
- Development of CMP products
- Efforts to disseminate strategies and principles of congestion management
- Project Prioritization Process

Congestion data also indicates the time of day (AM peak, PM peak, or off-peak hours) when congestion is most severe for a particular corridor or segment and reveals whether the congestion is the result of a bottleneck or a prolonged stretch of congested traffic conditions.

The congestion data serves as a baseline for understanding conditions by location and highlighting the corridors that merit attention. Much of the analysis regarding appropriate strategies and means of quantifying congestion occur with the direct input of the CMP Committee. The CMP Committee is comprised of technical experts from member agencies in the region who meet on a monthly basis to discuss regional approaches and strategies and coordinate efforts between agencies.

An important part of the CMP is to disseminate the congestion data and related analysis to local government agencies. These actions take place through meetings and coordination with the CMP Committee, presentations to local government agencies, and CMP products such as newsletters, documents including a *CMP Atlas* cataloguing conditions by corridor and a *CMP Strategies Toolkit*, and the recently developed CMP Strategies Matrix (all available on the MRCOG website). The CMP Strategies Matrix is a tool for member agencies to identify the most appropriate and highest priority congestion management strategies for each of the corridors in the CMP congested network. Although the strategies matrix was developed for use with the Project Prioritization Process (see Chapter 1), it can be used as a reference by local governments in the development of all transportation projects.

Figure 3-9: Sample from CMP Strategies Matrix



Efforts have been made to integrate the CMP into the metropolitan transportation planning process. This has occurred through activities conducted by the CMP Committee and through the ongoing efforts of MRMPO staff. Results of these coordinated efforts include the establishment of regional transportation priorities and priority locations. In addition, the goals of the CMP—preserve and improve *quality of life*, *mobility of people and goods*, and *support economic activity and growth*—were adopted as goals of the MTP.

The most important means of integration is the Project Prioritization Process (PPP), which features criteria and a structure that are closely tied to the MTP and incorporates data collected through the CMP. Described more fully in Chapter 1, the Project Prioritization Process is an objective, data-driven tool for evaluating transportation projects proposed for inclusion in the short-range TIP and identifying the projects which best address the needs of the region.

Future Directions & Needs

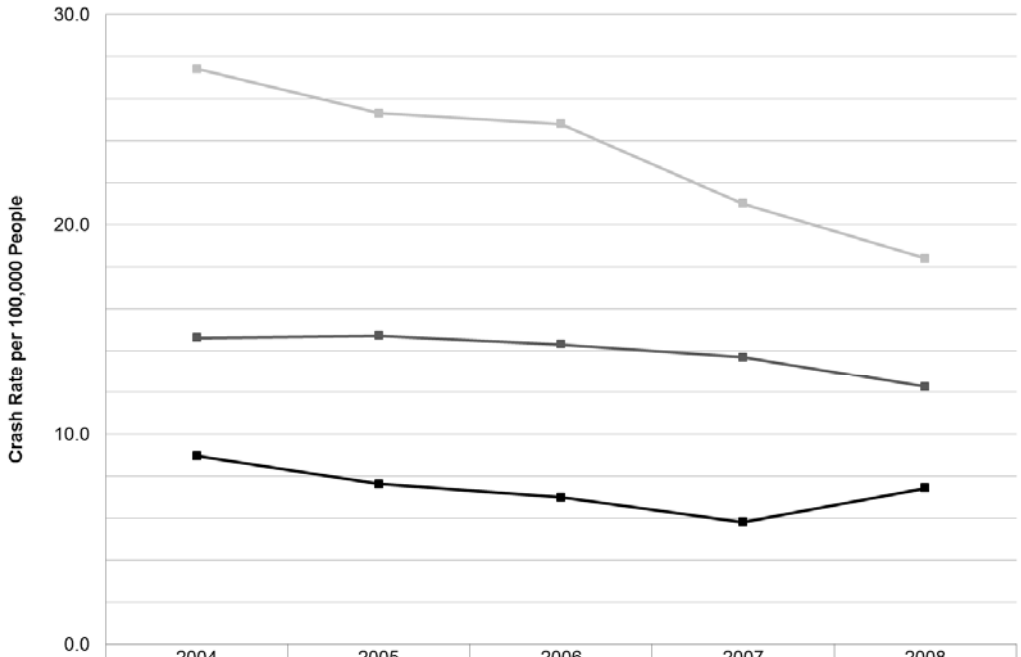
The CMP is an essential effort to improve transportation decision-making in the Albuquerque region. As an ongoing process, there are a number of CMP-related activities which must be continued. Future activities include the continual need to refine data collection methods and develop performance measures that can be incorporated into the Project Prioritization Process and lead to sound transportation decisions. A critical task of the CMP that is not yet fulfilled is meaningful analysis of the impacts of previously implemented transportation projects. Recent travel time data collection efforts enable MRMPO to establish baseline travel conditions for the extent of the congested network. Collecting additional data over time allows for evaluation of the impact of recent projects. By assessing before and after conditions, MRMPO can identify the strategies that work best in different circumstances, the magnitude of the benefit and, ultimately, determine the best practices for the region.

