Farmington Metropolitan Planning Organization

Metropolitan Transportation Plan

Adopted April 22, 2005

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Metropolitan Transportation Plan

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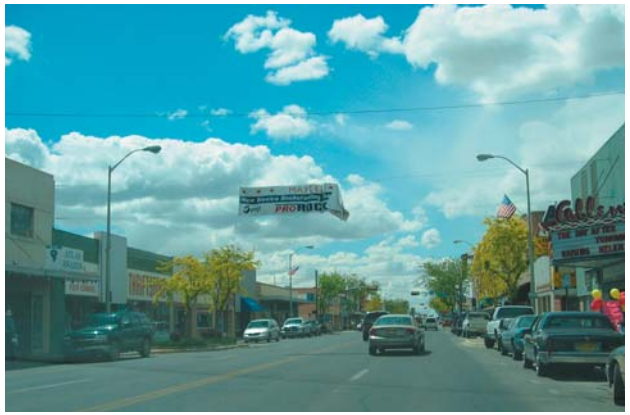
INTRODUCTION

Located within the San Juan River Valley, the Farmington, New Mexico region has a rich history, diverse population and vibrant community. It serves as the cultural and economic center of the four corners region of New Mexico, Colorado, Utah, and Arizona.

Just over a year ago, the Farmington Metropolitan Planning Organization (FMPO) came into being. The FMPO was created through a joint powers agreement with San Juan County and the cities of Aztec, Bloomfield and Farmington to assume the transportation planning responsibilities for the area. Formal designation of the MPO was made by the State of New Mexico in April, 2003. As an MPO, the FMPO has access to federal planning funds, formal recognition as the coordinating agency for transportation planning in the area, and the responsibility to ensure a "comprehensive, coordinated and continuing" transportation planning process.

To accommodate the future growth of the region, transportation services and infrastructure are developed and implemented through the regional transportation planning process carried out by the Farmington Metropolitan Planning Organization. This document is a product of that process.



What Key Issues does this Plan Address?

Some of the questions answered in the Plan include:

- Where is future growth likely to occur?
- What transportation improvements are needed to serve that growth?
- What roads will be developed as major corridors?
- What are the best ways for the MPO to meet future transportation improvements?
- How do we prioritize and pay for these transportation improvements?

The transportation plan is for the year 2030 and will include prioritization of improvements for short-term (1 - 6 years), near-term (7 - 20 years) and long term (20+ years) horizons.

The Farmington Metropolitan Transportation Plan is the long-range transportation plan for the urbanized region that includes the Cities of Aztec, Bloomfield, and Farmington as well as parts of San Juan County. The Plan identifies future transportation investments for all modes of transportation. Although the region's mobility continues to be dominated by the automobile, other modes such as public transit, pedestrian, and bicycle transportation are becoming increasingly important means of travel and are addressed by the Plan. Aviation travel and freight movement are also included in the planning process, but to a lesser extent.

As such, the Farmington Metropolitan Transportation Plan identifies specific services and projects for each mode of travel that will be necessary to meet the transportation needs of the region through 2030 Similar to virtually every community across the nation, anticipated revenues are not sufficient to fund all of

the transportation needs. Therefore, projects have been prioritized for implementation so that the Plan can respond to financial constraints required by law.

Planning Context

Related Plans

The Farmington Metropolitan Transportation Plan (MTP) is the first and most recent transportation plan for the Farmington MPO. Like many planning documents, it incorporates and builds upon the concepts and recommendations from previous efforts. While the MPO is new, transportation planning in the region is not. Numerous plans and studies are underway or have been completed by the cities in the region, as well as the New Mexico Department of Transportation. Some of the plans, studies, and projects related to the development and implementation of the MTP include:

NM 516, Farmington to Aztec. The New Mexico Department of Transportation (NMDOT) has finished Phase 1A of this study and is currently evaluating different alternatives as part of Phase 1B.

Traffic Counting Program. Traffic counts within the urbanized area are now the responsibility of the MPO. Every year, about one-third of the 185 sections will be counted and the results submitted to the New Mexico Department of Transportation.

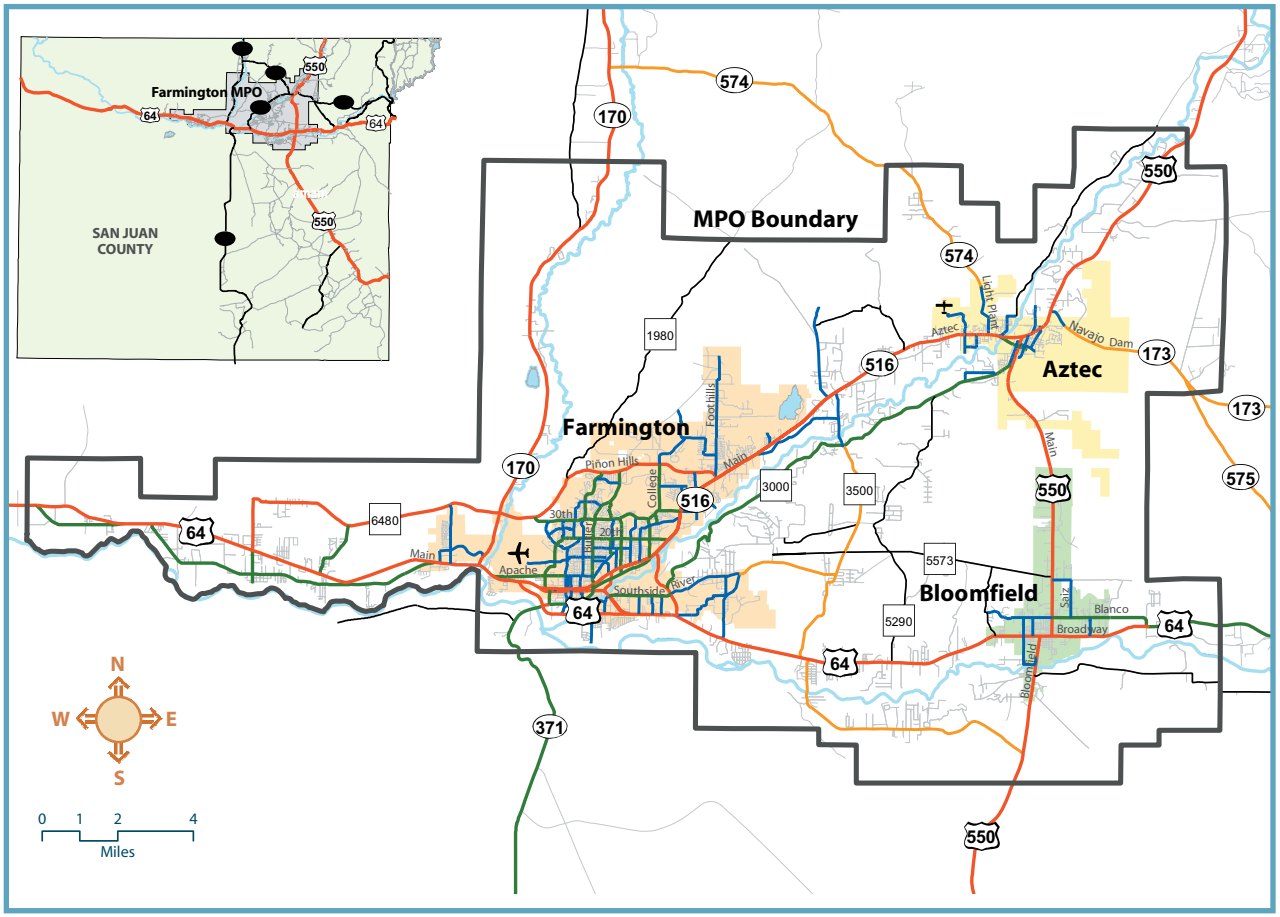
Aztec Main Street Project. The City of Aztec is currently planning and designing renovations for Main Street (US 550) from Rio Grande to the intersection of US 550/NM 516.

US 64 from Farmington to Bloomfield. The New Mexico Department of Transportation recently completed Phase 1C for this project to reconstruct US 64 from Farmington to Bloomfield as a 6-lane urban arterial with some limited access control. The next step will be to fund and program the estimated $56 million in improvements.

NM 516, Aztec Urban Section. The New Mexico Department of Transportation and City of Aztec is currently examining safety and mobility improvements on NM 516 from Light Plant Road to Navajo Dam Road. The project includes intersection improvements roadway typical cross sections access management, right of way, bridge replacements, and signed improvements.

Red Apple Transit. The Red Apple Transit System has been breaking records in the number of passengers it carries. At the end of October, 2003, the system revised several routes and expanded service. Overall ridership in April, 2004 was 25% higher than the same time the previous year.

FARMINGTON MPO STUDY MAP *(Fig. 1.1)*



Study Area

TEA-21 requires that MPOs develop transportation plans for the urban area and unincorporated areas under their jurisdiction which are expected to become urbanized during the 20–25 year planning period. The MPO has jurisdiction for transportation planning efforts over an area designated as the Metropolitan Planning Area Boundary (MPAB). The MPO has defined this area to include Farmington, Aztec, and Bloomfield, as well as parts of unincorporated San Juan County. Figure 1.1 identifies the study area boundary.

Plan Approval Process

The Metropolitan Transportation Plan was developed through an open and deliberative planning process, complying with all appropriate government regulations. The development of the MTP included four components. The first component included the enhancement of the City of Farmington's travel-demand computer model and expansion of that model to the borders of the MPO. The second component included the development of transportation alternatives and a review of the region's various modal systems. The third component included the identification of roadway and alternative mode alternatives, testing of alternatives, and the development of the draft MTP document. A fourth component includes the adoption of the MTP.

Final approval of the document will include review by the MPO staff and presentation to the Technical Committee, Citizen Action Committee and the Policy Committee. Once that review is completed, a final public hearing will be held to seek public review and comment. The document will also be made available to the public at local libraries. After approval, it will be presented to the governing bodies of the cities of Aztec, Bloomfield and Farmington. Simultaneously, it will be received by the New Mexico Department of Transportation, the Federal Highway Administration and the Federal Transit Administration.

Plan Elements: Required and Desired

Several laws, regulations, statutes, codes and other documents at the local, state, and federal levels affect the development of the MTP by specifying requirements to be considered in the planning process or to be contained in the MTP. These include the Transportation Equity Act for the 21st Century (TEA-21), existing and proposed metropolitan planning regulations, management and monitoring system regulations, Executive Order 12898 on Environmental Justice, the Americans with Disabilities Act, and a variety of others.

Of these, the Transportation Equity Act for the 21st Century provides the primary authoritative direction on the development of the MTP. On June 9, 1998, Congress enacted the TEA-21 as Public Law 105-178. TEA-21 authorizes the federal surface transportation programs for highway and transit systems for the six-year period from 1998 to 2003. TEA-21 continues and enhances the federal programs and priorities established in the previous Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).

Among the many environmental, funding, infrastructure, modal, safety, and other transportation-related provisions of the legislation, TEA-21 specifies that MPO's develop transportation plans in cooperation with the State and public transit operators that "provide for the development and integrated management and operation of transportation systems and facilities...that will function as an intermodal transportation system for the metropolitan area." With this language, Congress has continued its priorities of intermodalism, intergovernmental and pubic/private partnerships, and system development and management that originated in ISTEA. Further, the process for developing transportation plans shall provide for consideration of all modes and

TEA-21 Planning Factors

The Transportation Equity Act for the 21st Century (TEA-21) federal legislation recognizes that transportation investments impact a community's economy, environment, and quality of life. As such, it states that the planning process "shall provide for consideration of projects and strategies that will:

- support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- increase the safety and security of the transportation system for motorized and non-motorized users;
- increase the accessibility and mobility options available to people and freight;
- protect and enhance the environment, promote energy conservation, and improve quality of life;
- enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- promote efficient system management and operation; and emphasize the preservation of the existing transportation system."

shall be continuing, cooperative, and comprehensive to the degree appropriate.

Project Listings

TEA-21 identifies several categories of projects that are to be included for implementation over the life of a transportation plan. They are

- bicycle and pedestrian facilities;
- transportation enhancement activities;
- strategies for managing the transportation system; and
- capital investments and other measures to preserve the existing transportation system.

A description of all proposed improvements in sufficient detail to develop cost estimates should accompany the project listings.

Financial Plan

TEA-21 specifies that available revenues for implementation of transportation improvements over the life of the Metropolitan Transportation Plan must be developed through a cooperative effort between the MPO, State, and transit operators. The cost estimates for the projects, strategies, and other transportation improvements contained in the MTP must be constrained to the forecasts of available revenues.

When this requirement was enacted over 10 years ago, many communities around the country readily embraced the financial constraint philosophy. In this manner, transportation plans transformed from a wish list of projects that could not be implemented to meaningful plans with specific, identifiable transportation improvements.

Forecast Period

At a minimum, a transportation plan must be comprised of a 20-year planning horizon and be updated every five years. After its approval, the MPO is allowed to make substantial changes to the MTP during the five-year window, but the 20-year forecast period must be maintained. Therefore, the Farmington MPO incorporates an approximately 25-year planning horizon in order to retain the ability to modify the MTP, similar to other progressive communities.

Public Involvement Process

Public involvement is a high priority in the transportation planning process and in the development of the MTP. The Farmington MPO's public involvement procedures reflect the region's approach to public involvement. This process provides complete information, timely public notice, and full public access.

EXISTING CONDITIONS

The first step in developing a transportation plan is to understand the existing economic, land use, social and transportation conditions of the region. Understanding the trends and changes that made the region what it is today is essential before developing forecasts of future conditions.

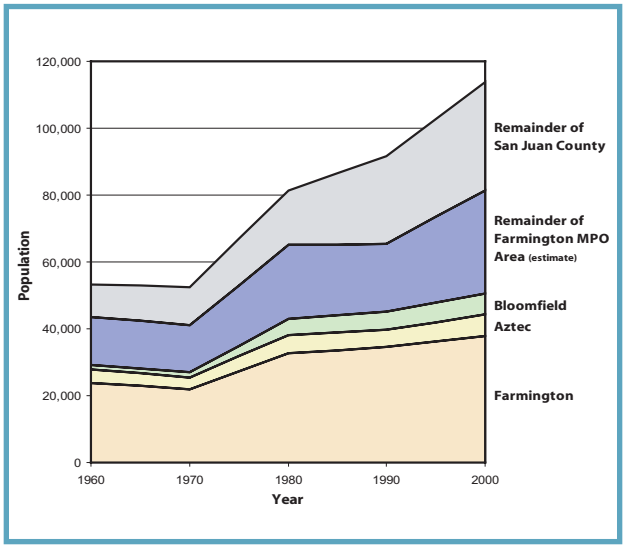
Land Use and Socioeconomic Charcteristics

The socioeconomic characteristics that make up the Farmington MPO area provide insight into the region's transportation requirements. Activities that occur in each of the various land uses form the basis of trip making or travel demand. Areas of residential land uses generate travel by producing trips through the activities occurring in these locations. Employment areas generate travel by attracting trips. The travel that occurs between trip generators takes place on one of the transportation modes available to the traveler. Accurate estimates of demographic data are imperative to understanding current conditions and forecasting travel in the future. Therefore, population and households are key items for the transportation planning process.

Population

U.S. Census estimates of population and households demonstrate steady growth in the region over the past several decades. Since 1960, San Juan County and the cities within it have grown considerably. While the country as a whole only experienced an average annual population growth rate of 1.1% between 1960 and 2000, New Mexico saw an annual average growth rate of 1.6% and San Juan County grew by an average of 1.9% per year. The population of Aztec increased at a similar rate to the nation as a whole with a 1.1% annual

SAN JUAN COUNTY POPULATION GROWTH: 1960-2000 *(Fig..2.1)*



growth rate. Farmington grew by 1.2% per year and the population of Bloomfield grew by an average of over 4% per year. Overall, the population of San Juan County more than doubled between 1960 and 2000, increasing from 53,000 to almost 114,000.

The population in San Juan County remained fairly constant between 1960 and 1970. However, during the 1970's, the population of San Juan County experienced its highest growth rate in recent times, growing at an annual average growth rate of 4.5%. Since 1980,

What does all this mean?

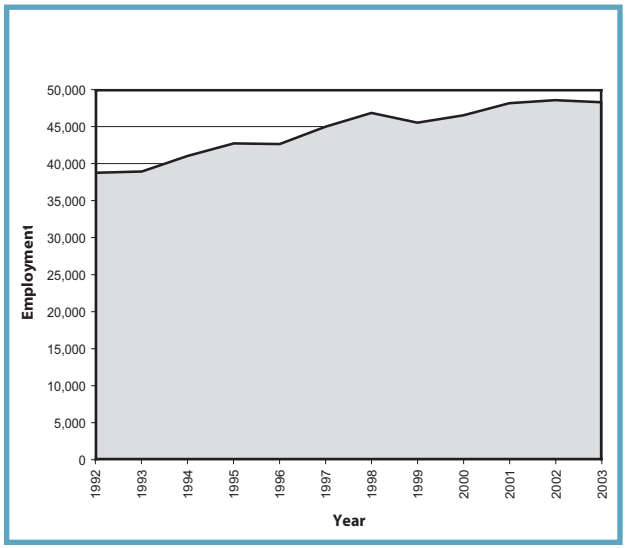
Whereas San Juan County and the MPO region have experienced significant growth in population and jobs, there has not been a similar growth in funding and construction of new transportation improvements. Understanding that growth will continue at a significant rate with continued fiscal limitations requires that strategic investments be made in our transportation system.

the growth has tapered off to some degree, averaging 1.7% per year between 1980 and 2000, as seen in figure 2.1. The population growth in the cities within the MPO have experienced similar growth patterns as the County as a whole. Though the cities' share of the county population has decreased somewhat since 1960, Aztec, Bloomfield and Farmington still account for approximately half of the County's population. Aztec and Farmington's share of the county population has decreased slightly between 1960 and 2000, while Bloomfield's share has increased slightly.

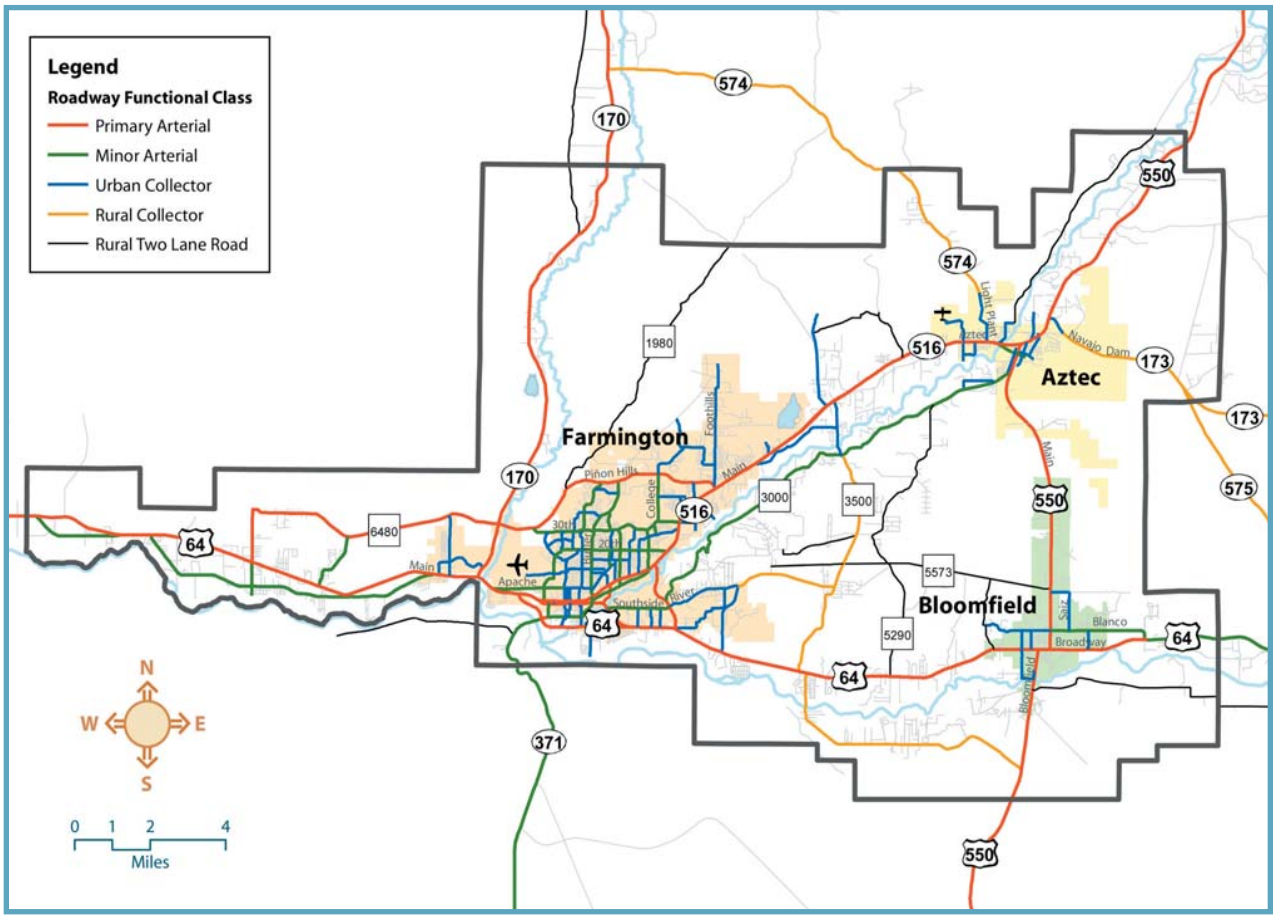
Employment

As shown in figure 2.2, County-wide employment has also increased considerably over the last decade. Employment growth in San Juan County has been comparable with the population growth in the County. Between 1992 and 2003, employment in San Juan County increased from almost 39,000 to over 48,000 in 2003, a 2% annual average growth rate. This exceeded both New Mexico's and the United States' average annual job growth rates over the same time period of 1.8% and 1.6%, respectively.

San Juan County Employment Growth: 1992-2003 *(Fig. 2.2)*



ROADWAY FUNCTIONAL CLASS *(Fig. 2.3)*



Transportation System

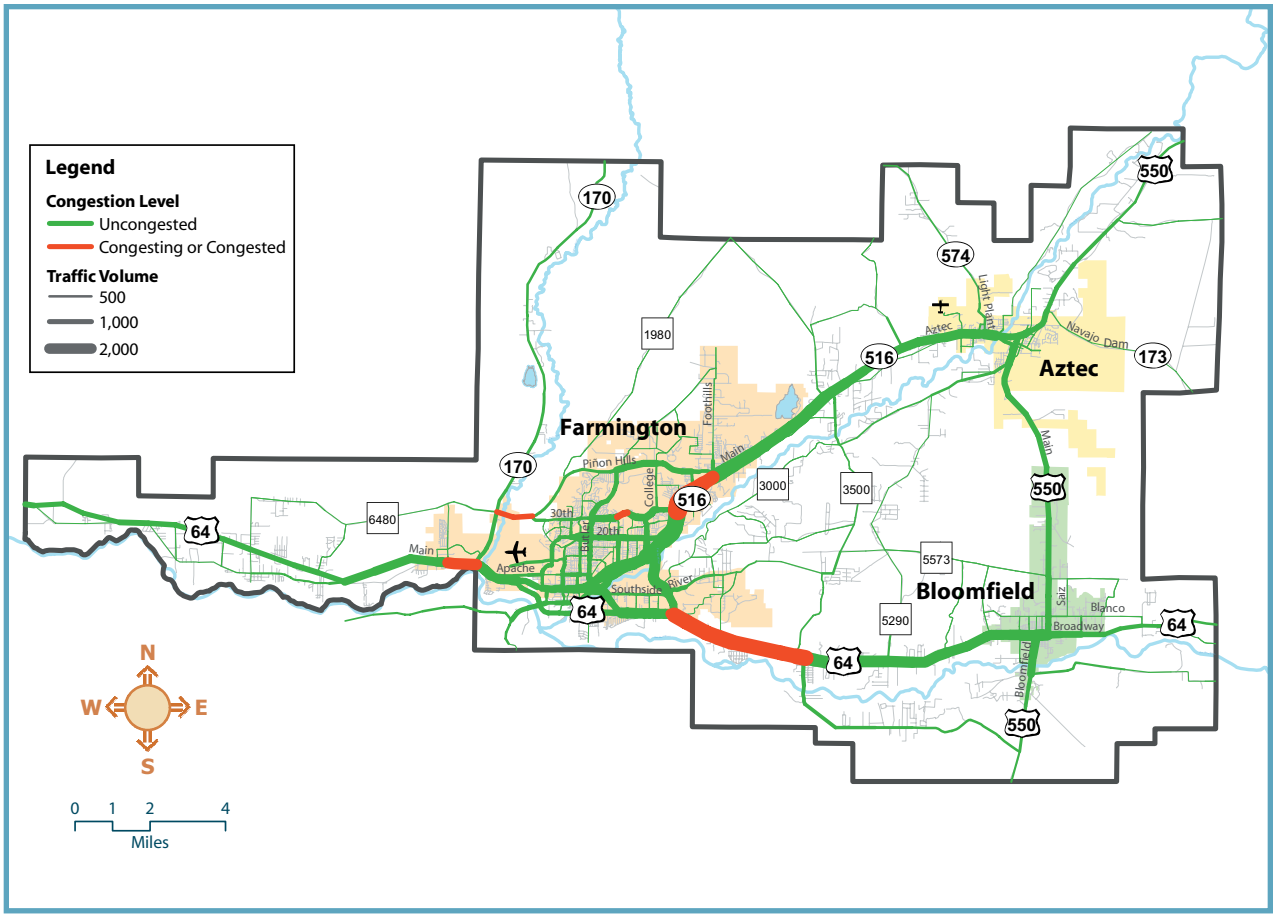
Many people envision the transportation system as the network of streets and highways that allow for automobile and truck travel within, to, and through the region. In reality, roads make up only one component of the transportation system, albeit an important one. Transit service, bicycle facilities, and pedestrian infrastructure are essential to a well-balanced multi-modal transportation system. Railroad corridors, airports, and intermodal truck terminals are also critical elements. Even traffic signals and stop signs are part of the transportation system.