VIII. Safety Strategies

Traffic crashes are the leading cause of unintentional death in the United States and many are preventable. For this reason, as well as others, transportation safety is a critical public health and safety issue and continues to be highlighted as a key planning emphasis area in federal transportation legislation. Planning for safe transportation facilities is a top priority for the nation's Department of Transportation and is an integral part of the AMPA *quality of life* goal. The primary focus of safety planning includes the analysis of crash data to identify effective strategies for reducing crashes. However, safety planning may also include education and enforcement strategies, the use of Intelligent Transportation Systems (ITS) technology, and exploring how the design of our roadways affects safety for users of all ages and abilities.

A safety element is one of eight factors that the latest federal transportation law, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU)" requires MPOs to include in their MTPs. Federal legislation also requires that the planning process include consideration of the safety of the transportation system for motorized and non-motorized users. Even though in recent years there have been traffic-related safety improvements and the overall rate of crashes has declined in the AMPA, the rate for fatality crashes per 100,000 in population increased by 28 percent between 2007 and 2008 (See Figure 3-10). Clearly there is still much work to be done in reducing crash related fatalities in the region.

Figure 3-10: AMPA, New Mexico and US Fatality Crash Rates, 2004-2008



	2004	2005	2006	2007	2008
AMPA	9.0	7.6	7.0	5.8	7.4
NM	27.4	25.3	24.8	21.0	18.4
US	14.6	14.7	14.3	13.7	12.3

Safety challenges in the AMPA include, but are not limited to, addressing major intersections and corridors that have high crash rates, alcohol-involved crashes, crashes where young drivers are involved, and the high occurrence of pedestrian crashes. In order to address these issues, particularly those at intersections, driver behavior and roadway design need to be investigated. In addition, assessing safety for the most vulnerable users, such as pedestrians and bicyclists, will provide a safer transportation system for all modes of traffic and increase mobility options for all users.

Management and Planning

When addressing transportation safety issues in the AMPA, there are federal, state, and regional plans and guidance to consider. The Federal Highway Administration (FHWA) has identified “4Es” for making our roads safer. The “4Es” include: engineering, education, enforcement, and emergency medical services. The FHWA also further stresses the importance of developing data-driven systemic approaches and technologies to analyze safety issues and to consider safety needs early-on and throughout the project development process.

Improving safety throughout the region not only saves lives and reduces injuries, but also helps mitigate both the direct and indirect costs of crashes including property damage, emergency services, medical bills and loss of time at work. In 2000, the National Highway Traffic Safety Administration (NHTSA) estimated that traffic crashes in the United States accounted for approximately $230 billion a year in economic losses. Improving safety can also help reduce congestion; according to a study done by AAA in 2008, 40 to 50 percent of all nonrecurring congestion may be associated with traffic incidents.

MRMPO provides an annual report on crash data called *General Crash Data Report and Trends*. In this report, crash data received from the UNM Division of Government Research (UNM-DGR) is analyzed to assess other trends that may be unique to the AMPA. This annual report categorizes crashes by severity, cause, crash type, age, alcohol involvement, pedestrian, bicycle, and truck involvement and provides intersection crash rates. For example, similar to national trends, the number one reported cause for crashes is “driver inattention,” followed by “following too close” and “failure to yield”. This report helps MRMPO and its regional partners identify problem areas and trends that need further investigation.

The creation of a safety management plan and/or task force could support the development of a prioritization process for spending Highway Safety Improvement Program (HSIP) funds and other safety-related funding sources in the AMPA. A safety task force could also review best practices and respond to new federal and state legislation and funding that is brought forward through the Sustainable Communities partnership among the U.S. Department of Transportation, Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA).

NMDOT Comprehensive Transportation Safety Plan (CTSP)

One of the necessary strategies to reduce traffic crashes is to develop a safety plan. In fact, the State of New Mexico is required by federal regulations to develop a State Highway Safety Plan (SHSP). In 2006 the New Mexico Department of Transportation (NMDOT) in cooperation with the MPOs, transit operators, and other local and private sector safety stakeholders around the state completed the *Comprehensive Transportation Safety Plan* (CTSP). The plan presented 12 emphasis areas and 94 strategies.

The ultimate goal of the 2006 CTSP was to achieve a 20 percent reduction in the state fatality rate by 2010, or a total rate of 1.67 fatalities per 100 million vehicle miles traveled. New Mexico exceeded this goal by achieving a fatality rate of 1.38 per 100 million vehicle miles traveled in 2008. As a result, in 2009 a new and more ambitious safety goal was set for the updated CTSP. The new goal is to achieve a 25 percent reduction in traffic fatalities from 413 in 2007 to no more than 310 fatalities by 2010. For the years following 2010, it will be the goal of the CTSP to continue to reduce fatalities proportional to the American Association of Highway Transportation Officials (AASHTO) goal of an annual reduction of 1,000 fatalities nationally, or 2.3 percent per year. This type of reduction would result in 218 fewer fatalities by the year 2025 in New Mexico. The efforts to address safety as a result of the CTSP have made a significant contribution to achieving this goal. Unfortunately, even though considerable progress has been made in reducing the number of deaths and serious injuries on the roads in New Mexico, this rate continues to remain above the national average fatality rate of 1.25 per 100 million vehicle miles traveled.

Safety Management

Long-range safety planning processes can be addressed through the development of a regional safety management plan or task force that is tailored to the AMPA and consistent with the CTSP. An AMPA safety plan would continue to support crash data collection and analysis, but would also encourage collaboration among stakeholders such as law enforcement agencies, health institutions and engineering departments. This process could help establish and strengthen working relationships, identify safety programs and activities that already exist in the region and ascertain if data improvements are needed. Comprehensive safety planning requires educational and behavioral programs and development of a multimodal, well-connected transportation network. Other important components are training on effective safety measures, involvement in regional incident management plans and education for decision makers and the public. Safety measures should include human factors research, safe street design and the use of technology to effectively reduce crashes.

Project Prioritization Process

MRMPO has integrated safety in its short-range planning process. For example, safety is identified as a key factor in the Project Prioritization Process used for evaluating and selecting TIP projects for funding and implementation. Projects that are proposed at intersections with high crash rates receive points in the Project Prioritization Process (the more points a project receives, the more likely it is to be selected for funding and implementation). Projects are awarded additional points if the project's primary purpose is to address safety or if a project implements safety strategies. Currently, there are projects in the TIP that specifically address safety issues. These projects address a variety of safety needs, such as street lighting, crosswalk markings, roundabouts, median barriers, railroad crossing improvements, and signal timing.

Connectivity and Design

Improving the connectivity and design of the transportation system, across and between modes, through intersections and railroad crossings, is integral to maintaining a safe transportation system. Walking can be an important part of someone's route to work or school. Yet, as road traffic increases so do the hazards confronting pedestrians. Identifying and alleviating these hazards reduces pedestrian injuries and fatalities and encourages more people to walk, ultimately improving the health and well-being of the region's communities. Bicycling also provides an active, environmentally friendly mode of travel. However, as with motor vehicle travel, without proper education on the rules of the road for both bicycles and drivers there is an increased risk of death and injury. Expanding education and safety training and programs for safe cycling skills is integral. Equestrian trails and multi-use path safety measures also need to be evaluated further.

Improving the safety and convenience of park and ride lots, pedestrian facilities and bicycle infrastructure are important for improving access to transit stops. As a large portion of the population continues to age, the need for safer access to transit will increase. Creating safe and comfortable alternatives to driving is important for all individuals; it is particularly important for senior citizens who may continue to drive despite the safety risks, or stop driving out of fear, resulting in quality of life consequences. Specific steps taken by transit providers and operators in the region to address safety include the development of an emergency preparedness plan, raising awareness about highway and rail at-grade crossings, and tracking incidents. Implementing ITS technologies on transit vehicles can also help mitigate some of these issues.