Definition of Congestion

Congestion levels for the Farmington MPO's roadways are also depicted in the Farmington MPO Existing (2003) Traffic and Congestion map. These congestion levels fall into one of three ranges:

- **Uncongested:** Corridors that generally operate in free-flow conditions, where the driver tends to be able to travel without undue delay except for typical traffic control operations, such as stop signs or traffic signals. During the peak hour, there might be some delay at a controlled intersection, but generally the driver can get through the intersection within one cycle of the traffic signal.
- **Congesting:** These corridors are roadways where the driver can generally travel in free-flow conditions during the off-peak hours, but might experience having to wait more than one cycle at a signalized intersection during the peak hours. Because these corridors have existing traffic volumes approaching capacity, there can be significant variations in congestion from day to day, fluctuating between acceptable to congested.
- **Congested:** The congested corridors within the Farmington MPO are those roadways where traffic volumes have either reached or exceeded the facility's capacity to accommodate these volumes. These facilities experience daily congestion delays where it is not uncommon that a driver might have to wait two or more signal cycles to get through the intersection.

EXISTING TRAFFIC VOLUMES AND CONGESTION *(Fig. 2.4)*



Roadway Network

Roadways make up the backbone of the transportation system. Cars and trucks use the roadway system for mobility. Transit buses utilize roads for their routes. Bicyclists often travel directly on roads, especially in corridors with delineated bike lanes or designated bike routes. Even pedestrians utilize sidewalks that are often constructed in roadway rights-of-way. The most effective roads, called multi-modal corridors, often accommodate all of these travel modes.

The roadway network is based on a range of different types of facilities with varying characteristics that, when combined, make up the roadway system. These facilities range from state highways, which serve high-speed, longer-distance trips, to local streets that are designed for lower speeds and shorter trip lengths. Figure 2.3 shows the facilities that make up the Faarmington MPO's roadway network.

Traffic and Congestion

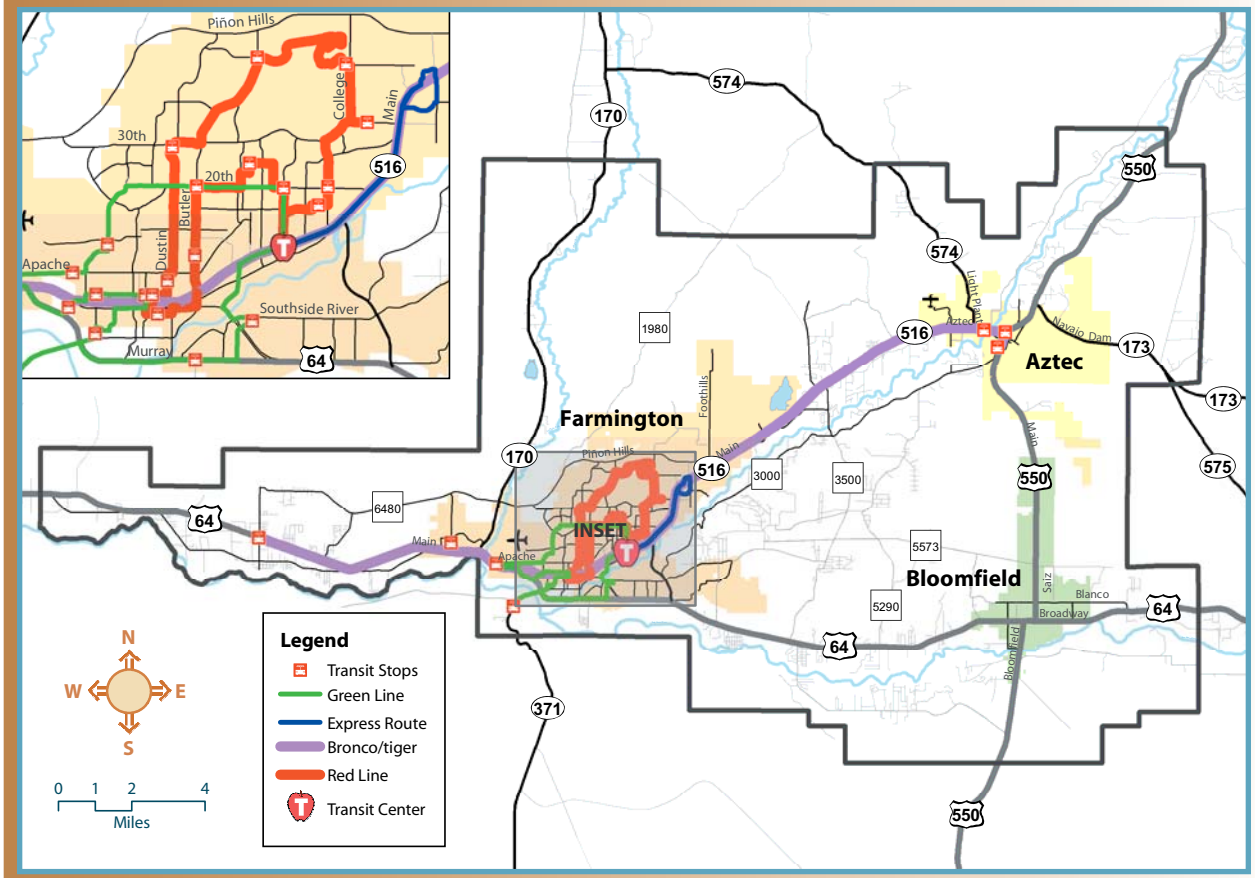
Existing daily traffic, volumes, and congestion levels for the Farmington MPO are presented in figure 2.4. A comprehensive daily traffic count effort was conducted by the MPO for the Metropolitan Transportation Plan.

Roadway Function: Mobility and Access

Two important variables which define roadway function are mobility and access. Freeways have full access control that allow vehicles to enter and exit only at interchange ramps since mobility is the primary function of a freeway. Local streets on the other hand have numerous driveways and connections because their primary function is to provide local access to businesses and residences.

Often, when congestion occurs on an arterial street, it is due to an imbalance between the street's intended function and the amount of access that exists along the corridor. In these cases, access is not well controlled, with the result being numerous opportunities for vehicles to turn in and out of driveways to access local land uses. These movements conflict with and impede the flow of through traffic, creating additional congestion.

RED APPLE TRANSIT *(Fig. 2.5)*



To complement the MPO counts, additional daily traffic counts were received from the the New Mexico Department of Transportation (NMDOT). These current daily traffic counts are presented graphically in figure 2.4. The relative traffic volumes are presented by different band widths; where, the wider the band, the greater the number of vehicles counted. As would be expected, traffic volumes are greatest in the more urbanized areas. Traffic volumes are also high between Farmington and the cities of Aztec and Bloomfield. In general, the roadways operate at acceptable congestion levels except for a few notable exceptions. These include US 64 southeast of Farmington, NM 516 in Farmington, US 64 west of Farmington, and Piñon Hills Boulevard in Farmington.

Transit

The transit service within the Farmington MPO area is currently provided by Red Apple Transit shown in figure 2.5. The Red Apple Transit System operates a modest transit network consisting of five fixed routes. The two largest routes, the Red Line and Green Line, operate as one-way circulators covering the northern and southern parts of Farmington. The Red Line operates in a counterclockwise direction while the Green Line operates in clockwise direction every hour. The routes overlap at two stops along 20th Street. A third route called the Express operates every 30 minutes from Orchard Plaza to the Animas Valley Mall. It offers local service to the retail businesses found along Main Street.

Transit service is also provided from the outlying cities to Farmington. The Bronco Route runs three times a day and provides service from Kirtland. The Tiger Route

also runs three times a day from Aztec. Finally, Red Apple Transit operates Dial-a-Ride demand responsive service throughout the Farmington city limits during fixed route bus operation. The existing fixed route transit service serves almost 43,000 weekday riders per year, with 139 average weekday riders. The Dial-a-Ride service serves over 2,000 riders per year.

Bicycle Corridors

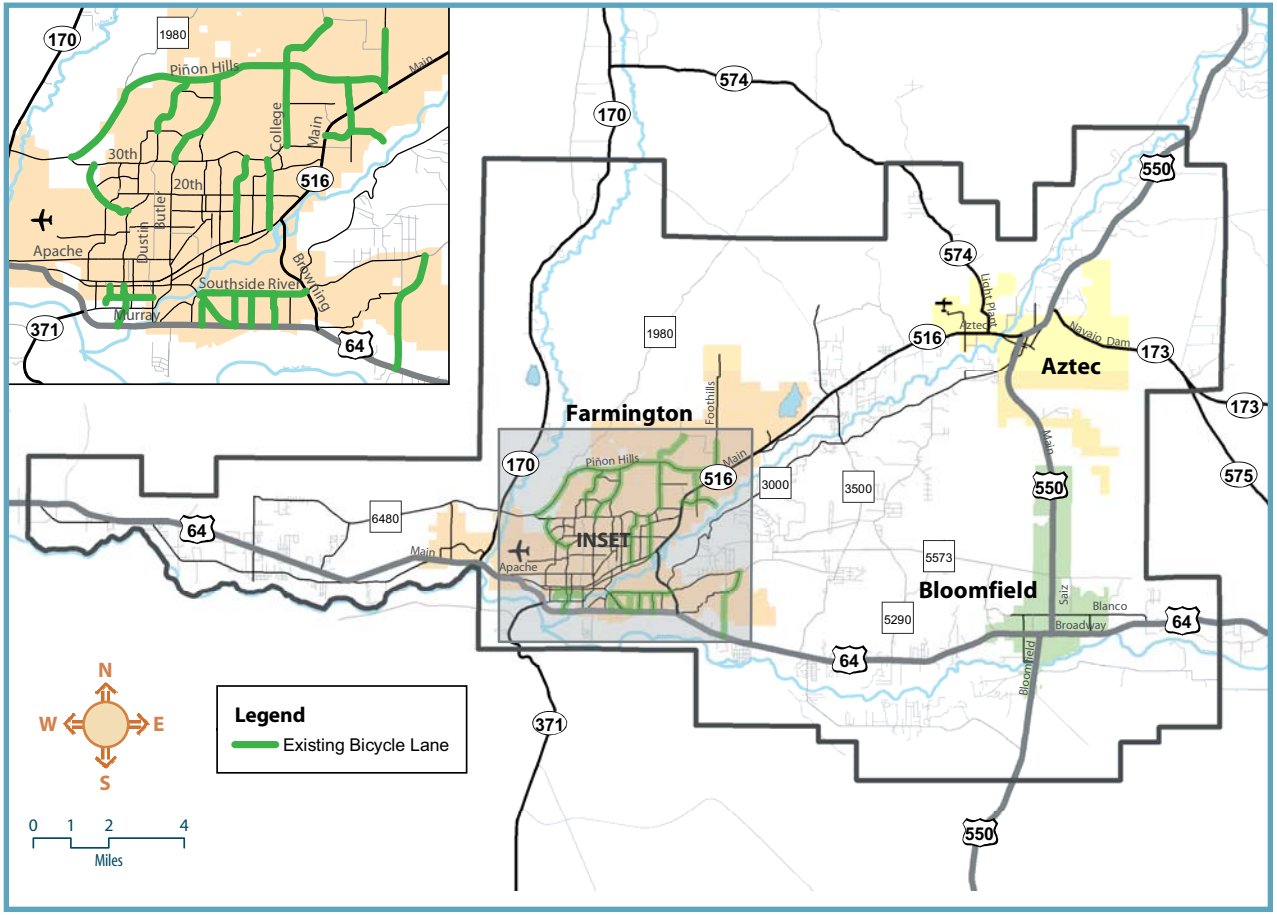
Increased bicycling in a community has positive effects on air quality, physical health, and when used extensively, traffic congestion The Farmington MPO recognizes a lack of bicycle corridors within the region. Currently, the primary means of traveling by bicycle is almost along roadways It should be noted, however, that the City of Farmington has established a Citywide Bicycle Plan and are implementing portions of that plan as opportunities become available. Many jurisdictions elsewhere in the United States have elected to restripe their travel lanes to permit space for adjacent bike lanes or to widen shoulders along non-urban roads. This is typically done at the time of resurfacing or reconstruction, but in some cases can only be accomplished during major reconstruction due to existing geometric and physical constraints (e.g., ditches).

As can be seen in figure 2.6, bicycle facilities in the MPO region are fairly limited. This lack of bicycle facilities is evidenced in the number of non-motorized commuters in the region. According to 2000 Census data, only 2.0% of workers in San Juan County walked or bicycled to work This is lower than the statewide and national averages (both approximately 3.4%) Currently, the MPO together with the cities, NMDOT, and local groups are working to designate more bicycle corridors and make bicycle facility improvements where possible.

Pedestrian Facilities

Walking is another form of non-motorized transportation that provides health benefits, enhances air quality, and can reduce traffic congestion. In addition, it is significantly cheaper than other transportation modes. Walking is often a primary form of transportation for children, the elderly, and those who cannot afford other transportation modes. In their report, Creating a Healthy Environment: The Impact of the Built Environment on Public Health (Center for Disease Control and Prevention, Sprawlwatch Clearing House, 2001), Richard J. Jackson, MD, MPH, and Chris Kochititzky, MSP, explore the relationships between human behavior, the physical and built environments, and public health. They suggest that "two of the main reasons for not exercising are lack of structures or facilities and fears about safety." They argue that "it is dishonest to tell our citizens to walk, jog, or bicycle when there is no safe or welcoming place to pursue these 'life-saving' activities" and "land

EXISTING BICYCLE LANES *(fig. 2.6)*



use decisions are just as much public health decisions as are decisions about food preparation."

Sidewalks provide safe passage for pedestrians by creating a right-of-way that is separate from vehicular traffic. They are particularly important in, to, and from activity areas around the region, such as in the downtowns, shopping districts, schools, recreation centers, government buildings, and college campuses. Sidewalks encourage pedestrian activity, which is a defining element of community and neighborhood identity. Good pedestrian connections are imperative for transit service because all transit trips begin and end with a pedestrian trip.

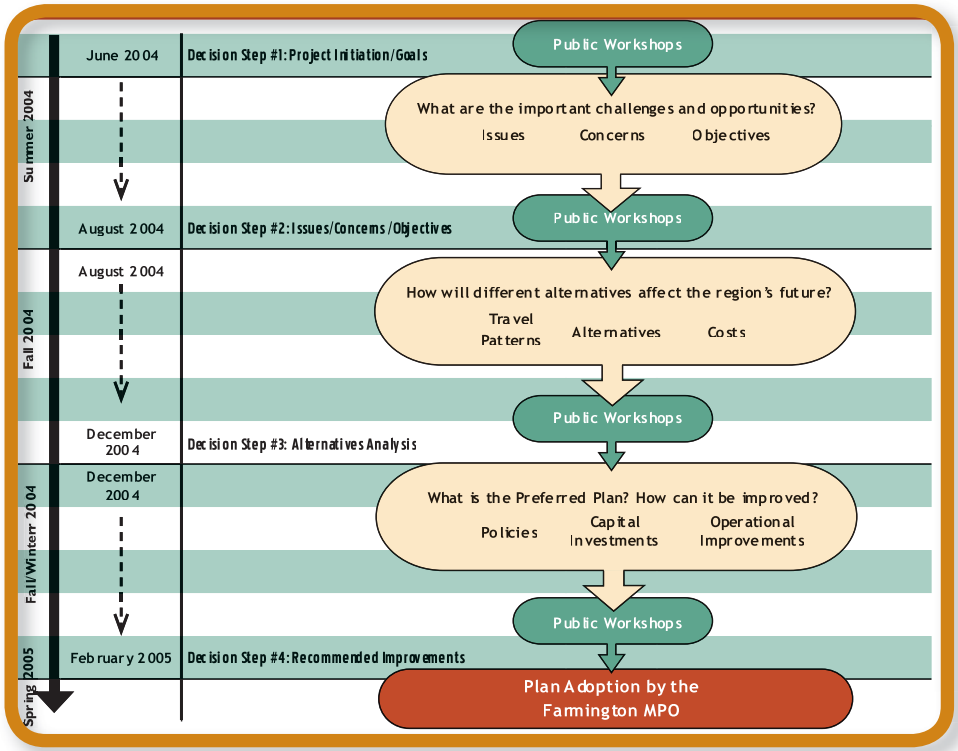
COMMUNITY INVOLVEMENT

Public involvement is an important component of any community-based transportation plan such as the Metropolitan Transportation Plan. Not only is it required by federal legislation, but good public participation allows planners to identify and understand aspects of the transportation system directly from the users, the general public. The public involvement program provided a number of ways the public could participate in the MTP process. This process was integrated into the overall work program, which can generally be divided into four work efforts, each with its own set of decision points and community involvement.

Citizen's Action Committee

In order to collect a wide range of input from various stake holders, a Citizen Action Committee was formed. This committee met throughout the process and provided input on issues and concerns, project alternatives and project evaluation.

The Citizens Action Committee was instrumental to the development of the plan. Members of the committee and organizations they represented are included in the acknowledgement page at the beginning of the report.



Decision Step #1: Project Initiation/Goals

The first major work effort established the vision and goals of the Metropolitan Transportation Plan. The vision and goals form the framework for guiding the plan and evaluating alternatives for the region. The vision and goals were developed through a collaborative process including policy and technical committees as well as members of the public.

Specific tasks were to:

- Develop a public involvement program to engage MPO residents and stakeholders;
- Establish a vision, mission statement and goals for the MPO and the Metropolitan Transportation Plan.

Decision Step 1 was completed in July 2004.

LSA provided a presentation of the plan schedule and work effort and led the discussion to develop the plan's goals and objectives. These goals and objectives are extremely important as they provide the framework for guiding the plan and evaluating alternatives for the region.

Decision Step #2: Issues/Concerns/Objectives

Decision Step 2 identified all issues and concerns that might affect plan development. Specific tasks were to:

- Develop long-range population and employment forecasts for the MPO area;
- Document current daily traffic volumes and corridor arterial levels of service; and
- Develop and calibrate an MPO travel demand forecast model for developing and evaluating 2030 land use and transportation alternatives.

Decision Step 2 was completed in September 2004. Results were presented to the public through a series of public open houses and workshops where the public was given an opportunity to provide input on what they believed were key issues and concerns.

Decision Step #3: Alternatives Analysis

A wide-range of transportation improvement alternatives were developed to address short, interim, and long-term traffic growth. They were based on public input from Decision Step 2, MPO approved socioeconomic data forecasts, and technical assessments.

The emphasis of Decision Step 3 was not to develop a single scenario, but to develop and analyze a menu

PUBLIC PARTICIPATION WORKSHOPS

PUBLIC WORKSHOPS

Workshops were held in locations in Farmington, Aztec, and Bloomfield. Each workshop included a general open house for participants to view materials and talk to project team members and a structured process for hearing public comments. The schedule included:

Decision Step 1

- Thursday, June 10, 2004, City of Farmington Municipal Building

Decision Step 2

- Monday, August 30, 2004, Bloomfield City Hall
- Tuesday, August 31, 2004, Farmington Civic Center
- Tuesday, August 31, 2004, Aztec City Hall
- Wednesday, September 8, 2004, San Juan College in Farmington

Decision Step 3

- Tuesday, December 7, 2004, San Juan College in Farmington
- Wednesday, December 8, 2004, Bloomfield City Hall
- Thursday, December 9, 2004, Aztec City Hall
- Saturday, December 11, 2004, Animas Valley Mall

Decision Step 4

- Tuesday, February 8, 2005, Bloomfield City Hall
- Wednesday, February 9, 2005, Aztec City Hall
- Thursday, February 10, 2005, San Juan College in Farmington

What did the public say?

Decision Step 1: Project Initiation/Goals

MPO residents were invited to this first step in the development of the MTP. Incorporating input from the public, this process developed the vision, mission statement, and goals for the MTP. This step also developed a detailed public involvement plan to continue the involvement of and engage the public and stakeholders. The plan includes a variety of methods used to communicate with the public, including public workshops, newsletters, MTP website, e-mail, public displays, newspaper advertisements/information items, information repositories, and comment forms (in both electronic and paper form).

Decision Step 2: Issues/Concerns/Objectives

MPO residents commented on the type of transportation changes they would like to see as well as what changes they would not like to see. Many of the comments related to the need for a complete, multi-modal and accessible plan that emphasized alternative modes. With respect to the public's vision for the MPO's transportation system, people suggested the following:

- Minimize congestion in Farmington;
- Improve and maintain existing facilities;
- Enhance mobility and accessibility for everyone;
- Build a multi-modal system with consideration for autos, and bikes, and pedestrian travel.

Decision Step 3: Alternatives Analysis

The objectives for this round of public workshops were to:

- Clarify the status of transportation improvements throughout the MPO, including committed projects and alternatives for consideration in the MTP;
- Give the public the opportunity to make suggestions for alternatives to be considered for inclusion in the MTP
- Learn public preferences on the alternatives for consideration in the MTP.

A summary of comments received at the workshops regarding the alternatives is presented below:

- Reduce congestion;
- Enhance transit system;
- Increase number of travel lanes on major roadways and highways; and
- Operational improvements (turn lanes, medians, etc).

Decision Step 4: The Plan

In this step, the public was given the opportunity to provide input on the final Metropolitan Transportation Plan alternatives to aid in the refinement and prioritization of roadway, transit, bicycle and pedestrian projects.

of alternatives that the MPO might use to address their transportation needs. In essence, this menu responded to the "what-if" type questions that often arise regarding how wide should the corridors be planned for, initial discussions on prioritizing and phasing, and how much will the various alternatives cost. The draft technical work for this Decision Step was presented in a second series of public open houses to solicit public input in December 2004. Several additional alternatives were added and evaluated as a result of public input.

Specific tasks were to:

- Develop regionally-approved 2030 dwelling unit and employment forecasts;
- Update existing conditions, traffic counts and congestion map;
- Forecast 2030 travel patterns; and
- Identify impacts and benefits of alternatives.

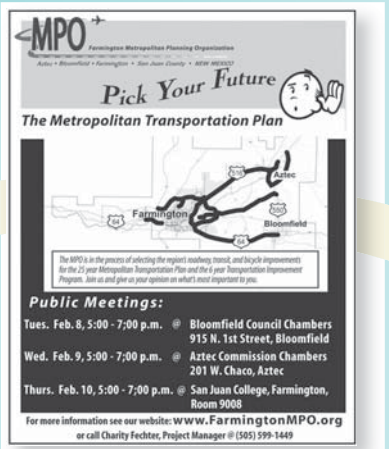
Decision Step 3 was completed in February 2005.

Decision Step #4: Recommended Plan

The final phase reviewed the pros and cons of each alternative and created a Metropolitan Transportation Plan and accompanying map. The plan and map were posted on the project's website and presented to the MPO residents and business stakeholders for input in public venues in February 2005. Based on public input, refinements were made to the MTP and map. The Plan was presented to the MPO Technical Committee and the Citizens Action Committee on February 24, 2005.

PUBLIC INVOLVEMENT PROGRAM

Participants at a public workshop

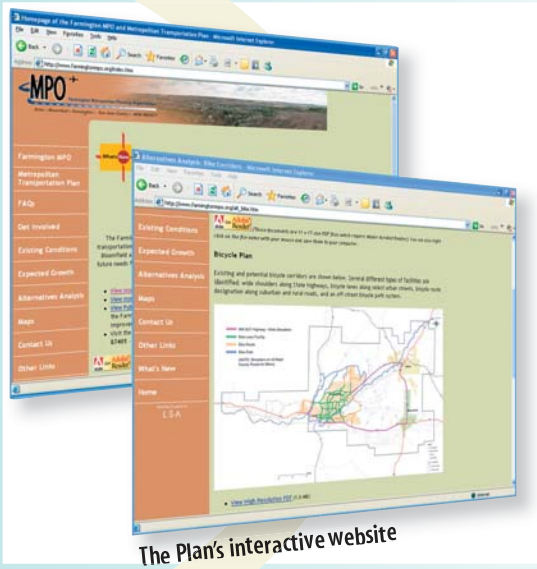


Ads in community newspapers publicized the public meetings

Questionnaires and other opportunities for community input

Project Website for the Farmington MPO Metropolitan Plan

As part of the Public Involvement Program, a project website was developed for disseminating information about the project and soliciting input and comments during the planning period. The website **www.farmingtonmpo.org** provided the following elements:



The Plan's interactive website

- Farmington MPO
- Metropolitan Transportation Plan
- FAQ's
- Get Involved
- Existing Conditions
- Expected Growth
- Alternatives Analysis
- Maps
- Contact Us
- Other Links
- What's New

The website was designed to be user-friendly so that the user could get the level of information desired from general to detailed. The website was also interactive as it allowed users to enter their e-mail address to be notified of updates or changes, and to provide comments at the various decision points.

VISION, MISSION, AND GOALS

The Farmington Metropolitan Transportation Plan is shaped within the framework of the MPO's vision, mission and goals. These were developed in response to the Federal Government's Transportation Equity Act for the 21st Century planning factors and in part through the efforts of the MPO Technical Committee, the MPO Policy Committee, MPO staff, and the general public.

Vision

The Farmington Metropolitan Planning Organization vision is for a safe, efficient and reliable multi-modal transportation system that meets the needs of residents and visitors in the region.

Mission Statement

Provide a forum to develop an effective transportation system to move people and goods safely, economically and efficiently while maintaining a high quality of life.

Goals

- Support the economic vitality of the Farmington region by providing a balanced, multi-modal transportation system that moves people, goods and information safely, economically and efficiently.
- Foster regional coordination and transportation system continuity.
- Develop and connect transportation systems and associated facilities into a cohesive intemodal system.
- Minimize congestion on the transportation system.
- Provide reasonable access to services and jobs for all of the region's residents, regardless of age, income or disability.
- Minimize negative environmental impacts and enhance the environmental quality of the Farmington region.

Vision, Mission, and Goals

4

- Identify and develop funding sources adequate to build, operate and maintain the metropoltan transportation system.
- Identify and implement new technology for balanced multi-modal transportation.
- Develop a transportation system that maintains and/or enhances the existing quality of life and works in concert with cultural and environmental resources and adopted local plans.

TEA-21 Planning Factors

Pursuant to the Transportation Equity Act for the 21st Century (TEA-21), 23 USC 134(f), an MPO is required to consider 7 specific factors within the Metropolitan planning process in the development of their Long Range Transportation Plans. These seven strategies are as follows:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity and efficiency;
2. Increase the safety and security of the transportation system for motorized and non-motorized users;
3. Increase the accessibility and mobility options available to people and for freight;
4. Protect and enhance the environment, promote energy conservation, and improve the quality of life;
5. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
6. Promote efficient system management and operation; and
7. Emphasize the preservation of the existing transportation system.

The TEA-21 Seven Planning Factors were considered throughout the Metropolitan Transportation Plan planning process. These factors were integrated with the MPO's goals, objectives and evaluation criteria.

Farmington MPO Goals and TEA-21 Planning Factors

Farmington MPO Goals	TEA-21 Planning Factors / Metropolitan Transportation Plan Evaluation Categories								
	Economic Vitality	Safety & Security	Accessibility, Mobility & Congestion	Environment	Integration & Connectivity	Preservation, Efficiency & Technology	Funding & Costs	Multi Modal	Land Development Policies
• Support the economic vitality of the Farmington region by providing a balanced, multi-modal transportation system that moves people, goods and information safely, economically and efficiently.	X	X	X			X		X	X
• Foster regional coordination and transportation system continuity.					X				X
• Develop and connect transportation systems and associated facilities into a cohesive intermodal system.			X		X			X	
• Minimize congestion on the transportation system.		X	X			X	X		
• Provide reasonable access to services and jobs for all of the region's residents, regardless of age, income or disability.	X		X					X	X
• Minimize negative environmental impacts and enhance the environmental quality of the Farmington region.				X					X
• Identify and develop funding sources adequate to build, operate and maintain the metropolitan transportation system.						X	X		
• Identify and implement new technology for balanced multi-modal transportation.		X	X		X	X		X	X

Objectives and Evaluation Criteria

TEA-21 Planning Factors / Metropolitan Transportation Plan Evaluation Categories	Objective		Evaluation Criteria
Economic Vitality	1	Provide adequate land area and access for commercial opportunities to serve future population growth.	GIS analysis of commercial land within proximity to customers and traffic model average commercial trip length and travel time.
	2	Minimize congestion to improve delivery of goods and services.	System wide average vehicle travel time and/or average travel speed.
Safety & Security	3	Improve system safety through improved levels of service and reduced congestion.	System wide level of service and congestion delay
	4	Minimize emergency vehicle response time.	System wide average travel speed.
Accessibility, Mobility & Congestion	5	Minimize congestion	Vehicle Miles of Travel (VMT) by arterial type and level of service.
	6	Minimize delay	System wide total travel time minus free flow travel time.
Environment	7	Minimize air quality impacts.	Total vehicle miles of travel along congested roads.
	8	Minimize impacts to existing neighborhoods:	Traffic growth and roadway widening within existing neighborhoods.
Integration & Connectivity	9	Increase transit, bicycle and pedestrian connections.	Number and location of pedestrian and bicycle connections to transit.
	10	Improve multi-modal street design for high activity areas.	Miles of arterial street along mixed use development areas and corridors.
Preservation, Efficiency & Technology	11	Maximize use of current transportation system.	Increased travel speed and level of service through Transportation System Management (TSM) and Intelligent Transportation Systems (ITS)
	12	Minimize access to adjacent developments along key arterials to maximize capacity.	Number of access locations per mile.
Funding & Costs	13	Minimize total transportation system costs	Total improvement costs.
	14	Maximize transportation system performance per project costs	Average increase in travel speed or reduction in total system delay per dollar of investment.
Multi Modal	15	Increase mode split.	Total number of transit, bicycle and pedestrian trips divided by total person trips.
	16	Increased multi-modal accessibility.	Percent of total population and employment within proximity of transit stops, bicycle network and pedestrian system.
Land Development Policies	17	Transportation system supports adopted local plans.	Develop a transportation system that is in concert with adopted local plans.

FUTURE GROWTH

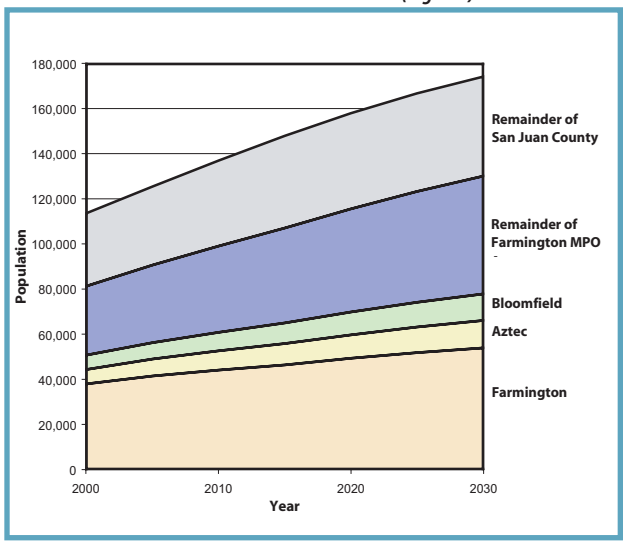
The Farmington MPO area is expected to grow considerably over the next several decades. Through extensive coordination with the MPO and the cities of Farmington, Aztec, Bloomfield and San Juan County, socioeconomic data forecasts were developed for the MPO area and allocated to traffic analysis zones. Traffic analysis zones (TAZ's) are small areas into which data is aggregrated for input into the travel demand model. In urban areas, these TAZ's are typically made up of several blocks and in rural areas they can be as large as several square miles. These forecasts and estimates built upon existing work already completed by the City of Farmington. The forecasts utilized data from the U.S. Census Bureau, the Bureau of Business and Economic Research at the University of New Mexico, the Farmington MPO, the Cities of Aztec, Bloomfield and Farmington, San Juan College, the United States Geological Survey, as well as other sources Once the socioeconomic data forecast and allocation were completed, it was approved by the Farmington MPO. Population and employment are both expected to increase by over 40% between 2003 and 2030.

Population and Dwelling Units

The population of the Farmington MPO is forecast to grow by 47% between 2003 and 2030, from 88,500 to 130,200, as shown in figure 5.2. The City of Farmington is expected to grow by 30% over that time period, from 41,400 to 53,800. The remainder of the MPO area is expected to grow at an even greater rate, increasing 62% from 2003 to 2030. Dwelling unit growth in the MPO area will closely follow population growth, increasing by 48% from 29,700 dwelling units in 2003 to 44,000 units in 2030.

Figure 5.2 shows the approximate distribution of future dwelling units. Dwelling units are a useful proxy

POPULATION GROWTH *(Fig. 5.1)*

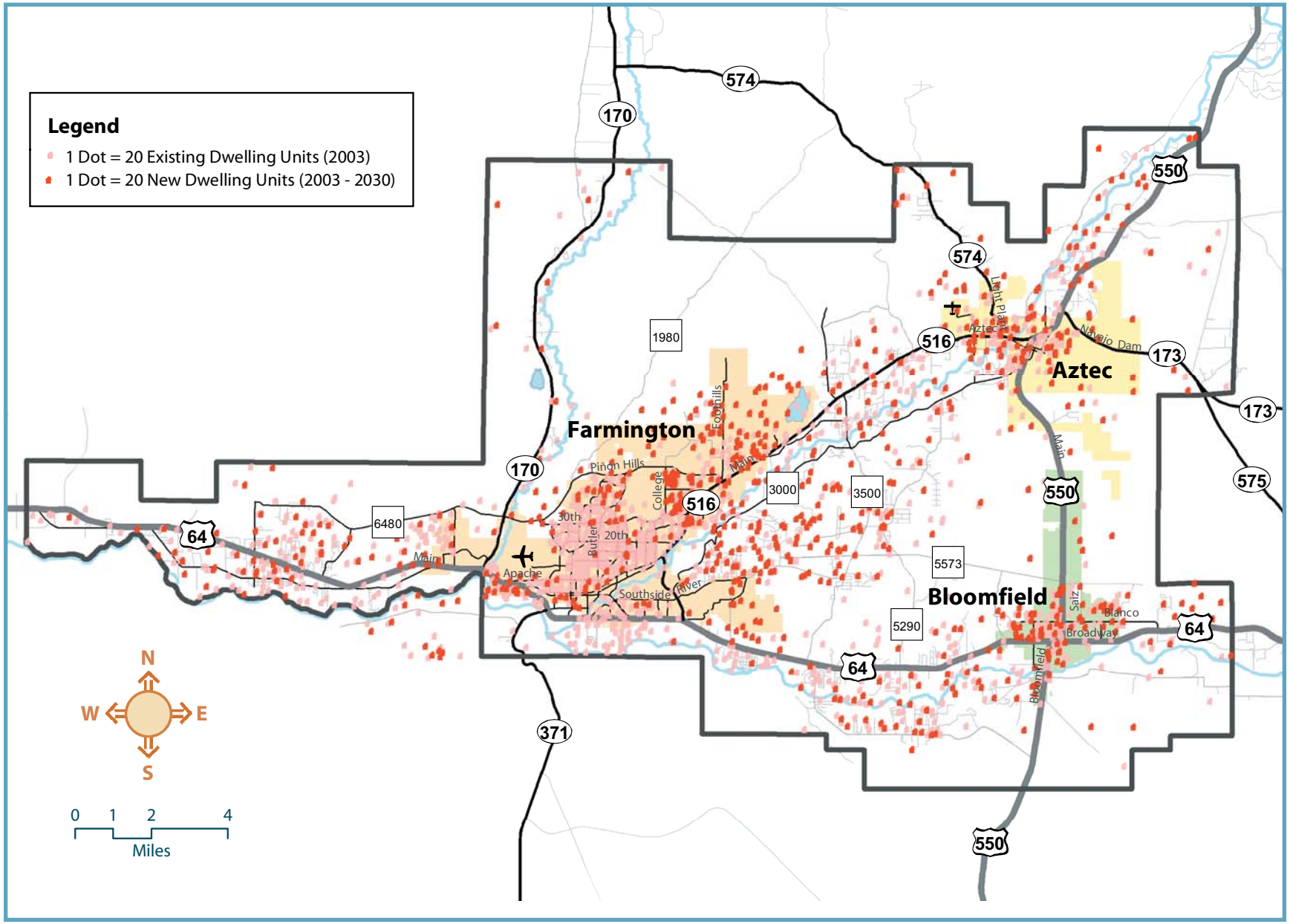


for population, and show the relative distribution of the population as well. It is important to note that the dots shown on the map are based on much more general data. In other words, the dots do not represent actual locations or actual numbers of new houses or development, but do show the relative locations and amount of growth.

What does all this mean?

Between the large growth in inter-city travel in the region and the constraints imposed on those corridors by geography, a large strain will be placed on the limited number of facilities linking the communities in the MPO region, such as NM 516, US 64, and US 550. Future growth cannot be accommodated without deteriorating the existing levels of service without significant enhancements to these transportation corridors.

DWELLING UNIT GROWTH *(Fig. 5.2)*

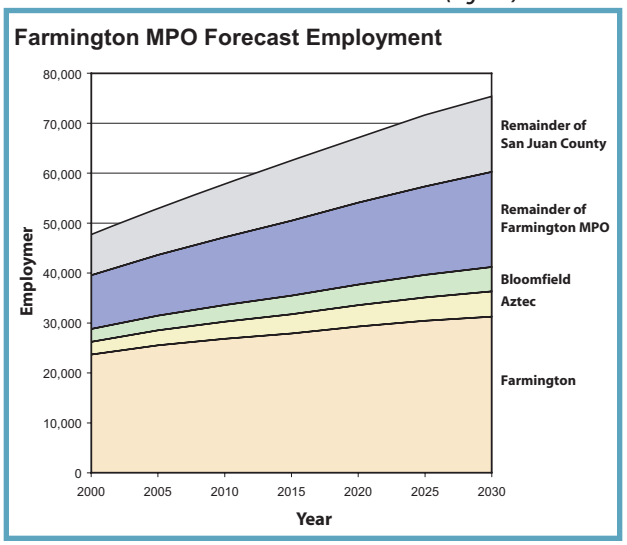


Employment

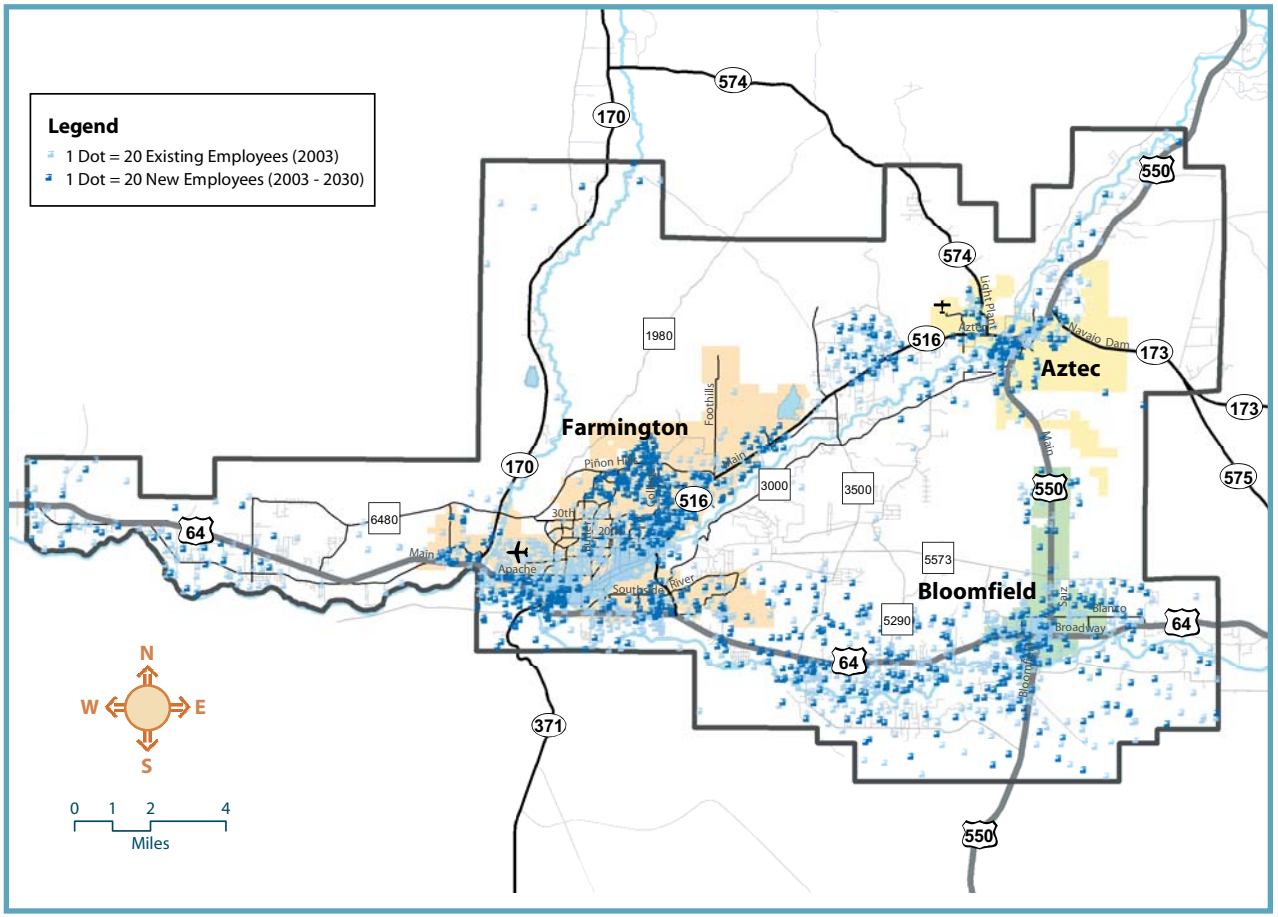
Employment within the MPO area is forecast to grow by approximately 40%, from 42,900 in 2003 to 60,300 in 2030, as shown in figure 5.3. Most of the employment growth will take place outside of the City of Farmington. The City of Farmington is expected to grow by 5,600 jobs (22%) between 2003 and 2030, from 25,700 to 31,300. The area of the MPO outside of the City of Farmington is expected to gain twice as many jobs, increasing by 11,800 jobs (69%) from 17,200 to 29,000 jobs between 2003 and 2030.

Figure 5.4 shows the approximate distribution of existing and future employment. It is important to note that the dots shown on the map are based on much more general data. In other words, the dots do not represent actual locations or actual numbers of new employment, but do show the relative locations and amount of growth.

EMPLOYMENT GROWTH CHART *(Fig. 5.3)*



EMPLOYMENT GROWTH *(fig. 5.4)*



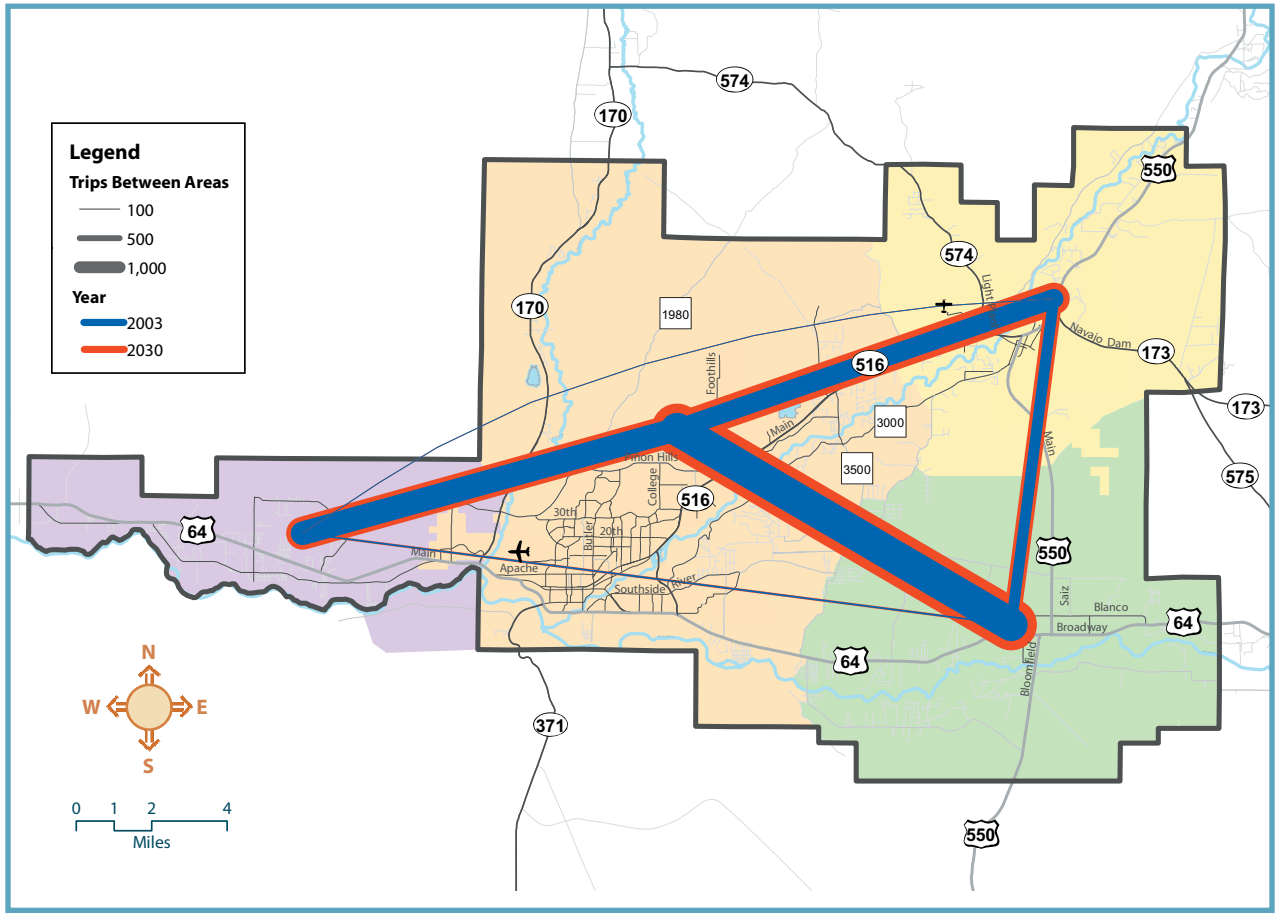
Travel Patterns

As would be expected, current travel between the cities within the Farmington MPO is primarily from and to the City of Farmington. The width of the blue lines in figure 5.3 show the relative current traffic volumes between those cities. Traffic volumes are similar between Aztec and Farmington and the Kirtland area and Farmington. There are considerably more trips made between Bloomfield and Farmington and considerably less made between Aztec and Bloomfield.