Using Intelligent Transportation Systems (ITS) technology to increase knowledge of roadway conditions for the users (such as real time traffic delay information) has proven to reduce travel delays and increase safety on the roadway. In addition, managed lanes and facilities dedicated to high occupancy vehicles or truck traffic can be effective in mitigating congestion, increasing traffic safety, and encouraging increased carpooling and transit use. Additional ITS applications that can help improve safety include incident

detection and response for emergency and safety crews, dissemination of real-time incident information to motorists and minimizing construction zone periods.

Street Design

Promoting the development of street patterns and designs that support pedestrian and bicycle comfort, convenience, and safety—particularly for travel to public transit stops, schools, colleges, universities, jobs, stores, parks and other destinations—is key to a safe roadway system. Implementing complete streets as part of local policy and design standards can help support the development of multi-modal streets that are safe for all users. Designing streets with a safety first approach by emphasizing appropriate speeds, sight distances, and curve radii is essential. Complete streets can be required with new infrastructure and also when redevelopment or pavement resurfacing projects occur. An effective way to introduce design changes is to begin with pilot projects that include "before and after" studies that focus on safety improvements, such as installing roundabouts instead of signalized intersections, or implementing road diets (the removal of traffic lanes often for the purpose of improving safety and adding other amenities such as wider sidewalks, bike lanes and/or center turning lanes). Conducting "before and after" studies will show the benefits of these types of road design changes to the transportation system. Roundabouts significantly reduce conflict points for all modes of travel and road diets provide a cost-effective way to reduce crashes, particularly on corridors with significant turning movements. According to the summary report, *Evaluation for Lane Reduction Road Diet Measures on Crashes* (2010) by the Federal Highway Association, a road diet application can provide a 29 percent reduction in crashes.

Safe Routes to School

Providing sufficient funding to establish and maintain strong and effective Safe Routes to School programs and to make safety improvements to pedestrian and bicycle infrastructure in the vicinity of schools, colleges, and universities is a priority for the region. The Safe Routes to School program is a federal-aid program created by SAFETEA-LU in response to the sudden decrease in children walking and bicycling to school. In 1969, about half of all students walked or bicycled to school. Today, fewer than 15 percent of all school trips are made by walking or bicycling, one-quarter are made on a school bus, and over half of all children arrive at school in private automobiles. This trend away from walking and biking to school has been costly both in terms of dollars and impacts to our children's safety and health (more than one-third of school-aged kids are overweight or

Picture 3-1: Walking to School

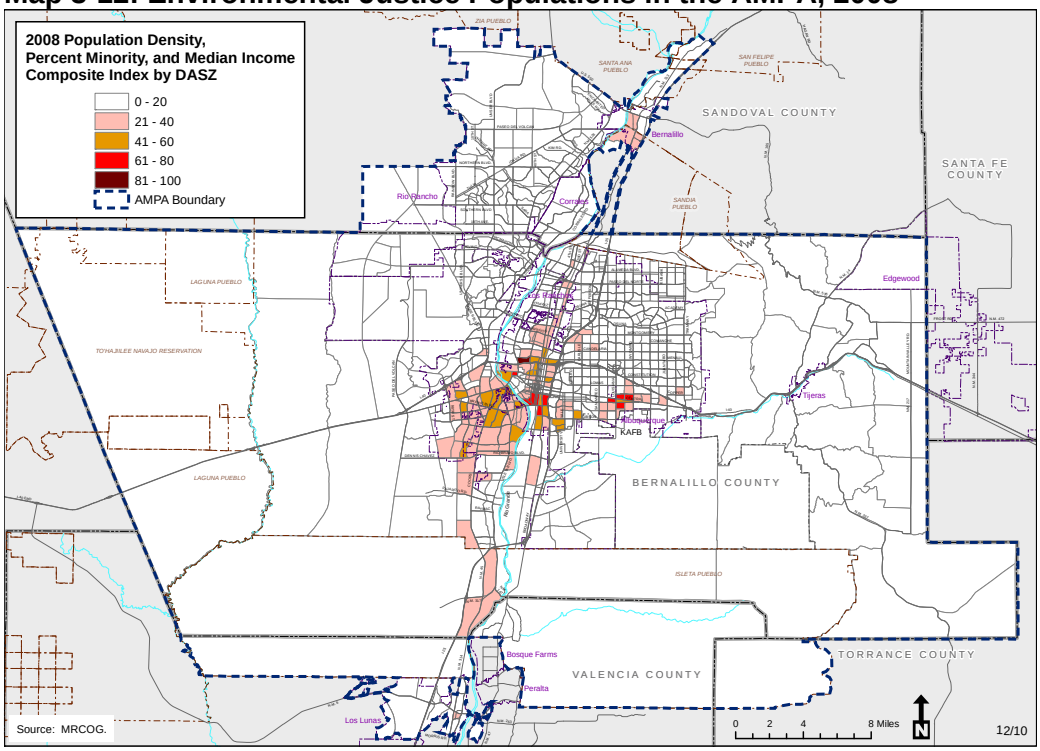
obese). Successful Safe Routes to School programs can also relieve congestion. For example, in some communities, school traffic accounts for about 25 percent of morning traffic congestion. Three schools in Rio Rancho received Phase I funding, and a “Ditches with Trails” project has been developed that focuses on improving segments of ditch banks that connect to schools. This project is managed by the Middle Rio Grande Conservancy District.