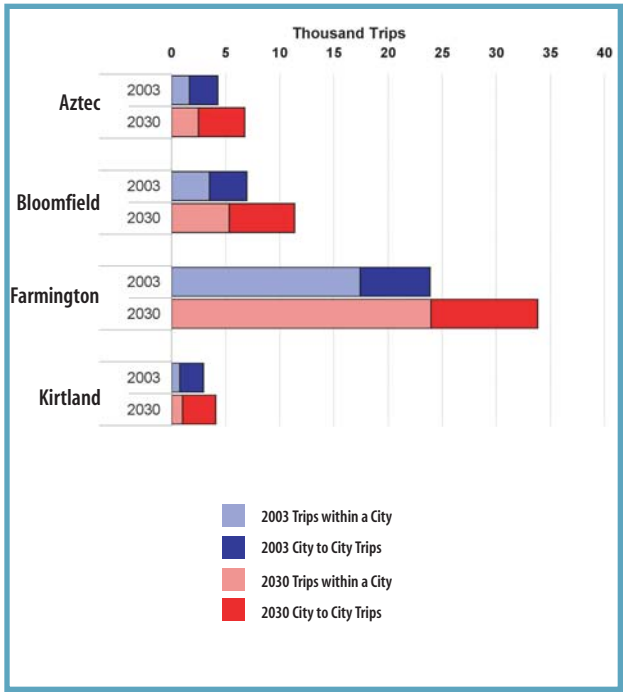
The red outer lines on the same map show the forecast traffic growth between the cities between 2003 and 2030. Travel between the communities is expected to grow by over 50% between 2030 and 2030, except between Kirtland and Farmington, which is only expected to increase by approximately 40%. Travel between Farmington and Aztec and between Aztec and Bloomfield is anticipated to grow by over 60% in each case.

The growth of intra- and inter- city travel was also analyzed. As can be seen in figure 5.6, most of the growth in number of trips in Aztec, Bloomfield, and Kirtland are in the inter-city category. In other words, most of the new trips being made in the outlying communities between 2003 and 2030 are leaving that community going (or coming from) somewhere else. The trips within the City of Farmington and between Farmington and another community are both growing considerably over the next twenty-five years.

TRAVEL PATTERN *(Fig. 5.5)*



TRAVEL PATTERNS BY CITY *(Fig. 5.6)*



ROADWAY PLAN

The Roadway Plan was based on technical 2030 Travel Forecasts utilizing a traffic model developed for the Farmington MPO study area. This process began by conducting a 2030 Travel Forecast, assuming the existing corridor network. This analysis then produced a 2030 Traffic Forecast and Congestion Map that identified problem areas. Through incremental analysis, various alternatives were tested and reviewed with the public, MPO staff, and NMDOT staff. The alternatives were also reviewed with members of the Farmington MPO's Technical Committee and the Citizens Action Committee.

Why does travel increase faster than population and employment growth?

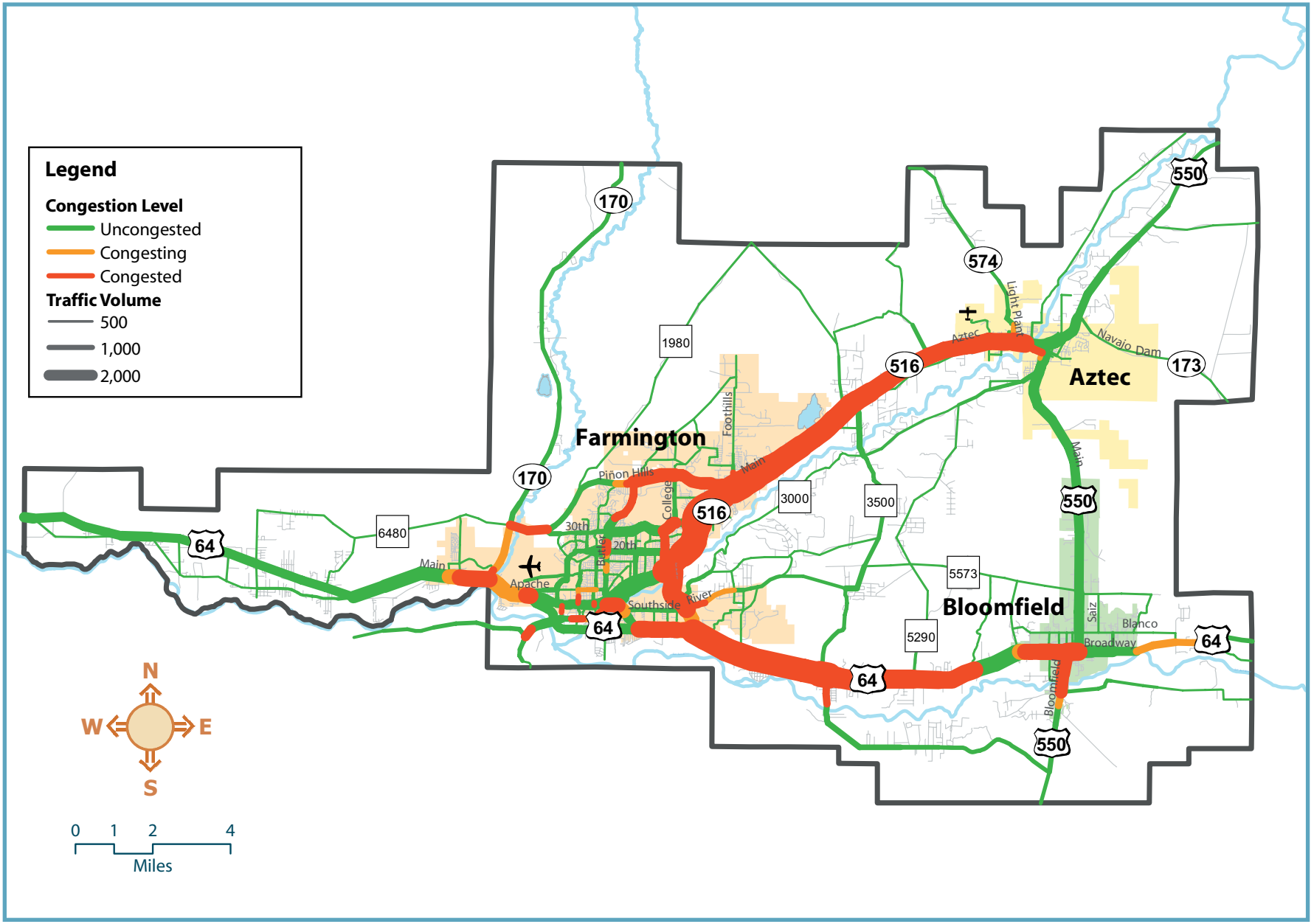
Several socioeconomic and behavioral characteristics of the Farmington MPO in the past decade have caused travel to increase faster than population and employment growth. For example, economic conditions have made automobile ownership and operation cheaper in relative terms. This accounts for more vehicles on the road and more trips made per person. According to the US Census, a smaller proportion of people are carpooling in 2000 than in 1990, both in the United States as a whole, and in the Farmington MPO. Lower density residential developments and suburban development have the effect of longer trip lengths and less efficiency for the roadway system. More household members in the workforce have led to more commute trips and longer trip lengths due to the need to satisfy more physical work-to-home, commuter relationships within each household. In addition, more people are obtaining drivers licenses and vehicles. All of this leads to more traffic on the roadway system.

Deficiencies Analysis

Using the travel demand model, future conditions on the existing roadways were projected. With significant growth in population and employment, increased congestion will occur if no improvements to the Farmington MPO's transportation system are made. Figure 6.1 depicts both forecasted daily traffic volumes represented by the width of the line, as well as whether the roadway corridor is projected to be congested (red) or uncongested (green). With the current roadway network, NM 516 between Farmington and Aztec and US 64 between Farmington and Bloomfield will experience congestion in 2030, as will several other roads in the region.

As is the case in many growing communities across the nation, the Farmington MPO has been adding population and jobs at a faster rate than it has been able to improve the roadway network. Combined with increased trip-making and longer trip lengths by the traveling public, vehicular traffic is outpacing our roadway improvement capacity. As a result, congestion has been building on the region's roadway network. This trend is expected to continue.

2030 CONGESTION WITH EXISTING SYSTEM *(Fig. 6.1)*



How do you forecast 2030 traffic volumes and evaluate improvements?

The forecasting of 2030 traffic volumes is based on the Farmington MPO Transportation Model The development of this model was a major work effort as part of the Farmington MPO Metropolitan Transportation Plan process. The model utilizes the state of the art VISUM software and includes the entire Farmington MPO planning area.

The model assumes three basic steps as follows:

1. Trip Generation: Based on existing and forecast socioeconomic data including the number of dwelling units and employment by category, the model estimates trips by trip type, such as work trips, shopping trips or service trips. The socioeconomic data is aggregated by small areas referred to as Traffic Analysis Zones (TAZ's). By comparing base year trip generation to forecast 2030 trip generation, one can see the estimated growth in trip activity within the area.

2. Trip Distribution: The trip distribution process examines the relationship between where trips are produced or generated in relationship to where they are attracted or the destination end of the trip. As an example, a Home Based Work Trip begins at the residence and travels to the place of work. This process of distributing trips is conducted for each trip type and for each trip generated throughout the modeling area.

3. Trip Assignment: This is the process where the trip distribution patterns are assigned to various routes between where the trip originates and its destination. The modeling software recognizes the travel speeds of the regional networks to identify the shortest distance and time paths. The model also recognizes that as the roadways fill up, congestion might occur and that alternate routes might be more attractive for assignment.

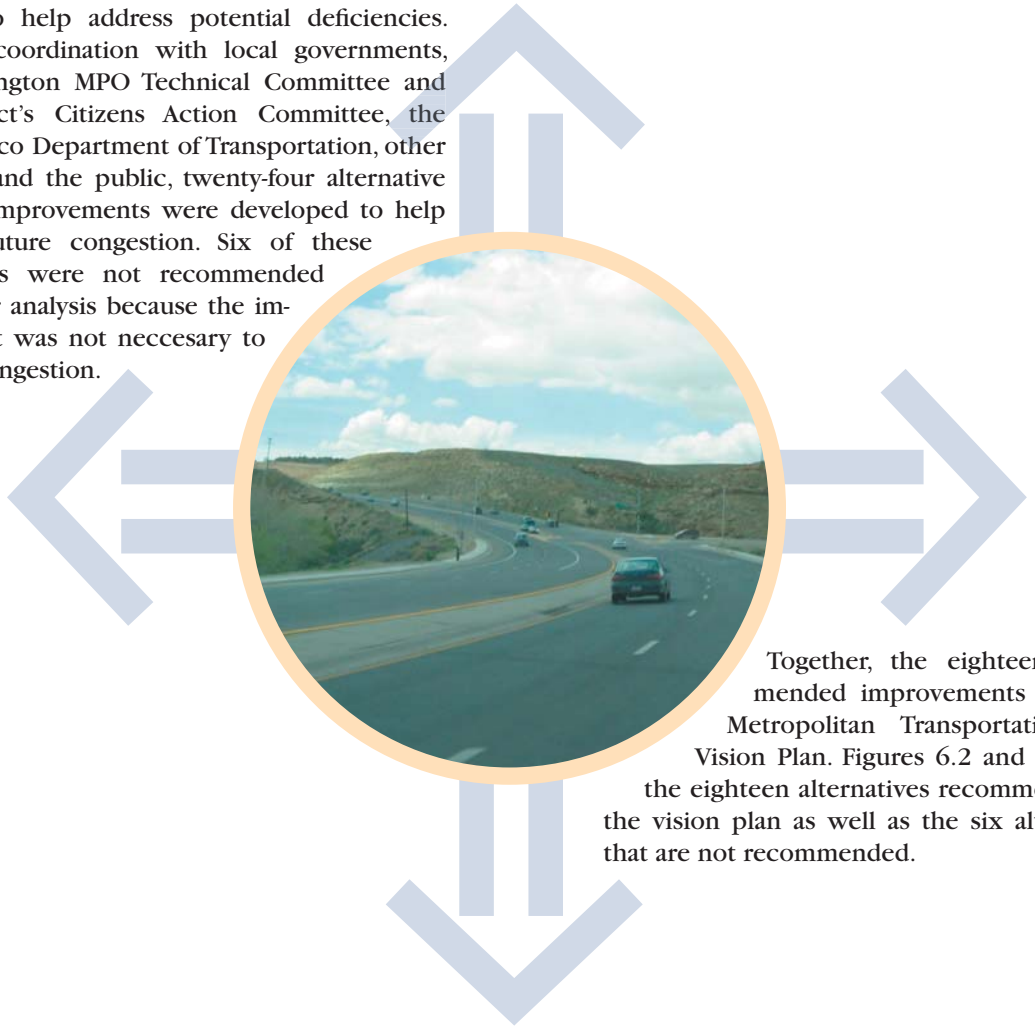
The Farmington MPO traffic model forecasts PM peak hour traffic, which is traditionally the worst case. The model's accuracy is developed through a sophisticated model calibration process where estimated existing trips based on the region's current population and employment characteristics and the region's roadway network are compared to actual traffic counts. The Farmington MPO conducted a very extensive set of these ground counts which allowed a high degree of calibration.

In developing the 2030 forecasts and to identify potential improvements, the 2030 socioeconomic data was first added to the model and a forecast model run conducted with the current roadway system. The model algorithms are designed to calculate the amount of congestion that likely will occur based on the relationship of the capacity of the roadway with estimated traffic volumes. Based on the 2030 forecasts with the existing roadway network, regional deficiencies and needs were identified.

In review of the various deficiencies and needs, a wide range of improvements were tested to determine which improvements best addressed future conditions. The model is designed to provide performance summaries of each improvement such as the increase or decrease of vehicle miles of travel, congestion and the magnitude of delay. Using the model, various improvements could be compared to one another to determine which improvement best addressed the region's future needs. This process also allowed the alternatives to be compared to one another for prioritizing improvements and identifying which improvements should be done early on in the 25 year planning process, those in the middle years and those at the end of the process.

Alternatives Analysis

The alternatives analysis evaluates future conditions of the transportation system and develops options to help address potential deficiencies. Through coordination with local governments, the Farmington MPO Technical Committee and the project's Citizens Action Committee, the New Mexico Department of Transportation, other agencies, and the public, twenty-four alternative roadway improvements were developed to help address future congestion. Six of these alternatives were not recommended for further analysis because the improvement was not neccesary to address congestion.



Together, the eighteen recommended improvements form the Metropolitan Transportation Plan Vision Plan. Figures 6.2 and 6.3 show the eighteen alternatives recommended for the vision plan as well as the six alternatives that are not recommended.

ROADWAY ALTERNATIVES DESCRIPTION *(Fig. 6.2)*

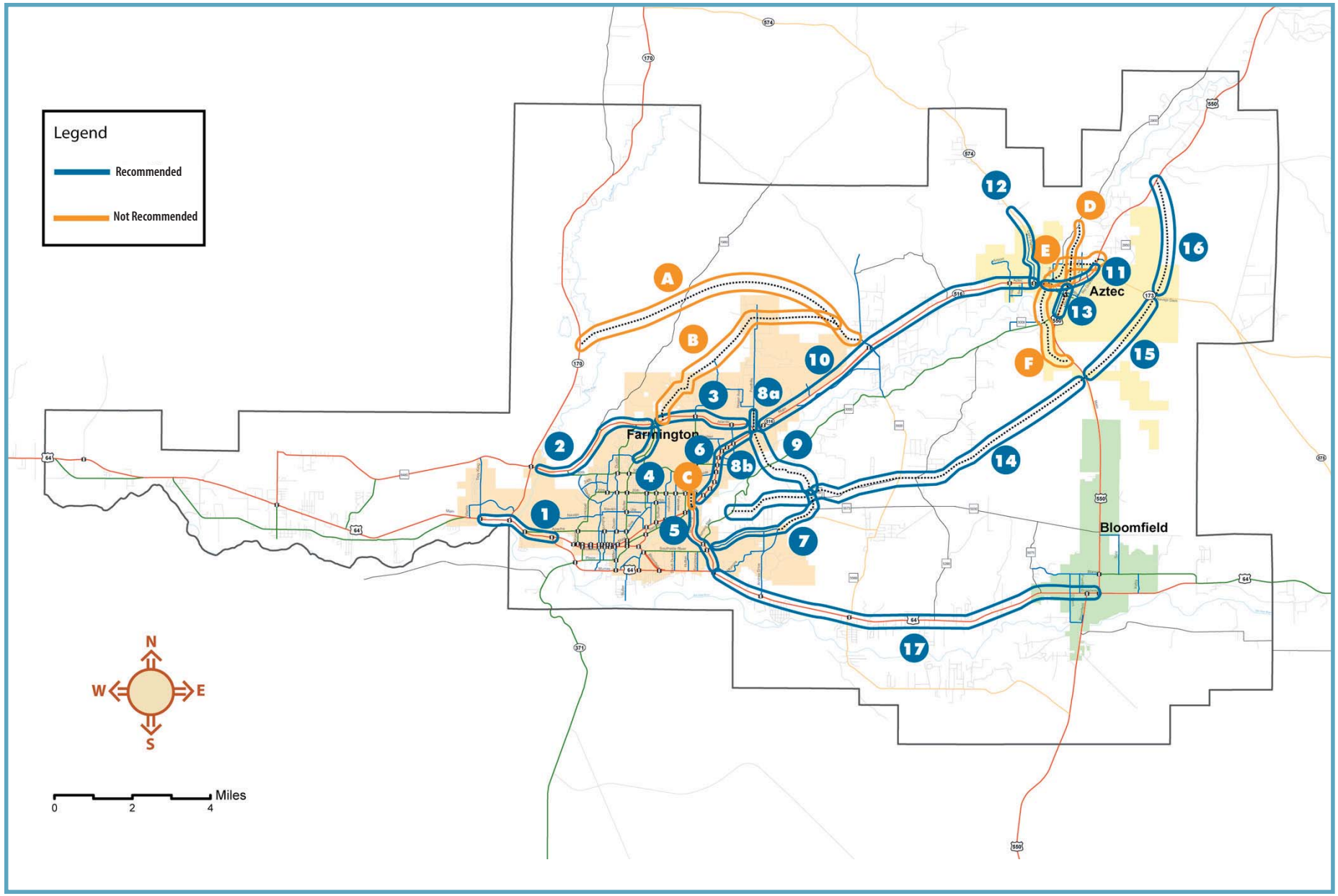
Alt #	Facility	Limits	Description
1	US 64	Troy King to Murray	Widen to 6 lanes
2	Pinon Hills Blvd	NM 170 to Butler	Widen to 4 lanes
3	Pinon Hills Blvd	Butler to NM 516	Widen to 4 lanes
4	Butler Ave	Pinion Hills to 38th	Widen to 4 lanes
5	Browning	NM 516 to US 64	Widen to 6 lanes
6	NM 516	Browning to Pinion Hills	Operational Improvements
7	Wildflower	Browning to CR 3950	Upgrade to arterial, extend to CR 3950
8A	Foothills	Crestwood to NM 516	Upgrade to minor arterial
8B	English	Crestwood to Pinon Hills	New 2-lane Connection
9	Pinon Hills East	NM 516 to CR 3950	New 4 lane minor arterial
10 A	NM 516	Pinion Hills to Light Plant	Widen to 6 lanes
11	NM 516	Light Plant to Navajo Dam Road	Widen to 6 lanes tapered to 4 lane
12	NM 574	NM 516 North	Upgrade to minor arterial
13	US 550	Hartman Place to NM 516	Travel Lane and Parking Changes
14	New / Highline Road	Browning and Southside River to US 550 between Bloomfield and Aztec	2-lane rural highway
15	New Relief Route Facility	NM 173 to US 550 south of Aztec	4-lane arterial
16*	New Relief Route Facility	US 550 north of Aztec to NM 173	4-lane arterial
17	US 64	Browning to US 550	Widen to 6 lanes
18	Intersections	City of Farmington	Signal System Improvements

** Alternative 16 includes Alternative 14 as well.*

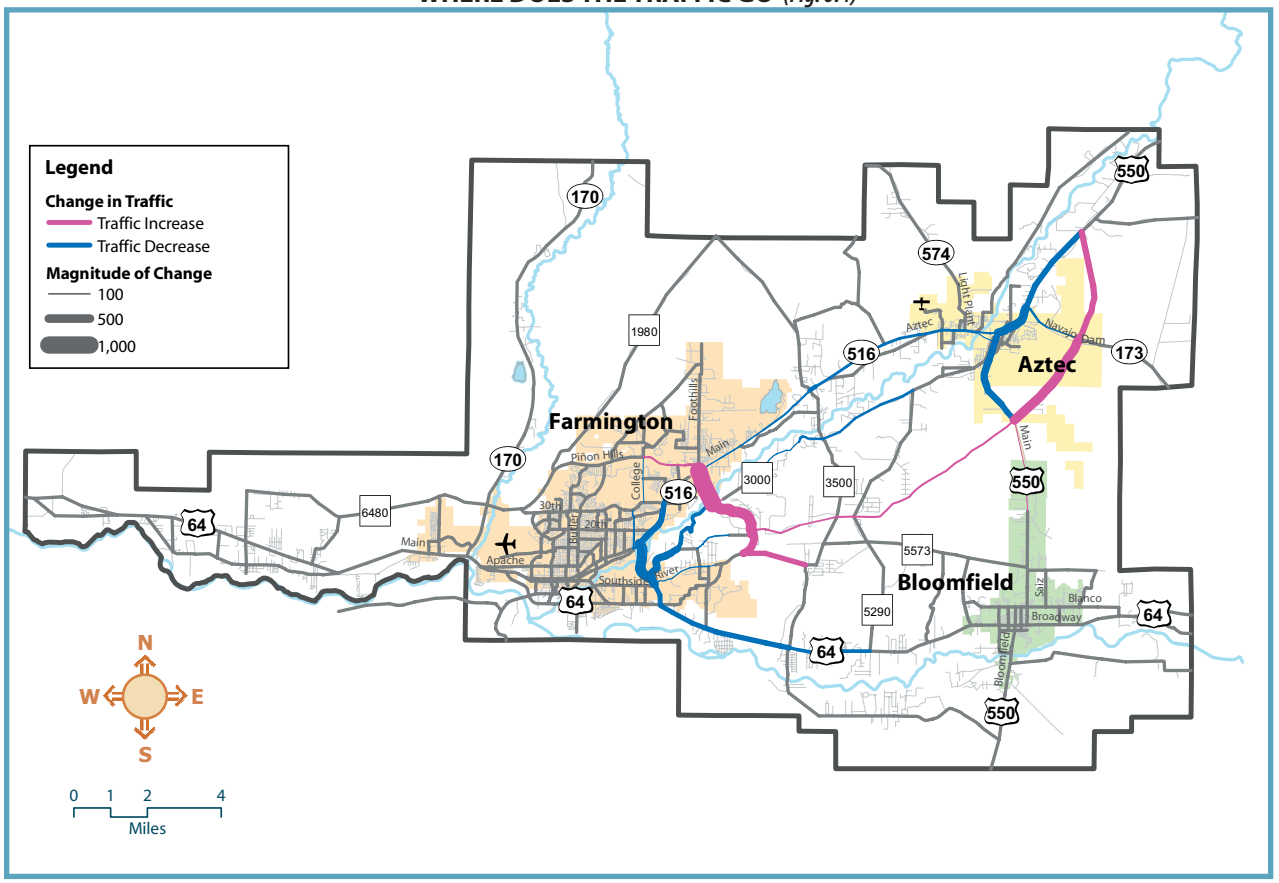
Fatal Flaw Alternatives - Not Recommended for Vision Plan

A	New Facility	NM 170 to NM 516	New facility north of Farmington
B	New Facility / Hood Mesa	NM 516 to Pinon Hills	New/upgraded facility
C	Browning	20th to Main	New 4-Lane arterial
D	New Facility	Aztec Ruins to NM 516/US 550 intersection	New 2-lane arterial
E	New Facility	US 550 to NM 516	New 2-lane arterial through northwest Aztec
F	New Facility	NM 516 to US 550	New 2-lane arterial through southwest Aztec

ROADWAY ALTERNATIVES *(Fig. 6.3)*



WHERE DOES THE TRAFFIC GO *(Fig. 6.4)*



The travel demand model also predicts changes in traffic patterns as a result of the vision plan. Figure 6.4, evidences where traffic volumes will decrease (shown in blue) as a result of the vision plan and where traffic will increase (shown in magenta). The vast majority of the increase in traffic is predicted to occur on future roads or roads with significant upgrades.

Vision Plan

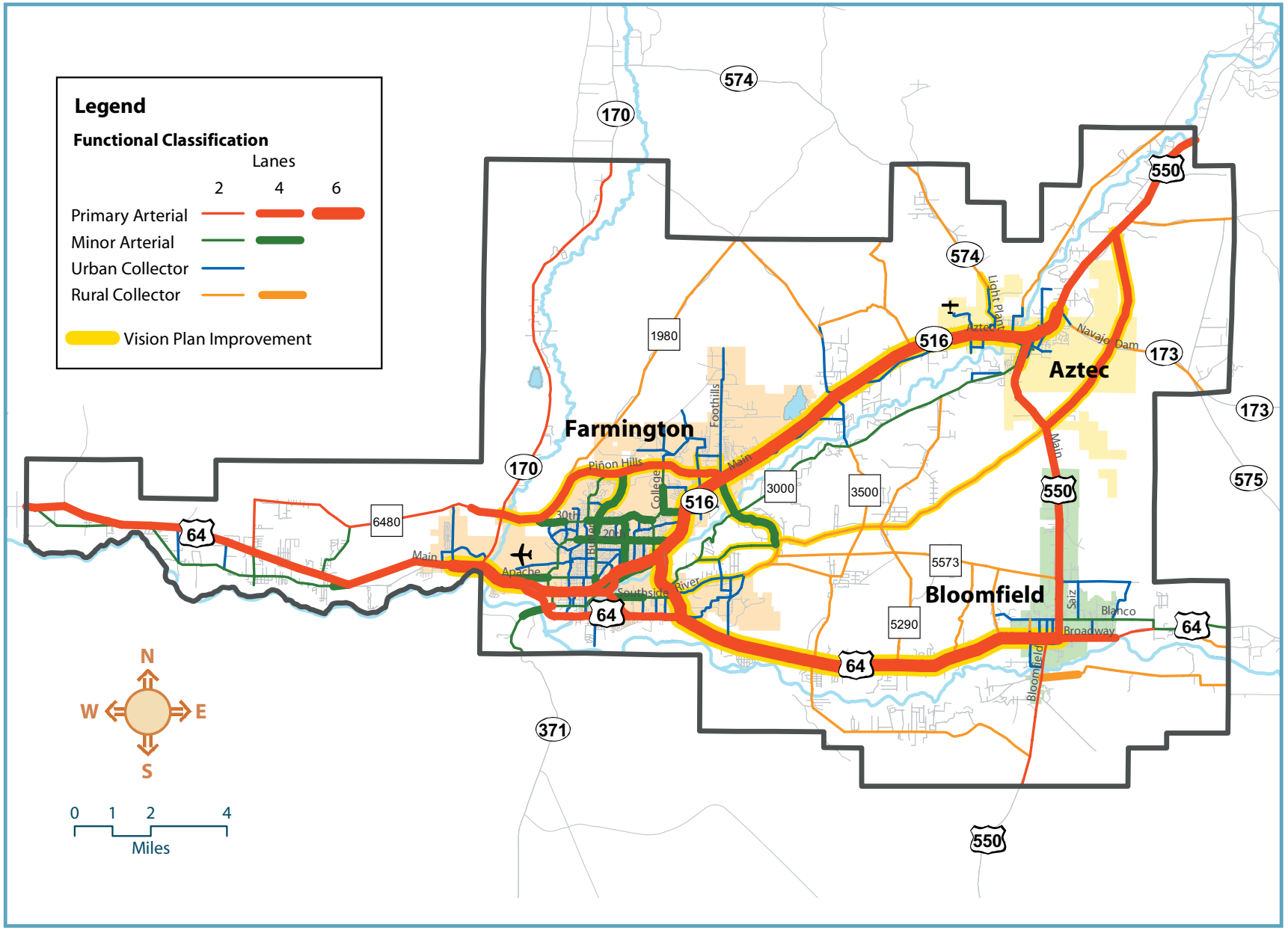
Based on the inclusion of 18 recommended improvements, the 2030 Farmington MPO MTP Vision Plan is presented in Figure 6.5. In order to phase and prioritize improvements each alternative was evaluated against the plan's nine project objectives and seventeen evaluation criteria. The individual objective rankings were then combined into one composite ranking, allowing the individual alternatives to be prioritized for construction. This assessment is shown in figure 6.6.

Several positive impacts are associated with the MTP Recommended Roadway Plan and are included in figure 6.6. The perfromance measures include the amount of traffic congestion delay, cost and effectiveness.

How are the Alternatives Evaluated?

Based on the MPO's evaluation criteria each alternative was measured using the projects 17 criteria measurements. The measurements were connected to a low to high rating for each of the nine evaluation criteria. scoring and prioritization included input from the project's Citizen's Action Committee and MPO's Technical Committee. These scorings were also presented to the public for their input and comments.

RECOMMENDED 2030 VISION PLAN *(Fig. 6.5)*



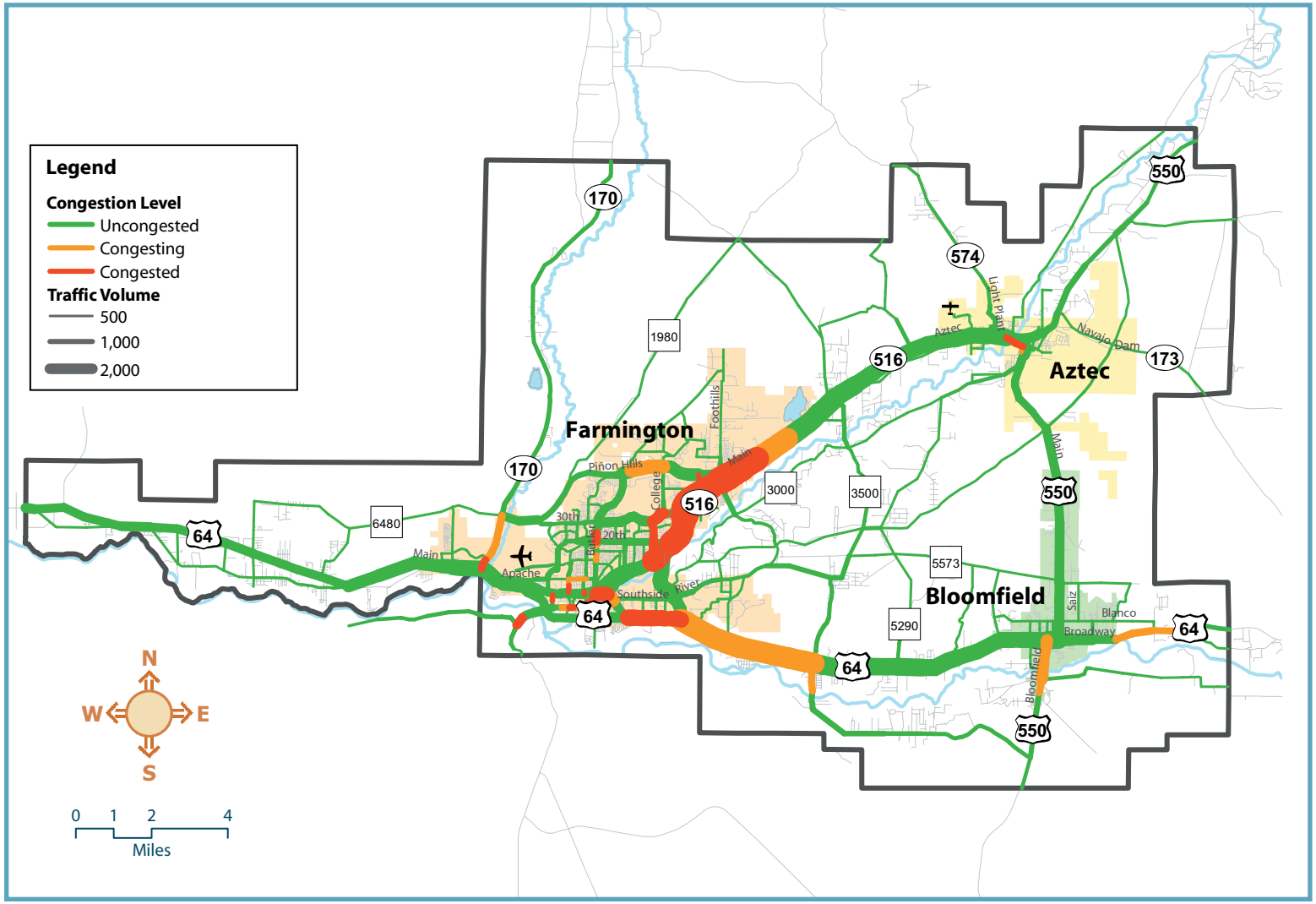
ALTERNATIVE SUMMARY TABLE *(Fig. 6.6)*

Alt #	Facility	Limits	Description	Reduction in PM Peak Hour Congestion Delay	Total Cost	Hours of Delay Saved per Million Dollars Spent	Economic Vitality	Safety and Security	Accessibility, Mobility, and Congestion	Environment	Integration and Connectivity	Preservation, Efficiency, and Technology	Funding and Costs	Multi-modal	Land Development Policies	Total Score	Rank	Alt #
1	US 64	Troy King to Murray	Widen to 6 lanes	7 Hours	$6,091,576	1.1	⊙	⊙	○	◒	●	⊙	⊙	◒	◒	22	12	1
2	Pinon Hills Blvd	NM 170 to Butler	Widen to 4 lanes	8 Hours	$9,945,474	0.8	⊙	◒	◒	◒	⊙	⊙	⊙	◒	◒	23	10	2
3	Pinon Hills Blvd	Butler to NM 516	Widen to 4 lanes	43 Hours	$6,951,811	6.1	◒	●	●	●	◒	⊙	⊙	◒	●	33	5	3
4	Butler Ave	Pinion Hills to 38th	Widen to 4 lanes	7 Hours	$1,546,514	4.5	○	○	○	○	⊙	⊙	◉	◒	◒	18	18	4
5	Browning	NM 516 to US 64	Widen to 6 lanes	9 Hours	$4,910,928	1.8	◒	◒	◒	⊙	◒	⊙	◒	◒	◒	25	8	5
6	NM 516	Browning to Pinion Hills	Operational Improvements	68 Hours	$1,825,000	37.2	◒	◒	◒	◉	◉	●	◉	◒	●	34	3	6
7	Wildflower	Browning to CR 3950	Upgrade to arterial, extend to CR 3950	16 Hours	$2,263,869	7.1	⊙	◒	◒	◒	⊙	⊙	◉	◒	◒	25	8	7
8A	Foothills	Crestwood to NM 516	Upgrade to minor arterial	9 Hours	$337,151	26.7	○	○	○	◒	⊙	⊙	◉	◒	⊙	19	16	8A
8B	English	Crestwood to Pinon Hills	New 2-lane Connection	26 Hours	$377,992	76.9	○	⊙	⊙	⊙	⊙	○	◉	◒	⊙	19	16	8B
9	Pinon Hills East	NM 516 to CR 3950	New 4 lane minor arterial	119 Hours	$5,886,759	20.2	◉	●	●	◉	◉	○	◉	⊙	◒	32	6	9
10 A	NM 516	Pinion Hills to Light Plant	Widen to 6 lanes	81 Hours	$45,100,000	1.8	◉	●	●	●	◒	◉	○	◉	◒	34	3	10 A
11	NM 516	Light Plant to Navajo Dam Road	Taper from 6 lanes to 4 lanes with acceleration/deceleration lanes at intersections	6 Hours	$22,800,000	0.3	⊙	⊙	⊙	○	◒	◉	◒	◒	◒	23	10	11
12	NM 574	NM 516 North	Upgrade to minor arterial	2 Hours	$5,002,071	0.4	◒	◒	⊙	⊙	⊙	⊙	⊙	○	◒	20	14	12
13	US 550	Hartman Place to NM 516	Travel Lane and Parking Changes	n/a	$900,000	n/a	◒	◒	○	◒	●	◒	⊙	◉	●	29	7	13
14	New / Highline Road	Browning and Southside River to US 550 between Bloomfield and Aztec	2-lane rural highway	34 Hours	$14,572,385	2.3	◒	◒	◒	◒	○	○	○	○	○	17	19	14
15	New Relief Route Facility	NM 173 to US 550 south of Aztec	4-lane arterial	13 Hours	$7,499,758	1.7	◒	◒	◒	◒	○	⊙	⊙	○	◒	21	13	15
16*	New Relief Route Facility	US 550 north of Aztec to NM 173	4-lane arterial	20 Hours	$11,997,000	1.7	◒	◒	◒	◒	○	⊙	○	○	◒	20	14	16*
17	US 64	Browning to US 550	Widen to 6 lanes	77 Hours	$56,000,000	1.4	◉	●	●	●	⊙	●	○	◒	●	35	2	17
18	Intersections	City of Farmington	Signal System Improvements	n/a	$850,000	n/a	◒	●	●	●	◒	◒	●	◒	●	37	1	18

* Alternative 16 includes Alternative 14 as well.

Key: ● High ◉ Medium High ◒ Medium ⊙ Medium Low ○ Low

2030 CONGESTION WITH PROPOSED VISION PLAN *(Fig. 6.7))*



Based on a 2030 travel model run which assumed the 2030 growth forecasts and the 18 roadway projects selected for the vision plan, 2030 congestion was estimated and is presented in Figure 6.7. By comparing figure 6.5, 2030 Congestion with the proposed Vision Plan Improvements, to figure 6.1, 2030 Congestion with the Existing System, one can see that traffic congestion in the MPO is expected to be greatly reduced if improvements identified in the Vision Plan are constructed. Some congestion remains along key corridors such as NM 516 in east Farmington, but the consensus was not to propose further widening given cost and environmental impacts.

Corridor Preservation

One of the primary products in the development of the MTP is the identification of future roadway functional classifications improvements in the Farmington MPO region. Recognizing the fact that the region might not have sufficient funding for implementing the recommended improvements, it is important to preserved these improvements from negative impacts of development, changing land uses, and encroachments so that future improvements can be made in an efficient manner. This is done through the active process of

- identifying major corridors for future roadway improvements;
- acquiring necessary right-of-way along these corridors as soon as practical or as part of development proposals;
- adopting access management regulations to allow appropriate access point spacing;
- identifying and securing access management standards for areas beyond the extent of existing urban development; and
- requiring building and development setbacks that preserve the relationship between the right-of-way and development so that future roadway improvements can be accommodated on the priority corridors.

The functionally classified corridors identified on the MTP Roadway Plan are all candidates for corridor preservation. Depending on the type of improvements identified, existing right-of-way, and functional classification, corridors should be so preserved for future use.

Roadway Design

The design of individual roadways is based largely upon the functional classification of that road. The functional classification of a roadway reflects its role in the region's street and highway system and forms the basis for access management, corridor preservation, and street design guidelines and standards. Roadway function tends to vary to some degree depending on the amount of urbanization in a particular corridor. The differences in the nature and intensity of development in rural and urban areas warrant corresponding differences in urban system characteristics relative to the rural systems.

The roadway functions of the facilities on the MTP represent a desired function for the year 2030. Existing roadways may not meet all of the desired characteristics described by their function, but strategic improvements can serve to fulfill the future vision over time. As proposed roadways are planned and developed, the guidelines and standards associated with their function should be considered to the degree practical and appropriate. Functional classifications are summarized as follows:

State Highways

State highways permit limited at-grade intersections at cross-streets. Access may be either full or partial control with small amounts of direct land access. State highways are intended to provide higher levels of mobility rather than local property access. NM 516 between Farmington and Aztec and US 64 between Farmington and Bloomfield are expected to have high volume and high speed regional state highway characteristics by the year 2030.

Principal Arterial

Principal arterials permit traffic flow through the urban area and between major destinations. They are of great importance in the transportation system since they connect major traffic generators, such as the central business district, to other major activity centers. Principal arterials carry a high proportion of the total urban travel on a minimum of roadway mileage. Since movement, not necessarily access, is the primary function of principal arterials, access management is essential to preserve capacity and enhance safety. Medians can be used to control potential conflict points and to separate opposing traffic movements. Left turn lanes are essential at intersections to maintain mobility for through traffic. Right turn deceleration lanes are desirable at intersections with significant turning activity Browning Parkway and Piñon Hills Boulevard are examples of principal arterials

Minor Arterial

Minor arterials collect and distribute traffic from principal arterials and expressways to streets of lower classification and, in some cases, allow traffic to directly access destinations. They serve secondary traffic generators such as community business centers, neighborhood shopping centers, multifamily residential areas, and traffic between neighborhoods. Access to land use activities is generally permitted, but should be consolidated, shared, or limited to larger-scale users. Butler Avenue is an example of a minor arterial within the MPO region.

Collector Street

Collectors provide for land access and traffic circulation within and between residential neighborhoods and commercial and industrial areas. They distribute traffic movements from these areas to the arterial

streets. Collectors do not typically accommodate long through trips and are not continuous for long distances. In areas where arterial streets are adequately spaced, collector 'streets should penetrate but not necessarily completely traverse through residential areas. Individual access from residential lots should be discouraged, particularly where bicycle lanes or routes are provided. The cross section of a collector street may vary widely depending on the scale and density of adjacent land uses and the desired character of the local area. Left turn lanes should be considered on collector streets adjacent to nonresidential development. Examples of collector streets in the Farmington MPO include Dustin Avenue, Farmington Avenue and Glade Road.

Implementation

Developing and maintaining a comprehensive network of streets and highways that support safe automobile, transit, bicycle, and pedestrian traffic is critical to improving mobility within the MPO. Of particular concern is the development of performance standards for pedestrian and bicycle mobility that can be used in combination with vehicular performance to evaluate and develop the MPO's transportation infrastructure. These standards should be coupled with an ongoing program of constructing new bicycle lanes and sidewalks in order to create a truly multi-modal street and highway system.

In order for the Farmington MPO region street and highway system to support the multi-modal needs of the community and provide acceptable level of service, a number of broad policies and actions are needed. These actions and policies build on the successes and opportunities of the existing system and can help prevent past mistakes from recurring. They are described below.

ROADWAY ACTION 1: COORDINATE MULTI-MODAL ENHANCEMENTS FOR FUTURE ROADWAYS

Coordinate modal issues among the MPO's Technical Committee to determine the multi-modal enhancements appropriate for each future roadway improvement.

ROADWAY ACTION 2: ADOPT ARTERIAL STREET DESIGN GUIDELINES

Adopt arterial street design guidelines that provide flexibility for integrating multi-modal enhancements into roadway improvements, such as mid-block pedestrian crossings, far side transit stops and turnouts, pedestrian refuge islands, pedestrian crossings, bicycle lanes and routes, and others.

ROADWAY ACTION 3: UPDATE STREET AND INTERSECTION DESIGN STANDARDS

Modify the current street and intersection design standards to promote a balance for transportation modes.

ROADWAY ACTION 4: COORDINATE HIGHWAY DESIGN STANDARDS WITH NMDOT

Coordinate with the New Mexico Department of Transportation to review highway standards for facilities within the City limits.

ROADWAY ACTION 5: ESTABLISH ACCESS STANDARDS

The MPO and member jurisdictions should establish uniform access standards for highway, arterial and collector streets, and rural roadways.

ROADWAY ACTION 6: DEVELOP ACCESS CONTROL PLANS FOR CORRIDORS

Develop access control plans which define future points of access for all major roadway improvements.

ROADWAY ACTION 7: DEVELOP ACCESS MANAGEMENT PHASING PLAN

Develop an access management phasing plan to address critical corridors with existing access control problems that are resulting in congestion and safety issues.

ROADWAY ACTION 8: FUND ACCESS PLANS

Since preservation of the existing transportation system is a core element of the MPO's goals, funding should be made available to implement solutions to existing corridors with access control problems.

ROADWAY ACTION 9: FUND INTERSECTION DATA COLLECTION AND SIGNAL TIMING PLAN DEVELOPMENT

Commit MPO funds to develop an ongoing program to collect intersection turn movement counts and prepare multiple signal timing plans. Signal timing plans should be updated every five years.

ROADWAY ACTION 10: REQUIRE SIGNAL PROGRESSION ANALYSIS FOR NEW DEVELOPMENTS

For new developments that propose new traffic signals, a signal progression analysis should be performed based on long-range traffic forecasts to demonstrate the impacts of the new signal on traffic flow along the impacted streets.

ROADWAY ACTION 11: ESTABLISH LEVEL OF SERVICE STANDARDS

Establish level of service standards for highways, arterials, collectors, rural roadways, and intersections.

ROADWAY ACTION 12: PURSUE ADDITIONAL FUNDING

Pursue additional funding sources to maintain the desired level of service on the roadway system in order to minimize congestion.

Safety and Maintenance

While the focus of the Farmington Metropolitan Transportation Plan is on new and widened roadways, safety and maintenance are critical components of the transportation system. In fact, the federal government identifies safety and security and the preservation of the existing system as underlying foundational principles of the transportation planning process.

Safety is often difficult to fully consider in the long-range transportation planning process. Specific safety concerns need to be identified and resolved in a shorter timeframe to be effective. On the other hand, the MTP should lay the foundation for the consideration of safety in every aspect of the provision of transportation services and infrastructure. Whether it is safe connections between neighborhoods and schools, safe areas for transit patrons to wait for the bus, or safe roadway designs, safety must be the highest priority.

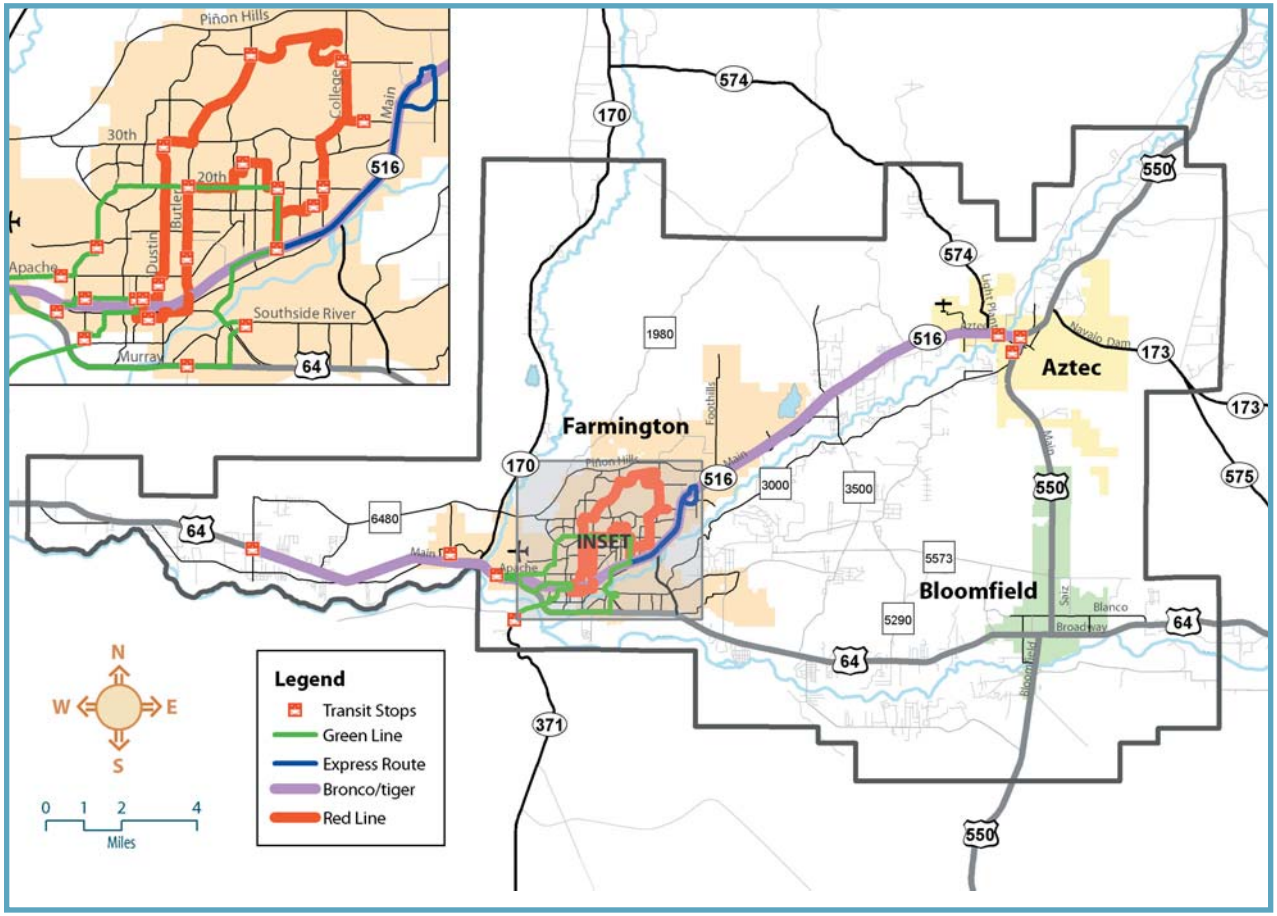
Maintenance is also a key component of the transportation system. All aspects of the transportation system require some maintenance, including pavement, signs, street markings, bridges, buses, bus shelters, recreational paths, sidewalks, crosswalks, and traffic signals. According to the Federal government, maintenance of the existing system should come before consideration of new facilities based on the concept that if a community can't keep its current system in good shape, there is no reason to believe that new facilities will be maintained either. The benefits obtained from the initial investment are significantly eroded when the system is not effectively maintained.