IX. Environmental Justice Assessments

MRMPO primarily addresses environmental justice in its efforts to assess where low-income and minority populations reside and how those populations are served by the transportation network within the AMPA, as part of the Project Prioritization Process (PPP), and by tailoring its public participation process to increase access to the decision-making process.

MRMPO produced an environmental justice index using 2000 Census data, the only source for which small-area, protected group status data was available. Typically, an environmental justice index uses the percentage of the population living in poverty. The MRMPO index instead uses median household income relative to the state average, since higher-quality data is available for median household income. Although minority and income status are not forecast at the Census tract level, MRMPO is still able to estimate and forecast population density. As a result, MRMPO employed a 2000 dataset for income and minority status and 2008 and 2035 (base and horizon year) datasets for density. The environmental justice index in summary uses minority status and median income data along with population density to identify areas where there are concentrations of environmental justice communities. However, low-density areas such as tribal reservations do now show up using that methodology. The index shows broadly where there might be environmental justice communities, and not all communities are necessarily identified. The results, as shown in Map 3-11, give an idea of where in the AMPA there might be environmental justice concerns.

Map 3-12: Environmental Justice Populations in the AMPA, 2008



Transit Accessibility

MRMPO's Transportation Accessibility Model (TRAM) was used to assess whether environmental justice communities have greater or lesser access to public transportation than the AMPA as a whole. The following table shows results from an analysis conducted using the 2008 networks and transit services in order to determine whether public transportation investments are being equitably distributed across the region. As the analysis shows, the region is doing a relatively good job providing environmental justice communities access to transit services, as compared to the general population. MRMPO will track transit accessibility for environmental justice communities over the life of the MTP to measure the performance of the plan from a quality of life perspective, with the aim of increasing accessibility to transit for environmental justice areas. More description on this performance target is provided in Chapter 5.

Table 3-10: Accessibility of Transit to Populations in the AMPA

Percent of EJ population within ¼ mile of transit service in 2008	57%	Percent of AMPA population within ¼ mile of transit service in 2008	26%
Percent of EJ population within ½ mile of transit service in 2008	85%	Percent AMPA population within ½ mile of transit service in 2008	72%
Percent of EJ population within ¼ mile of high frequency transit service in 2008	7%	Percent of AMPA population within ¼ mile of high frequency transit service in 2008	6%
Percent of EJ population within ½ mile of high frequency transit service in 2008	26%	Percent of AMPA population within ½ mile of high frequency transit service in 2008	21%