TRANSIT PLAN

Transit service within the Farmington MPO area is currently provided by Red Apple Transit. This system includes a loop system and routes within the City of Farmington with limited service to Aztec and Kirtland. As growth in the area occurs, increased demand for transit will occur. Transit demand will also increase over the year 2030 planning horizon for the senior and youth population, who typically have a higher need for transit. Transit will also be a factor in replacing auto trips along the primary arterial travel corridors. The current extent of Red Apple Transit's bus routes are shown in Figure 7.1.

Transit service, whether fixed-route or demand-responsive, is intricately linked to many other governmental and planning actions. Providing fixed-route transit service relies upon direct pedestrian connections between bus stops and origins and destinations. Transit

RED APPLE TRANSIT *(fig. 7.1)*



service reacts to the density of development within the city, locations of transportation corridors and activity centers, and the design of developments along the corridors and centers it serves. Travel corridors and activity centers with a mix of uses and a large number of travelers provide the demand that can effectively support higher levels of transit service.

A balanced, multi-modal transportation system sometimes requires shifts in public investment given the historical emphasis on roadways and automobiles. To facilitate a higher level of transit service in the region, new developments and land use patterns should be planned in such a way as to support the non-automobile modes. In turn, the design of the City's infrastructure and roadway system must consider all transportation modes, including transit.

Methodology

Two future year (2030) transit alternatives were developed for the Farmington Metropolitan Planning Organization's (MPO) Metropolitan Transportation Plan. In order to assess whether future year service levels were reasonable, an estimate was made of the current system's annual revenue bus hours and annual revenue bus miles since these data were not available. This baseline served as the basis for evaluating future increases in transit service levels.

In developing the 2030 alternatives, forecasts of households and employment were reviewed graphically using geographic information systems (GIS). Typically, transit routes function best in areas with higher population and employment densities. While the 2030 forecasts of households suggest the MPO area will grow by 47 percent over current conditions, this growth is likely to occur in a dispersed manner. In developing the routes for 2030, particular attention was paid to areas with the highest population and employment densities. These areas were identified as locations with the most transit ridership potential

Factors Affecting Transit Mobility

Two of the primary factors affecting ridership on transit systems are density and service characteristics. Higher population and employment densities within walking distance to the transit system can support higher-type transit services. Service characteristics are also an important consideration for Red Apple Transit. However, more service will require additional investment. Furthermore, issues such as providing "coverage" versus "productivity" route strategies has a significant impact on ridership and how the system is perceived by the public.

The concept for the two future transit alternatives was to replace the inefficient one-way loop operation of the Red and Green Lines with two-way service on all routes. The Red and Green Lines were maintained, with enhancements in the future. Boarding and alighting data were reviewed to determine the most productive segments. It was also important to retain transit service to important attractions such as the San Juan Medical Center, major employment centers, multi-family housing, retail, and other social services. Based on this methodology, two transit service options were developed and evaluated.

Service Option 1

Service Option 1 reflects a 33 percent increase in revenue service miles over the current system. This increase in service levels seemed reasonable after reviewing the 2030 forecast for households. While the forecasts suggest that total households will increase by 47 percent in the Farmington MPO area, an increase of this magnitude was thought to be unusually large. A closer look confirmed that this number was being skewed by the larger percentage increases in households outside of the City of Farmington. This area is marked by dispersed development patterns making this population harder to serve by transit. Hence, this option's 33 percent increase is considered a conservative alternative that attempts to match transit service with household growth within the City of Farmington's boundaries

The routes have been restructured in Option 1 to serve the existing transfer center at Orchard Plaza located at Main Street and Farmington Avenue. All routes will start and end at this transit center, thereby allowing transit riders the opportunity to transfer to other routes in the system. Other transfer locations will be available at the intersection of any two routes. Red Apple Transit currently has a fleet of two cutaway buses and six vans that serve existing service. Option 1 would require three new vehicles to operate the expanded service. This estimate does not include spare vehicles which should represent twenty percent of the total fleet. Including the spares, a total of five vehicles would be needed for this option. This assumes a base fleet of five vehicles that are used to operate the existing system. A route map for Transit Service Option 1 can be seen in Figure 7.2. Below is a brief description of the proposed route and service frequencies:

Maroon Route – Local service at a 45 minute frequency from the Animas Valley Mall to Orchard Plaza via Main Street. This route serves the retail businesses along Main Street.

Yellow Route – Local service at a 60 minute frequency from north of San Juan College to Orchard Plaza via College Boulevard, 30th Street, Hutton Avenue, 20th Street, and Farmington Avenue. The Yellow Route serves the San Juan College, San Juan College Career Center,

San Juan Apartments, Conquistador Apartments, and Orchard Plaza.

Orange Route – Local service at a 60 minute frequency from the junction of Apache Street/W. Main Street to Orchard Plaza via Apache Street, Municipal Drive, 20th Street, and Farmington Avenue. This serves the Northgate Apartments, City Hall, and the retail businesses along 20th Street.

Fuschia Route – Local service at a 60 minute frequency from Piñon Hills/Butler Avenue to Orchard Plaza via Dustin Avenue, 30th Street, Butler Avenue, Apache Street, Orchard Avenue, Broadway Street, San Juan Boulevard, and Main Street. This route provides service to Village Apartments, Mesa Shopping Center, Senior Center, Civic Center, State Office Buildings, and Orchard Plaza.

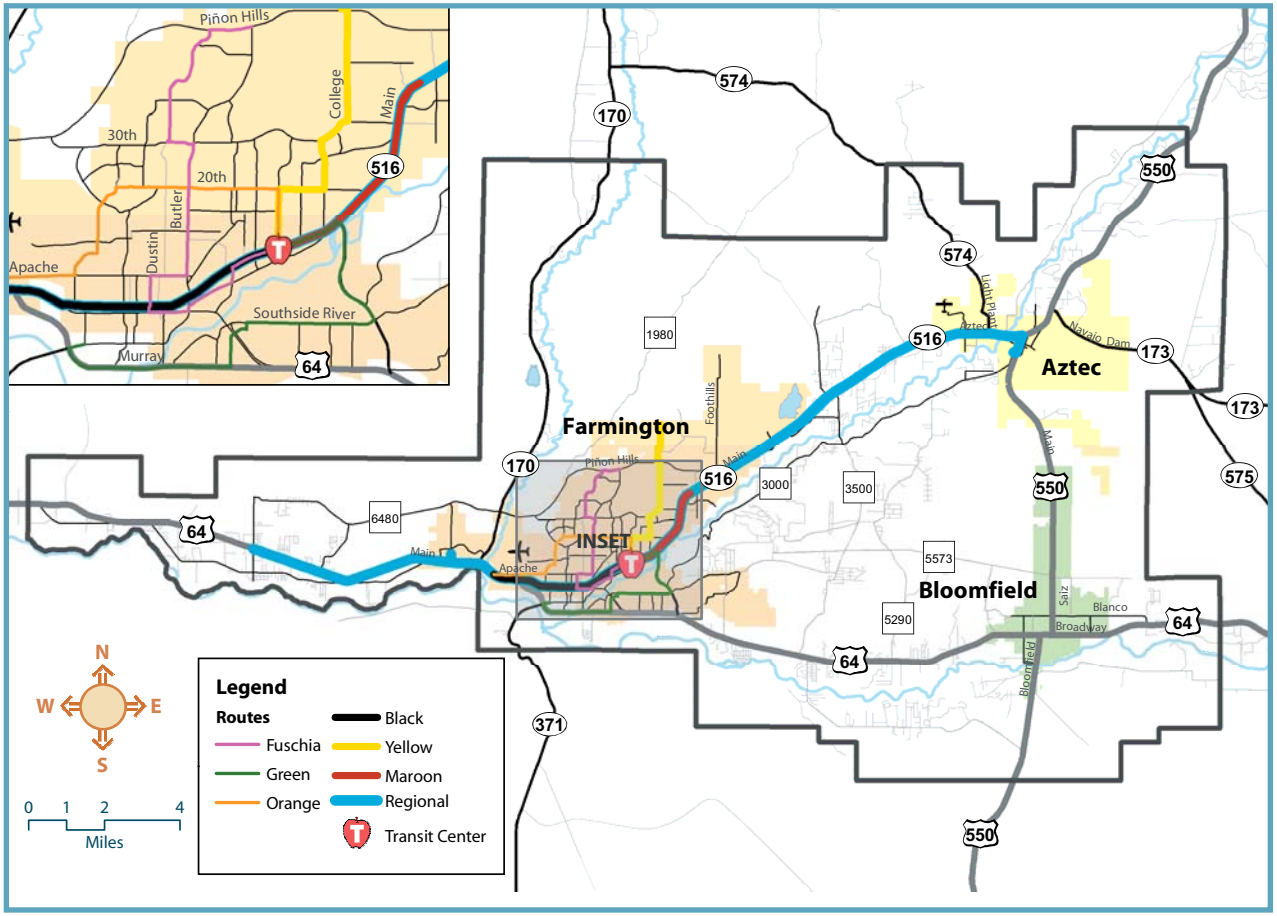
Black Route – Local service at a 60 minute frequency from W. Main Street/Apache Street to Orchard Plaza via W. Main Street. This route is the western counterpart to the Maroon Route. It provides service to Northgate Apartments and businesses along W. Main Street.

Green Route – Local service at a 60 minute frequency from the San Juan Medical Center to Orchard Plaza via Old Bloomfield Highway, Carlton Avenue, Bloomfield Highway, Southside Road, Browning Parkway, and Main Street. This route provides service to the San Juan Medical Center, Mesa Village Apartments, and Orchard Plaza.

Tiger Route– Limited service (3 trips per day) from Aztec to Orchard Plaza via State Highway 516.

Bronco Route– Limited service (3 trips per day) from Kirtland to Orchard Plaza via Highway 64 and W. Main Street.

TRANSIT SERVICE OPTION 1 *(fig. 7.2)*



Service Option 2

Service Option 2 reflects a 47 percent increase in service miles over the current system. The higher level of service is consistent with the expected growth in households for the entire Farmington MPO area. The most notable difference between Option 2 and Option 1 is the shifting of the transit center westward to roughly Butler Avenue and Main Street (Butler Transfer). The purpose of this shift was to bring the transit center closer to the traditional "downtown" of Farmington along Main Street. This location also moves the transit center into an area with greater population and employment densities. In addition, the transit hub would be closer to the City's various social services.

Most of the local routes in Option 2 also have more frequent service frequencies. While much of the service

in Option 1 is hourly, most of the service in Option 2 will operate with 45 minute headways throughout the day. In addition to the Tiger and Bronco routes, a new Bloomfield Limited will provide service from the City of Bloomfield to Farmington. This option would require at least four new vehicles over the existing number to operate. If spare vehicles are desired, six new vehicles would be required for this option. The route system is shown in Figure 7.3 and described below:

Black Route – Local service at a 45 minute frequency from the Animas Valley Mall to the Butler Transfer. This route provides service to all the retail businesses along Main Street.

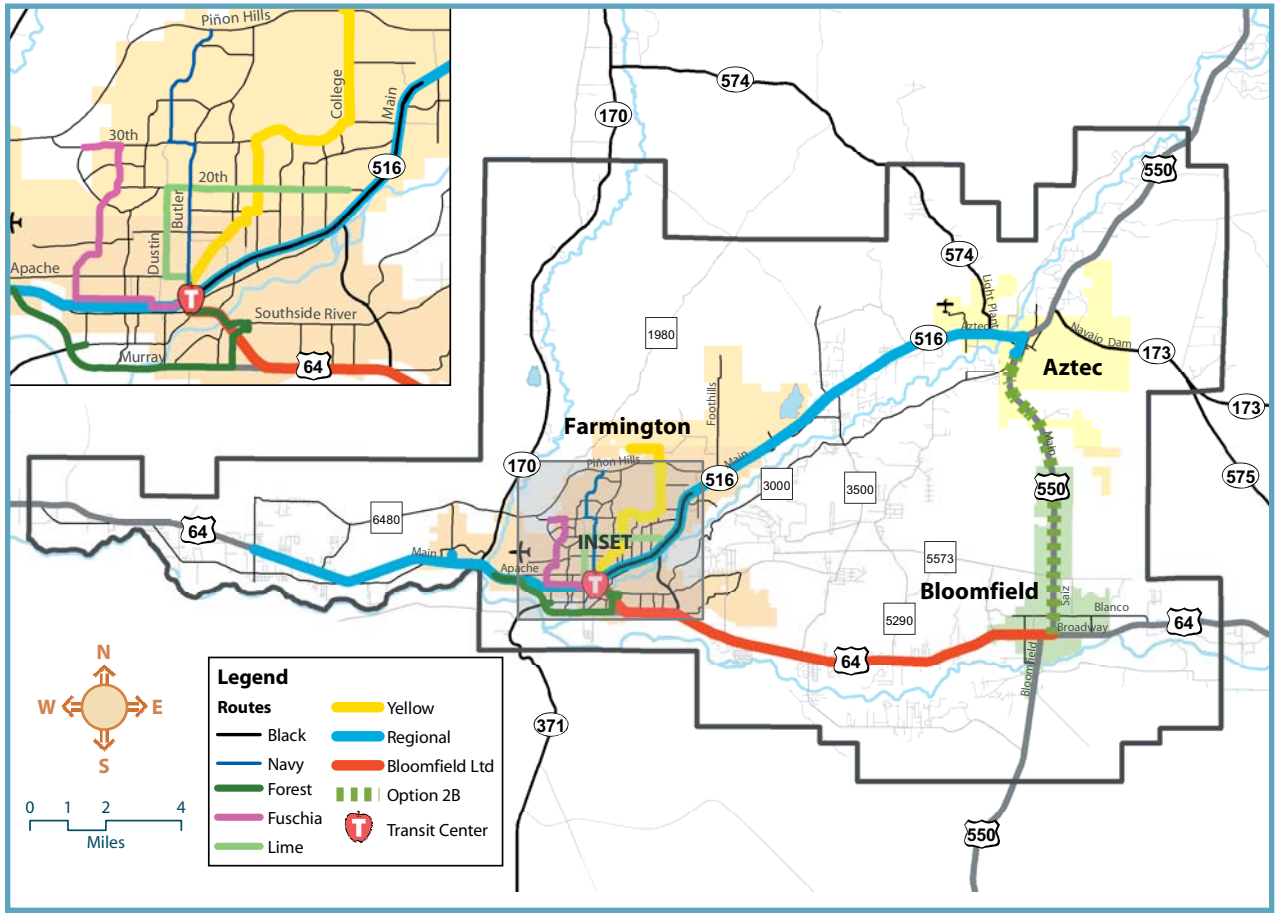
Yellow Route – Local service at a 60 minute frequency from Lions Trail to the Butler Transfer via College Boulevard, 30th Street, Sullivan Avenue, Vine Avenue, and Butler Avenue. It provides service to the San Juan College, San Juan College Career Center, residential neighborhoods, and the Butler Transfer.

Lime Route – Local service at a 45 minute frequency from the 20th Street/Clayton Drive to the Butler Transfer via 20th Street, Dustin Avenue, Apache Street, and Butler Street. This provides service to 20th Street retail businesses and Butler Transfer.

Navy Route – Local service at a 45 minute frequency from Piñon Hills Boulevard/Dustin Avenue to the Butler Transfer via Dustin Avenue, 30th Street, and Butler Avenue. This route provides service to Village Apartments, residential neighborhoods, Mesa Shopping Center and the Butler Transfer.

Fuschia Route – Local service at a 45 minute frequency from Glade Drive/30th Street to the Butler Transfer via 30th Street, Municipal Drive, Arrington Street, Main Street, and Butler Street. It provides service to City Hall, Retail, Civic Center, and the Butler Transfer Center.

TRANSIT OPTION 2 *(fig. 7.3)*



Forest Route – Local service at a 60 minute frequency from W. Main Street/Apache Street to the Butler Transfer via W. Main Street, Murray Drive, Carlton Avenue, Bloomfield Highway, Broadway Street, and Butler Avenue. This route provides service to Northgate Apartments, American Plaza, San Juan Medical Center, Mesa Village Apartments, and the Butler Transfer Center.

Tiger Route – Limited service (3 trips per day) from Aztec to Butler Transfer via State Highway 516.

Bronco Route– Limited service (3 trips per day) from Kirtland to Butler Transfer via Highway 64 and W. Main Street.

RIDERSHIP FORECAST SUMMARY *(Fig. 7.4)*

Ridership	Existing - 2004	Option 1 - 2030	Option 2 – 2030	Option 2B – 2030
Annual Ridership	42,756	61,512	79,376	80,911
Average Weekday Ridership	139	200	259	264
Increase Over Existing	—	43.9%	85.6%	89.2%

Bloomfield Ltd – Limited service (3 trips per day) from Bloomfield to Butler Transfer via Highway 64.

Option 2B

Service Option 2B is very similar to Option 2. Option 2B includes the same recommendations as Option 2, including the relocation of the transit center from Orchard Place to Butler Transfer, and adds limited service several times per day between Aztec and Bloomfield. Option 2B would result in a 60% increase in service miles over the current system. This option would require one additional vehicle over Option 2B, or from five to seven vehicles more than the existing service, depending on the desire for spares.

Alternatives Analysis

Red Apple Transit carried 42,756 passengers on their fixed routes in 2004. This annual figure equates to about 139 passengers during an average weekday. Future year transit ridership was estimated based on revenue hours of service, households within a half mile of the route, and employees within a half mile of the route

For 2030, this ridership model was applied to the Option 1 and Option 2 alternatives. Using this method, system-wide ridership was forecast to be approximately 200 riders during an average weekday for Option 1 and 259 riders for Option 2. When these forecasts are annualized, Option 1 would carry 61,512 passengers while Option 2 would carry 79,376 passengers. The forecasts for Option 1 and Option 2 would represent increases of 43.9 percent and 85.6 percent, respectively. Option 2B is estimated to add only five riders per day to Option 2, or 80,911 riders per year. Figure 7.4 provides a summary of the ridership projections for the fixed route services.

The routes in all of the options eliminate the one-way loop operation of the Green and Red Lines. While a one-way loop may be useful for certain applications, routes on infrequent headways and long routes require some passengers to have long wait times as well as travel out of direction. The proposed routes for both alternatives are relatively direct and operate in two directions. One positive characteristic of the current system that has been retained for both future alternatives is the central hub or transfer station. In Option 1, Orchard Plaza, located approximately at Farmington Avenue and Main Street, remains the main transfer center. In Options 2 and 2B, the location has been shifted westward to approximately Butler Avenue and Main Street. Depending on the availability of land, the location of the transfer center can be moved. As mentioned earlier, the idea of shifting the transfer center closer to the traditional Farmington downtown is to provide people a more pedestrian-friendly environment to access transit either by walking or riding their bicycles.

Red Apple Transit currently provides about 186,600 revenue bus miles annually. Both alternatives would represent increases in transit service over the base network. Option 1 would increase bus miles by 33 percent to 247,800. Option 2 would represent an 11 percent increase in service over Option 1 with 275,300 bus miles and Option 2B would increase revenue miles to 298,800. Not surprisingly, Options 2 and 2B are forecast to carry more riders than Option 1, with Option 2B having the highest ridership by a small margin. Higher ridership does not always suggest a superior alternative; however, an equally important issue is the cost of providing a certain level of service. Hence, the forecasted ridership was examined in light of the potential costs associated with providing the proposed service levels. Applying the current operating cost per mile of $2.04* to the annual revenue miles, the annual cost for providing Option 1 service in 2004 dollars would be $505,512, Option 2 would cost $561,612, and Option 2B would cost $599,352. Taking the annual cost and dividing by

COMPARISON OF TRANSIT OPTIONS *(Fig. 7.5)*

Fixed Route Summary	Existing	Option 1 - 2030	Option 2 – 2030	Option 2B – 2030
Annual Revenue Miles	186,600	247,800	275,300	298,800
Annual Cost (@$2.04 per mile*)	$379,440	$505,512	$561,612	$599,352
Operating Cost per Rider	$8.87	$8.22	$7.08	$7.41

**This figure was provided by Red Apple Transit for 2004*

the annual riders that are forecasted for each alternative, Option 2 has the lowest operating cost per rider at $7.08. Figure 7.5 below has a summary of the comparison.

Recommended Plan

The Recommended Transit Plan provides a long-term vision on how public transportation in the MPO area can be enhanced and expanded to serve residents in the outlying areas. Balancing overall ridership and operating expenses, it is recommended that Option 2 be adopted. This option provides for a 29% increase in daily ridership over Option 1, while increasing total operating costs over Option 1 by only 11%. Overall, the operating cost per rider of Option 2 is almost 15% less than Option 1. Option 2B was not deemed a viable alternative due to the very modest increase in ridership and greatly increased operating costs.

Implementation

There is a trade-off relationship in the transit system between the number of routes, the frequency of service, and the extent of service hours. As an example, if resources are expended on increasing the frequency of service or extending the service hours, less productive service routes might need to be eliminated and those resources reallocated to the higher-frequency and extended service-hour routes. Similarly, if additional routes are added, frequency of service and/or service hours for existing routes might need to be cut.

As development occurs and the MPO grows service to intensified existing development areas and newly developed areas, the trade-offs between number of routes, frequency of service, and service hours should be examined. To the extent possible, frequency of service should be increased on the higher-density transit route corridors to capture trips that might have traditionally used automobiles. As new development occurs, extended or new services should be considered when densities warrant.

Because Option 2 provides superior service and reduced costs per rider than Option 1, the implementation strategy is based on trying to move toward the Option 2 transit network. The most important priorities would involve:

- Relocating the transit center westward to the vicinity of Butler Avenue and Main Street and
- Restructuring the two current fixed route one-directional loops to several fixed routes operating bi-directionally.

As a starting point, 60 minute headways can be set for all of the fixed routes. Over time, as ridership builds and more funding becomes available, headways can be shortened to 45 minutes for routes with the highest productivity. Once these core fixed route services are established, the Bloomfield Limited should be considered.

To ensure that the multi-modal needs of the community are met, a number of broad policies and actions are needed. These actions and policies build on the successes and opportunities of the existing system and are described below.

TRANSIT ACTION 1: ONGOING MONITORING OF TRANSIT PERFORMANCE AND SERVICE

Monitor and modify transit service in response to future growth, changes in development patterns, and users' needs.

TRANSIT ACTION 2: RELOCATE RED APPLE'S REGIONAL TRANSIT HUB

Examine the possibility of relocating Red Apple's regional transit hub to a location within proximity of Farmington's urban core.

TRANSIT ACTION 3: DEVELOP PEDESTRIAN STANDARDS TO PROMOTE PRODUCTIVE TRANSIT SERVICE

Develop pedestrian access standards that provide direct and continuous access to transit stops and safe street crossings.

TRANSIT ACTION 4: ROADWAY DESIGN STANDARDS

Develop transit-friendly roadway improvement standards that accommodate and promote far side intersection bus turnouts, efficient transit operations, and rider safety and comfort. Require transit-friendly roadway design in construction of new roadways and reconstruction of existing roadways.

TRANSIT ACTION 5: DEVELOP A LONG-TERM TRANSIT FUNDING STRATEGY

Establish a long-term funding commitment for the expansion of Red Apple Transit to implement the proposed Transit Vision Plan.

BICYCLE PLAN

The bicycle is a healthy alternative to the automobile for many trips. It can also play an important role in helping the city to reduce congestion, improve air quality and develop a more balanced transportation system. The recommendations of the Metropolitan Transportation Plan propose improvements to existing street and trail facilities and development of an expanded system of bicycle-friendly roads and trails for the Farmington MPO's future. As a vital component of the transportation system in the region, bicycles provide both commuter and recreational transportation.

Alternatives Analysis

Facility needs identified in the Bicycle Plan are based on general principles of safe and convenient bicycling, as well as specific location needs for various situations in the Farmington MPO. These can be summarized as follows:

Safety and Convenience

Whichever route a cyclist may choose or need to use, that route should be as safe as possible for bicycling. Issues may include hazards (e.g., drainage grates, overhead obstructions, etc.), lighting, vehicular conflicts, or conflicts with other users. Routes should also provide access to various destinations by a reasonably direct means.

Connections Between Destinations

The typical cyclist requires safe and convenient access to connect their residence with school, employment, or entertainment and shopping destinations. These linkages must provide safe access across high volume arterial streets.

Options

Different levels of cyclists feel comfortable on different types of facilities. Some cyclists have different access requirements to various locations at varying times of day. Maximum flexibility is important in accessing all parts of the community.

Signage

The bicyclist requires clear and consistent signs to mark bicycle facilities. These signs not only assist the cyclist in choosing the most appropriate route, but also alert the motorist to the presence of cyclists, thereby increasing safety.

Maps

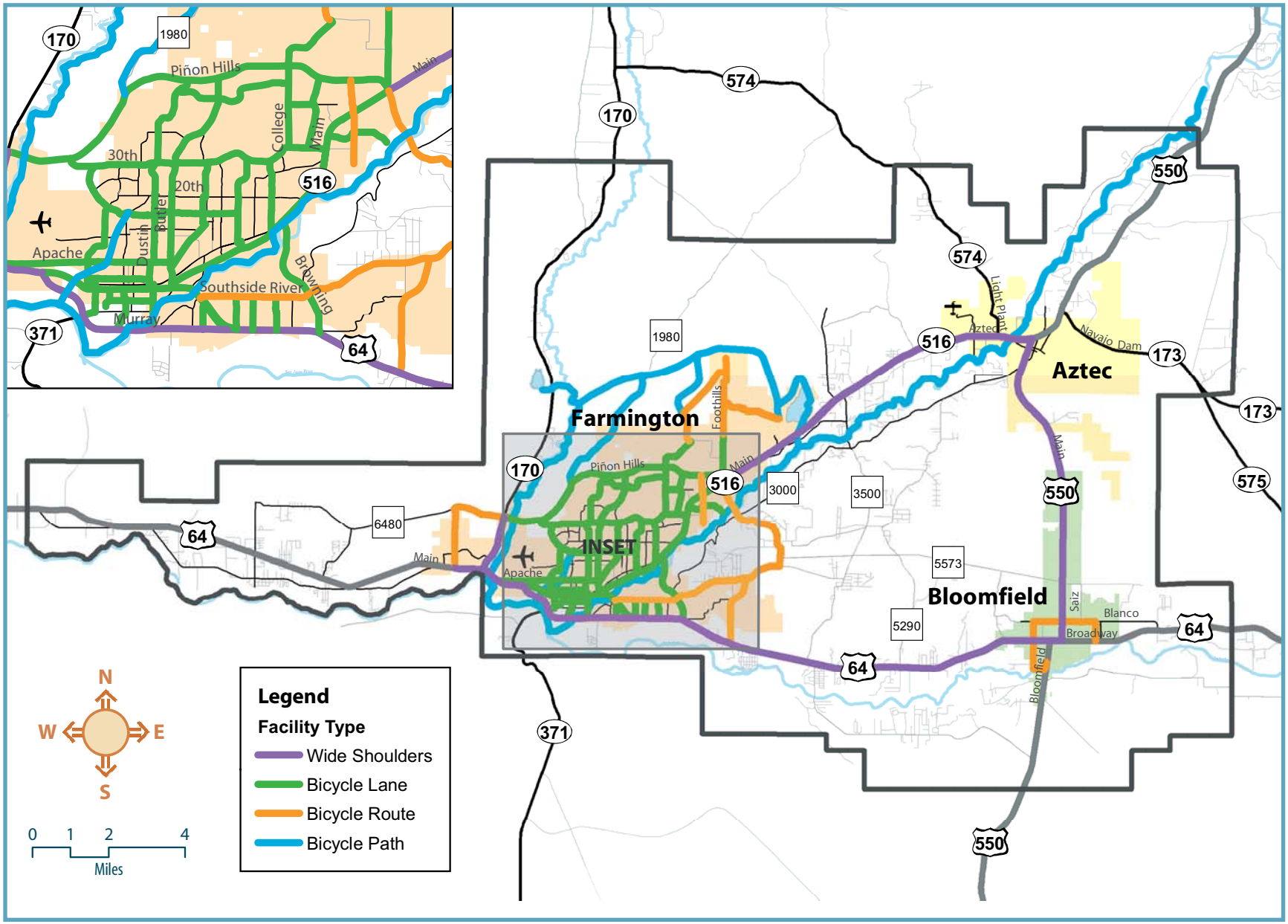
In order to transmit this information to the community, the MPO should develop a map of existing and planned bicycle routes, lanes, and paths which would also provide safety and related information. The MPO should disseminate these maps to schools, recreation centers, libraries, and other locations.

Bicycle Parking

Bicycle parking needs include the following:

- The downtown area should have an adequate amount of dedicated, secure bicycle parking.
- Safe and secure bicycle parking should be provided as necessary in City parks, specially where high use is anticipated, at schools libraries, recreational centers, other public buildings, activity centers, and along activity corridors.

PROPOSED BICYCLE PLAN (*Fig. 8.1*)



Ancillary Facilities

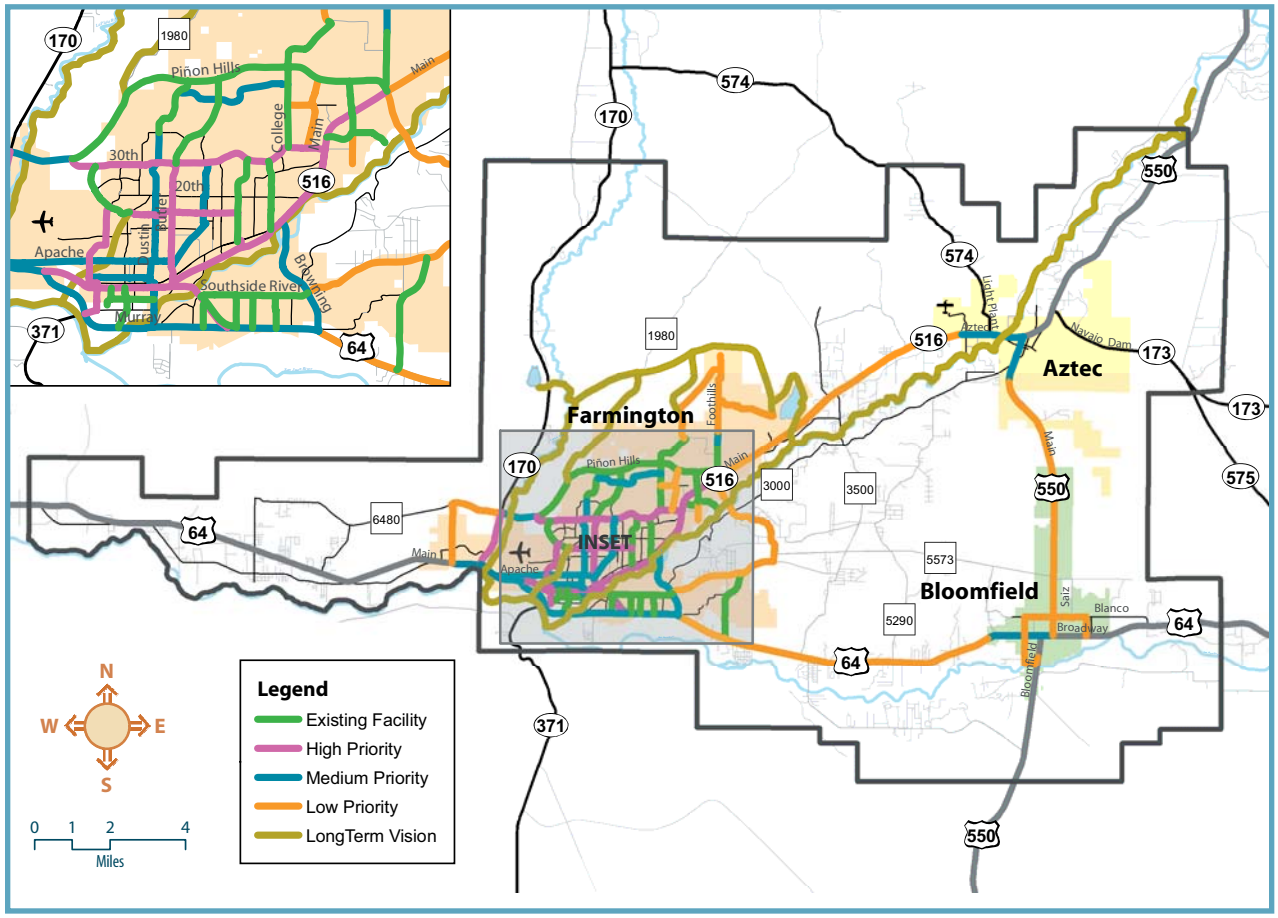
To effectively use the bicycle as a transportation mode, the cyclist requires facilities in addition to routes and parking. Commuter cyclists require showers and lockers at their place of employment. Other needed ancillary facilities include access to other public transit modes (buses, carpools, etc.), and rest areas with water at suitable intervals or locations.

Recommended Plan

Current and future bicycle facilities in the Farmington MPO must provide facilities for use by various users. These paths, lanes, and routes serve both commuter and recreational bicyclists. Commuter cyclists might use their bicycles daily for work and shopping trips and view their bicycles as vehicles. Recreational bicyclists tend to ride their bicycles on a more occasional basis, seek attractive and safe routes, and view their bicycles as recreational and exercise equipment. 2030 Recommended Bicycle Plan is presented in figure 8.1. Several different types of facilities are identified: wide shoulders along State highways, bicycle lanes along select urban streets, bicycle route designation along suburban and rural roads, and an off-street bicycle path system.

The plan presents both a system of regional recreational bicycle paths and a system of on street lanes and routes for bicycle trips. Using the travel demand model, trips of five miles or less (a reasonable and typical trip made by bicycle) were analyzed on roads within the Bicycle Plan. Potential bicycle facilities were then prioritized based on the expected number of these "short trips." In this way, the facilities most likely to be used by bicyclists receive a higher priority than other facilities. These priorities are shown in figure 8.2.

BICYCLE CORRIDORS PRIORITIZATION *(Fig. 8.2)*



Implementation

To ensure that the multi-modal needs of the community are met, a number of broad policies and actions are needed. These actions and policies build on the successes and opportunities of the existing system and are described below.

BICYCLE ACTION 1: IMPLEMENT BICYCLE VISION PLAN

These recommendations include the following:

- Include bike lanes or routes in the design of all new facilities or major improvement.
- Establish a dedicated funding plan to implement the bicycle vision plan and for maintenance of these facilities.
- Prioritize and implement critical segments that provide continuity for the system and provide connections to major activity centers, schools, San Juan College, etc.
- Evaluate the recommended bicycle corridors for opportunities to provide bicycle lanes, routes, or trails.

BICYCLE ACTION 2: BICYCLE STANDARDS AND GUIDELINES FOR NEW DEVELOPMENTS

Standards and guidelines should be adopted that:

- Develop minimum bicycle standards and guide lines for all new roadways and reconstruction of existing roadways; and
- Explore opportunities to narrow existing ravel lanes in order to accommodate bike lanes.
- Incorporate private development standards by providing bicycle facilities connecting to key destinations such as schools, parks, trails, and activity centers.

BICYCLE ACTION 3: ADJUST SHORT-TERM FUNDING ALLOCATIONS FOR BICYCLE FACILITIES

Project priorities in the region's Transportation Improvement Program should be adjusted annually to reflect available funding. The MPO Technical Committee should prioritize bicycle improvements and expenditures annually.

PEDESTRIAN PLAN

Walking is an essential part of our daily activities, whether it be trips to work, shop, school, or play. Often pedestrian facilities are overlooked or merely added onto street improvement projects. However, to preserve and enhance the quality of life in the urbanized areas of the region, consistent maintenance of the existing pedestrian system and additional facilities are needed.

Development of a continuous, efficient pedestrian system in the Farmington MPO is dependent on many factors, most notably:

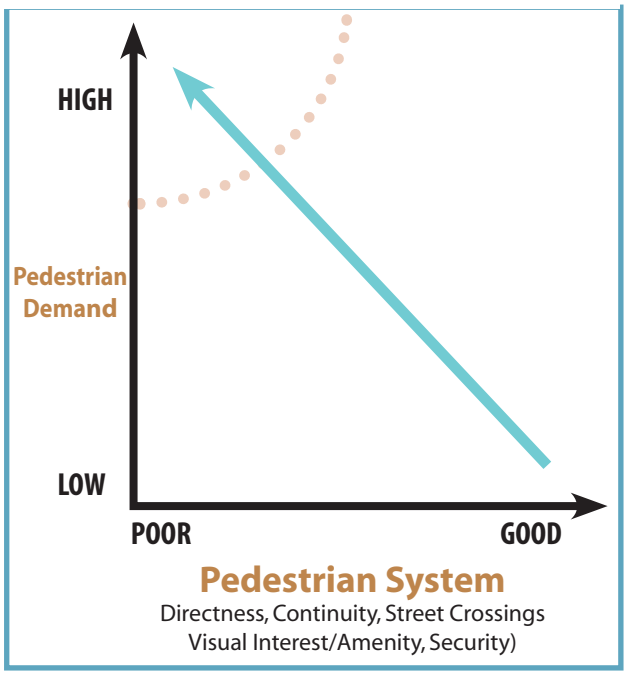
- the location of existing and anticipated activity areas and districts,
- programs to retrofit established sections of town with pedestrian-oriented activities,
- design standards and requirements for new development,
- desired pedestrian levels of service,
- funding for pedestrian improvements, and
- Americans with Disabilities Act (ADA) requirements.

Pedestrian Levels of Service

If the MPO desires a multi-modal transportation system, then there needs to be some way to assess capital and land development projects to determine whether these improvements enhance the pedestrian experience or impact pedestrian mobility. National examples of pedestrian network performance measurements are limited, but include the City of Fort Collins, Colorado Pedestrian Plan, and the Kansas City, Missouri Walkability Plan.

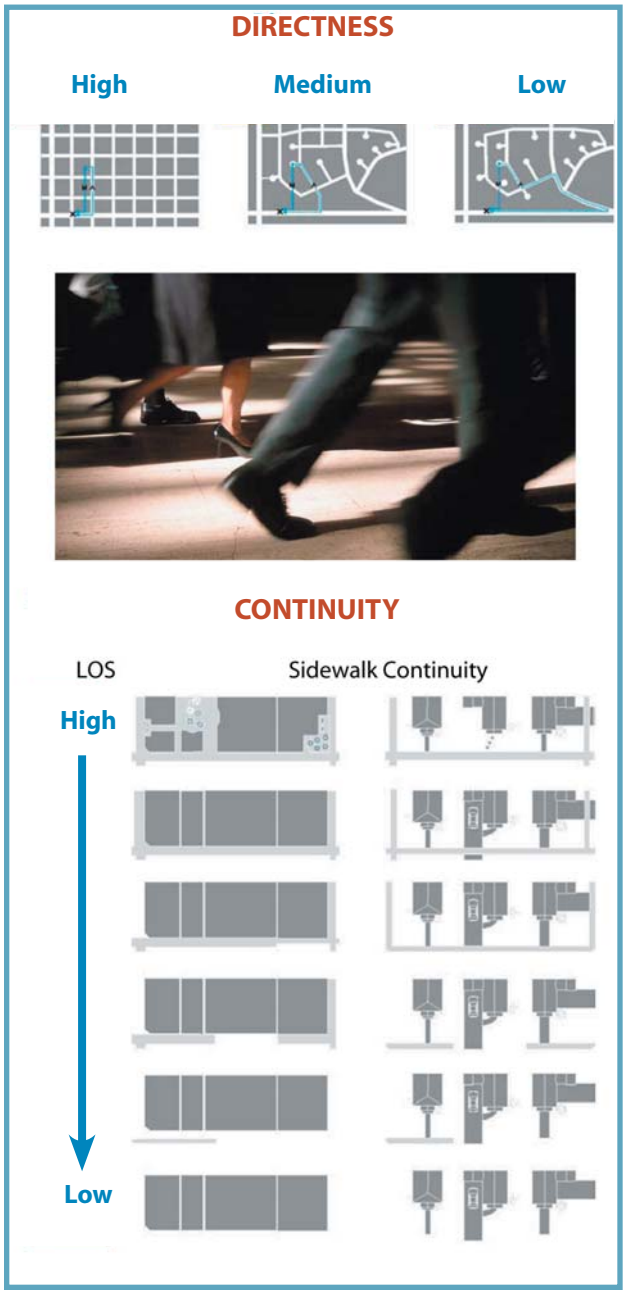
Figure 9.1 shows the relationship between the pedestrian system's level of service and the potential demand for pedestrian travel. Areas with high potential use and low service levels should be regarded as the highest priorities for pedestrian improvements.

PEDESTRIAN SYSTEM AND DEMAND *(Fig. 9.1)*



Directness

Distance is critical to the walking trip. As an example, research has closely correlated transit use to distance. No matter how many buses may run up and down an arterial, ridership will be low unless the pedestrian distance to and from activities and bus stops is minimized. The measure of directness is simply how well a community provides direct pedestrian connections to destinations such as transit stops, schools, parks, commercial centers, or activity areas. The grid street pattern,



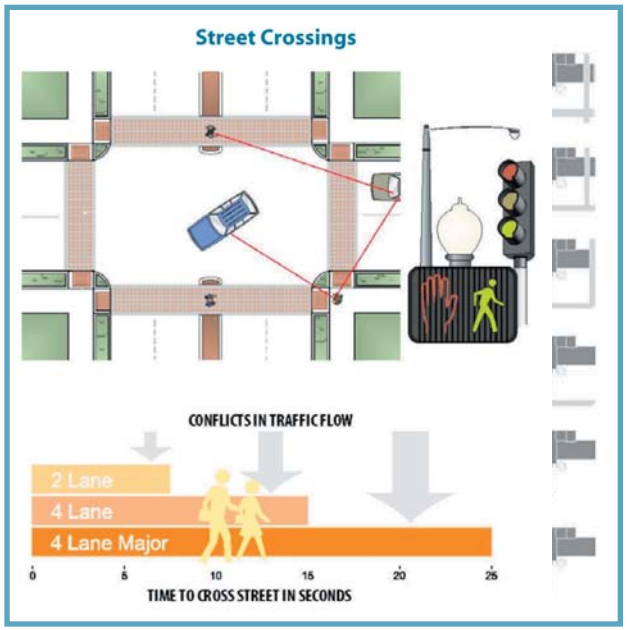
in which a pedestrian can go north, south, east, or west to easily get to a destination, typifies the ideal system with a high level of service. The common curvilinear residential subdivision, which may have cul-de-sacs that back up against a commercial center, transit stop, school, or park but do not have direct connections and instead require a circuitous route, will deter potential pedestrians. These areas have lower service levels.

Continuity

Continuity is a measure of the completeness of the sidewalk system and avoidance of missing segments. In the highest level of service, the pedestrian sidewalk appears as a single entity within a major activity area or public space. High-level pedestrain facilities also provide a quality, continuous stretch of pedestrian network that is physically separated from other modes. Mid-level pedestrian facilities provides a continuous pedestrian network on both sides of each street, but they may vary in character and design. The low-level pedestrian service is when there is a complete breakdown in the pedestrian flow, and each pedestrian selects a different route because no pedestrian network exists.

Street Crossings

Street crossings may be the Achilles heel of the pedestrian system. Because street crossings place the pedestrian in the middle of the street and exposed to potential conflicts with automobiles, the measurement of a street crossing becomes very complex and the achievement of a high level of service requires significant investment. Improvements such as crosswalks, pedestrian count down signal heads, raised median refuge islands and street lighting can improve the pedestrian safety at intersections.



Visual Interest and Amenity

To promote pedestrian activity in an activity area, the pedestrian system needs to be aesthetically appealing. The attractiveness of the pedestrian network can range from visually attractive, with enhancements like street lighting, fountains, and benches, to an experience of discomfort and intimidation associated with the absence of amenities

Security

Pedestrians require a sense of security, both through visual line of sight with others and separation from vehicles. Street lighting is also important for walking at night.

Pedestrian Districts and Areas

Although these pedestrian design considerations can be applied throughout the region, the need will vary by the type of activity area. As an example, a high pedestrian performance level will be of greater importance in the downtown than in outlying, lower density subdivisions with light vehicular and pedestrian traffic. The following activity areas to which differential performance standards would be applied are proposed:

Pedestrian Districts

The primary areas within the Farmington MPO that qualify as pedestrian districts include downtown Farmington, Aztec and Bloomfield and the San Juan College Campus area. These areas include locations that residents consider as places to go, walk around, shop, eat, study, or conduct business. Pedestrian standards should be high in the downtown pedestrian district. In addition to the need for direct, continuous sidewalks where it is safe to cross the street, this area requires higher levels of visual interest and amenities to attract residents and visitors. Future pedestrian districts could be added to this designation where there are planned future mixed-use activity areas and districts.

Commercial Centers

These areas tend to be located along arterials and aggregated at various locations along the corridor, particularly where major arterials intersect. In the past, these locations have been more of the strip commercial and "L" shaped neighborhood shopping center style developments, which provide relatively poor pedestrian environments. Future goals include improving the directness and safety of the pedestrian network to, from, and within these locations.

Schools

Whereas it is not necessarily critical for routes to schools to be picturesque and visually captivating, there are basic pedestrian needs for the student, including a safe and secure continuous sidewalk with safe street crossings and direct connections to neighborhoods. To that end, the City of Farmington has adopted a Safe Routes to School program.

Transit Corridors

Both ends of all transit trips are typically pedestrian trips. The most critical elements for pedestrians in transit corridors are direct and safe connections and safe, paved, lighted, and possibly sheltered bus stops.

Other Areas

Although all other areas within the city should have safe, secure, and reasonably direct pedestrian connections, the critical pedestrian trip-making characteristics of these areas are not as critical as the four areas mentioned above.

Implementation

To ensure that the multi-modal needs of the community are met, a number of broad policies and actions are needed. These actions and policies build on the successes and opportunities of the existing system and are described below.

PEDESTRIAN ACTION 1: FUND PEDESTRIAN IMPROVEMENTS

The region's Tansportation Improvement Program should be adjusted annually to reflect targeted pedestrian improvements based on input from the Technical Committee.

PEDESTRIAN ACTION 2: STREET DESIGN STANDARDS

Develop minimum pedestrian standards and guidelines for all new roadways and reconstruction of existing roadways. These standards shall include street crossing treatments, sidewalk design, and landscaping.

PEDESTRIAN ACTION 3: PEDESTRIAN STANDARDS FOR NEW DEVELOPMENTS

Develop public and private development standards for providing pedestrian facilities that connect the development to key destinations and activity centers. These standards should also include sidewalks on both sides of all roadways where volumes exceed 300 vehicles per day in urban areas.