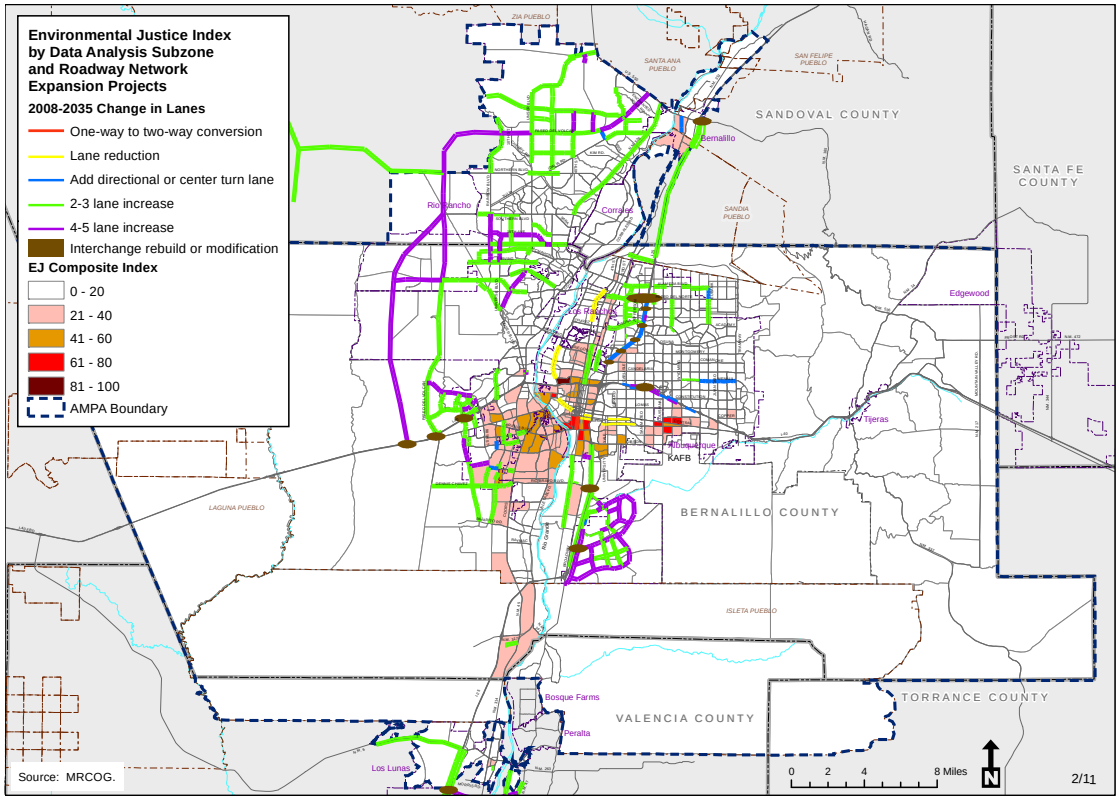
MRMPO offers opportunities to participate in the planning process on a largely geographic basis to ensure that no geographic area is excluded from its public participation efforts. With respect to engaging communities of Limited English Proficiency, MRMPO has begun translating more of its documents into Spanish. In addition, videos produced by MRMPO will be narrated in both English and Spanish. MRMPO will continue its efforts to ensure the full participation by all affected communities, particularly environmental justice and Limited English Proficiency communities, in the transportation decision-making process.

Future Projects Analysis

The Project Prioritization Process, through which projects are selected for inclusion in the TIP, uses environmental justice criteria as a scoring factor, adding points to projects if they are located within or adjacent to identified environmental justice communities. Because a full environmental justice evaluation as part of the NEPA process is usually required to determine whether or not a project has substantial adverse effects on a community, and because such an analysis cannot be performed during the Project Prioritization Process, the assumption is made that a project will benefit rather than burden the adjacent community. However, explanation of the project's impacts to adjacent communities is also required.

For this 2035 MTP, a map was developed to show the location of roadway projects included in the MTP in relationship to the environmental justice communities identified through the Environmental Justice Index. Map 3-12 shows roadway capacity expansion projects included in the 2035 MTP along with areas shaded in pink-orange-red that score above 20 on the current (2008) Environmental Justice Index. Most capacity expansion projects (green or orange on the map) fall outside currently developed areas, but several projects (notably the widening of 2nd Street in Albuquerque's North Valley and several projects in on the Southwest Mesa area of Albuquerque) should include a documented environmental justice process to insure that no disproportionate burden is placed on these potentially-vulnerable areas. In addition, concentrations of elderly, children, seniors, the disabled and similar population groups could also experience adverse impacts and therefore should be documented and analyzed as a part of the decision making process.

Map 3-13: Environmental Justice Index and Roadway Network



This page intentionally left blank.