INTERMODAL CONNECTIONS

Air, truck, and inter-city bus industries are essential components in the local economy and play a fundamental role in the Farmington transportation system. The Plan's modal system plans represent a comprehensive effort to build a multi-modal transportation system, but additional efforts are necessary to maintain the economic competitiveness and attractiveness of the region. Since many of these planning elements involve private sector entities, it is imperative to involve them in the planning process.

Freight

Coordination with private freight transportation providers, either through a task force or some other means, can provide the MPO with a wealth of information if done properly. Private companies are often hesitant to provide government entities with proprietary information. However, through their involvement they may see the virtue in sharing data, especially if it results in improvements to the transportation system that increase freight movement potential

Freight providers tend to be very knowledgeable about the bottlenecks in the system that hinder truck and other vehicle movements. In addition, they may be aware of signal timing, signage, or geometric (e.g., turning radii) deficiencies in the system. With their involvement, the MPO can develop a detailed list of improvement needs and incorporate them into the transportation improvement program (TIP) for implementation. While long-range freight planning is necessary, short-term results are also important in engaging and maintaining interest from freight providers.

Freight movements invariably impact land uses, especially along the corridors utilized by truck traffic. The level of impact is often intensified when sensitive receptors, such as neighborhoods, schools, parks, and so forth, occur along these high traffic routes. Proper long range planning and coordination with appropriate land use planners can serve to alleviate these impacts. This may include periodic designation and update of truck routes, implementation of additional limited-access roadway facilities, and other techniques.

Implementation

With the previous discussion in mind, the following actions and policies will ensure that intermodal transportation planning will occur in the FMPO area. Most of these actions take into account the need to work with the private freight moving companies to enable the best intermodal system is in place in Farmington.

INTERMODAL ACTION 1: COORDINATE FREIGHT ISSUES

The MPO should work with freight transportation companies operating in the region to identify specific deficiencies in the transportation system that hinders freight movements and to incorporate design elements for large trucks in roadway planning and design. In addition, coordination with NMDOT on freight issues could provide increased information regarding freight flows and improvement needs.

INTERMODAL ACTION 2: LAND USE CONSIDERATIONS

To the extent possible, heavy truck traffic should be separated from light vehicle traffic and sensitive land uses (e.g., neighborhoods, schools, parks, etc.). Industrial land uses should be isolated from residential and commercial areas. Land use planning activities for areas near the airport should carefully consider noise and other impacts so that only compatible uses occur.

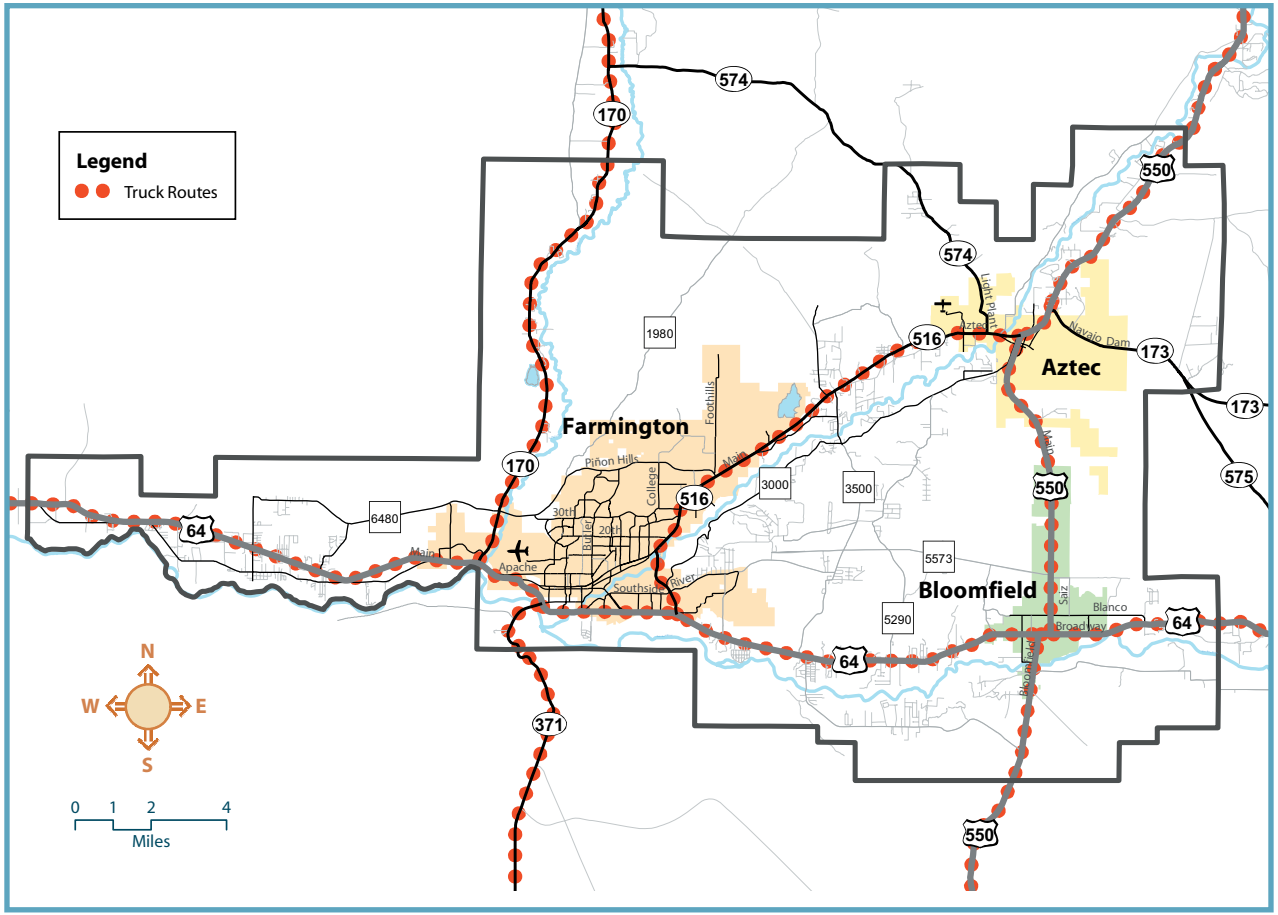
INTERMODAL ACTION 3: ROADWAY DESIGN AND ACCESS MANAGEMENT

Due to their large size, trucks and buses have special needs for moving through the transportation system. Roadway and access requirements for these vehicles should be considered in the design of intersections and interchanges. Roads in and around industrial areas should be designed specifically for the movement of large trucks.

INTERMODAL ACTION 4: DESIGNATED TRUCK ROUTES

Truck routes provide freight haulers with a network of the most efficient and least impacting locations for traveling through the Farmington region. Primary truck routes shall be only on US and State facilities and are shown in figure 10.1.

TRUCK ROUTES *(fig. 10.1)*



Air

The air needs of the Farmington MPO are served by two airports. The Four Corners Regional Airport serves the commercial airline needs in the region and also has general avation operations. The Aztec Municipal Airport also serves the general aviation needs of the region.

Four Corners Regional Airport

Four Corners Regional Airport, located in western Farmington, is owned and managed by the City of Farmington. Currently, the airport serves the needs of three commercial airlines and includes general aviation operations as well. Those airlines account for eleven daily departures from Farmington.

The airport maintains three runways, two paved and one graded landing strip. Runway 5/23 is 6,500 feet long and 150 feet wide. Runway 7/25 is 6,704 feet long and is 100 feet wide. Runway 11/29 is a graded cross-wind landing strip which is 2,783 feet long and 100 feet wide. While runways 5/23 and 7/25 can accommodate turboprop aircraft, use of runway 11/29 is limited to only the smallest aircraft (small wingspan and low approach speeds), such as Cessna 172's, Cessna 180's, and similar aircraft.

The airport terminal is approximately 25,000 square feet and contains one departure and one arrival gate as well as airline ticket counters and offices, rental car counters and offices, and a restaurant (vacant as of September 2004). The airport also has aircraft rescue and fire fighting services, air traffic control tower, fixed based operations facilities, airport maintenance buildings, and aircraft storage and maintenance buildings.

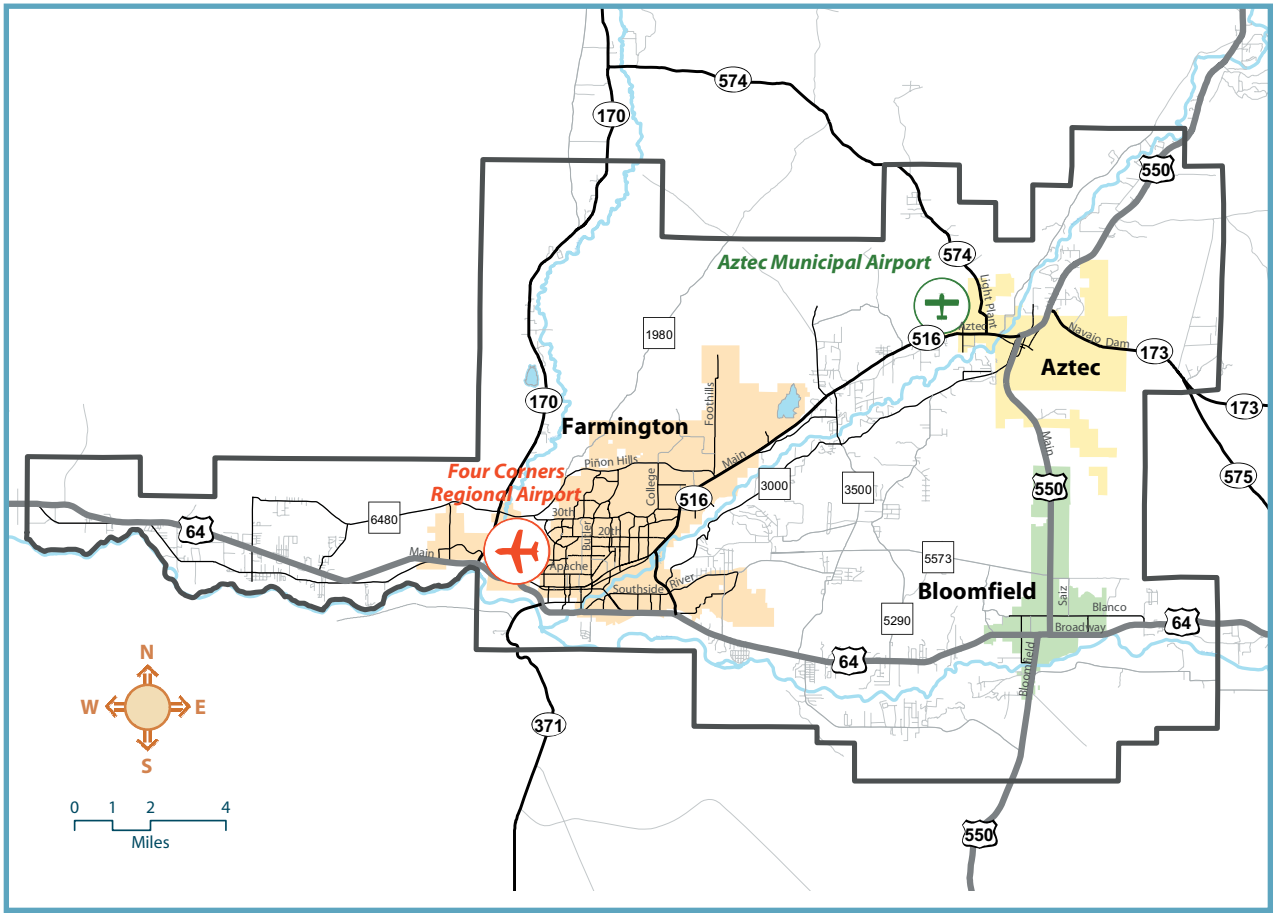
Commercial airline service at the Four Corners Regional Airport has declined in the last decade, falling from 127,000 passengers served (arrivals and departures) in 1993 to 61,000 passengers in 2002. This decline can be attributed, in part, to the increased competitiveness of airline fares and resultant diversion of customers to Albuquerque, the move of Mesa Airlines' maintenance and headquarters facilities from Farmington to Phoenix, and the events of September 11, 2001. General aviation operations were estimated to be 157,000 operations in the year 2003, over twice the number of operations in 1992 (58,000).

The Airport Master Plan completed in September 2004 recommends improvements to the runway facilities to ensure that FAA approved Runway Service Area requirements are met. The recommendations would maintain the length of Runway 7/25 and decrease the overall length of Runway 5/23. These improvements would continue to support the 19 seat Beechcraft 1900 turboprop aircraft that currently serve the commercial airline needs at the Four Corners Regional Airport.

The Airport Master Plan anticipates that by 2023, commercial airline service will have completely converted to jet service. This would require a longer runway or runways if commercial service is to be maintained at the airport. The maximum runway length possible utilizing the existing runways would be 7,250 feet and at a rather large cost. The regional jets most commonly in use in the United States require runway lengths of approximately 10,000 feet at the altitude of Farmington when operating at full capacity. Several smaller regional jets can operate with a 7,000 foot long runway, but they are uncommon in the United States.

The Airport Master Plan continues that if commercial airline service is to be served in Farmington in 2023, that either a new runway will need to be developed or the airport relocated. There is room for the airport to expand to the north and lay out an acceptable 10,000 foot airstrip alignment. The proposed alignment would require the acquisition of approximately 647 acres of land and realignment of Piñon Hills Boulevard and 30th Street. It estimates an approximate cost of $39 million. The Airport Master Plan recommends that a detailed preliminary engineering feasibility study of the proposed alignment be undertaken.

AIRPORTS *(fig. 10.2)*



Aztec Municipal Airport

Aztec Municipal Airport is owned and managed by the City of Aztec and is located at the western edge of the Aztec. This general aviation airport maintains two paved runways. Runway 8/26 is the main runway and is 4,300 feet long and 50 feet wide.The crosswind runway is Runway 4/22 which is 2,850 feet long and 40 feet wide. Runway 8/26 has a retro-reflective landing light system which is visible from approximately 1.5 miles away when the approaching aircraft uses its landing lights. Services available at the airport include parking tie-downs and fuel (100 low-lead and Mo-Gas). Eight aircraft are currently based at the airport: six single engine airplanes and two ultralights. Aircraft operations average 23 take-offs/landings per week, with approximately 83% of those being transient operations and 17% local general aviation.

FINANCIAL PLAN

A major component of the Metropolitan Transportation Plan is the financial element. The purpose of the financial element is to balance the transportation projects recommended for implementation with the resources of the community available to build and maintain transportation facilities and services.

Vision Plan Costs

For the roadway system, a series of no-build and visioning alternatives were tested using the Farmington MPO Travel Demand Model. The no-build scenario provides insight into future roadway needs by assuming socioeconomic (e.g., population, household and employment) growth but no new roadway capacity. The visioning scenarios were developed to address these needs. Based on the eighteen projects in the Vision Plan recommended for implementation, total improvement costs are estimated to be $205 million.

How do you estimate project costs?

As part of the MTP development process, it is necessary to estimate costs for each alternative. If detailed engineering cost estimates were available for particular projects, either from localities, NMDOT, or other reliable sources, that data was used. Where accurate and reliable cost data was not readily available, a cost estimation routine was used based on the results of the travel demand model. These roadway costs were developed by analyzing the results of the travel demand model taking into consideration the individual characteristics of the recommended roadway network. These planning level construction costs include estimated local costs of construction based on the projected roadway type as well as the estimated level of effort required for utility relocation, access maintenance, terrain, drainage, right of way acquisition, stormwater pollution prevention, project management, and construction contingencies.

Farmington MPO 2030 Available Funding

Whereas the total cost for the Roadway Vision Plan is estimated at approximately $205 million, actual funding will be significantly less. It is therefore necessary to estimate what levels of funding might be available and what portions of the Roadway Vision Plan should be implemented.

Based on current estimates, New Mexico Department of Transportation District 5 is estimated to receive approximately $32 million per year. This would equate to approximately $800 million dollars for the period through 2030.

In review of the Draft New Mexico Department of Transportation 2006-2011 State Transportation Improvement Program, the Farmington MPO is expected

2030 Vision Plan Ranking and Financially Constrained Funding Level *(fig. 11.1)*

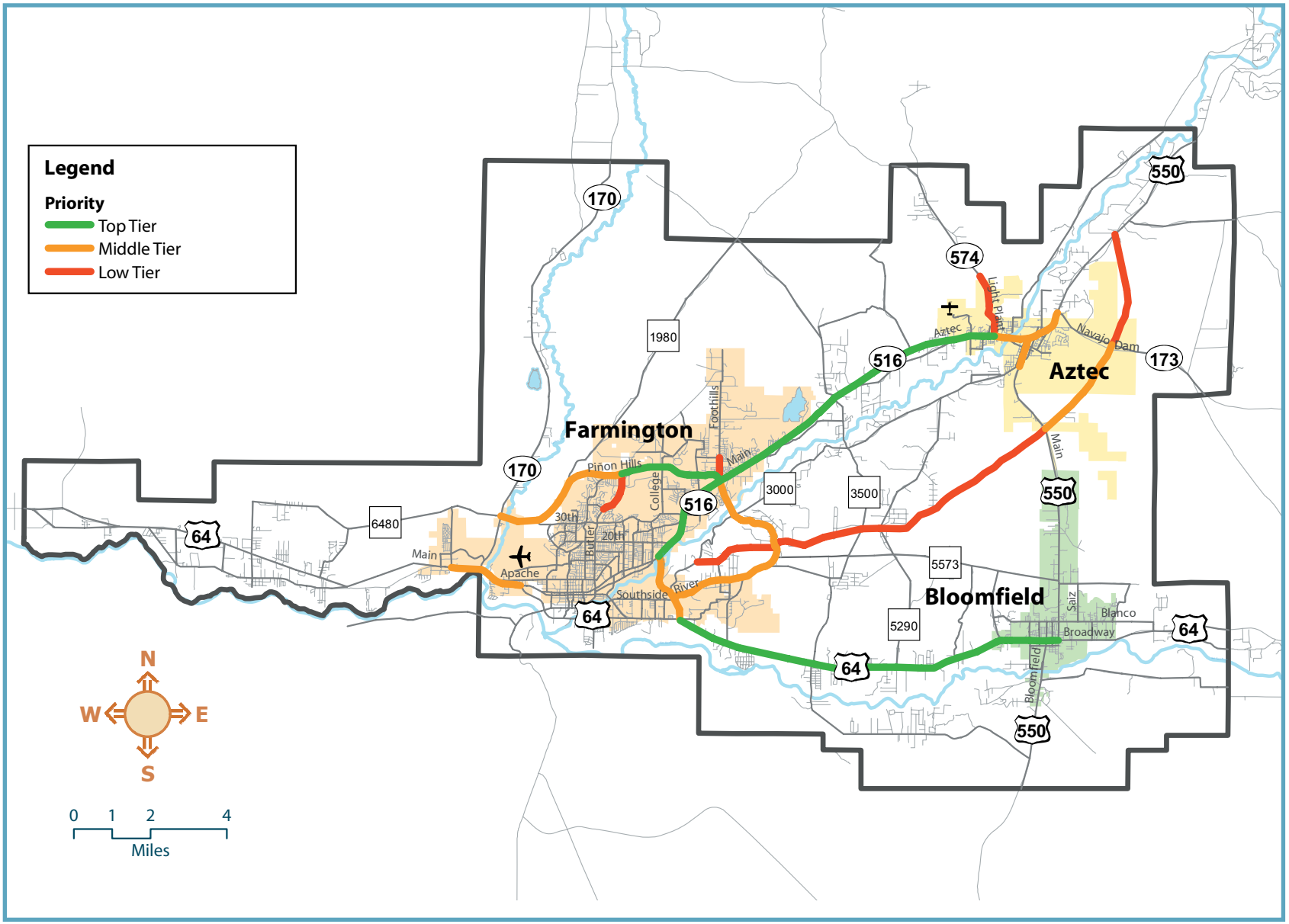
	Alt #	Facility	Limits	Description	Reduction in PM Peak Hour Congestion Delay	Project Cost	Cumulative Cost	Hours of Delay Saved per Million Dollars Spent	Economic Vitality	Safety and Security	Accessibility, Mobility, and Congestion	Environment	Integration and Connectivity	Preservation, Efficiency, and	Funding and Costs	Multi-modal	Land Development Policies	Rank
Top Tier	18	Intersections	City of Farmington	Signal Timing Improvements	n/a	$850,000	$850,000	n/a	◒	●	●	●	◒	◒	●	◒	●	1
	17	US 64	Browning to US 550	Widen to 6 lanes	77 Hours	$56,000,000	$56,850,000	1.4	◉	●	●	●	⊙	●	○	◒	●	2
	6	NM 516	Browning to Pinion Hills	Operational Improvements	68 Hours	$1,825,000	$58,675,000	37.2	◒	◒	◒	◉	◉	●	◉	◒	●	3
	10	NM 516	Pinion Hills to Light Plant	Widen to 6 lanes	81 Hours	$45,100,000	$103,775,000	1.8	◉	●	●	●	◒	◉	○	◉	◒	4
	3	Pinon Hills Blvd	Butler to NM 516	Widen to 4 lanes	43 Hours	$6,951,811	$110,726,811	6.1	◒	●	●	●	◒	⊙	⊙	◒	●	5
Middle Tier	9	Pinon Hills East	NM 516 to CR 3950	New 4 lane minor arterial	119 Hours	$5,886,759	$116,613,570	20.2	◉	●	●	◉	◉	○	◉	⊙	◒	6
	13	US 550	Hartman Place to NM 516	Travel Lane and Parking Changes	n/a	$900,000	$117,513,570	n/a	◒	◒	○	◒	●	◒	⊙	◉	●	7
	5	Browning	NM 516 to US 64	Widen to 6 lanes	9 Hours	$4,910,928	$122,424,498	1.8	◒	◒	◒	⊙	◒	⊙	◒	◒	◒	8
	7	Wildflower	Browning to CR 3950	Upgrade to arterial, extend to CR 3950	16 Hours	$2,263,869	$124,688,367	7.1	⊙	◒	◒	◒	⊙	⊙	◉	◒	◒	9
	11	NM 516	Light Plant to Navajo Dam Road	Widen to 6 lanes tapered to 4 lane	6 Hours	$22,800,000	$147,488,367	0.3	⊙	⊙	⊙	○	◒	◉	◒	◒	◒	10
	2	Pinon Hills Blvd	NM 170 to Butler	Widen to 4 lanes	8 Hours	$9,945,474	$157,433,841	0.8	⊙	◒	◒	◒	⊙	⊙	⊙	◒	◒	11
	1	US 64	Troy King to Murray	Widen to 6 lanes	7 Hours	$6,091,576	$163,525,417	1.1	⊙	⊙	○	◒	◉	⊙	⊙	◒	◒	12
	15	New Relief Route Facility	NM 173 to US 550 south of Aztec	4-lane arterial	13 Hours	$7,499,758	$171,025,175	1.7	◒	◒	◒	◒	○	⊙	⊙	○	◒	13
Lower Tier	12	NM 574	NM 516 North	Upgrade to minor arterial	2 Hours	$5,002,071	$176,027,246	0.4	◒	◒	⊙	⊙	⊙	⊙	⊙	○	◒	14
	16*	New Relief Route Facility	US 550 north of Aztec to NM 173	4-lane arterial	20 Hours	$11,997,000	$188,024,246	1.7	◒	◒	◒	◒	○	⊙	○	○	◒	15
	8A	Foothills	Crestwood to NM 516	Upgrade to minor arterial	9 Hours	$337,151	$188,361,397	26.7	○	○	○	◒	⊙	⊙	◉	◒	⊙	16
	8B	English	Crestwood to Pinon Hills	New 2-lane Connection	26 Hours	$377,992	$188,739,389	76.9	○	⊙	⊙	⊙	⊙	○	◉	◒	⊙	16
	4	Butler Ave	Pinion Hills to 38th	Widen to 4 lanes	7 Hours	$1,546,514	$190,285,903	4.5	○	○	○	○	⊙	⊙	◉	◒	◒	17
	14	New / Highline Road	Browning and Southside River to US US 550	2-lane rural highway	34 Hours	$14,572,385	$204,858,288	2.3	◒	◒	◒	◒	○	○	○	○	○	19

* Alternative 16 includes Alternative 14 as well.

Key ● High ◉ Medium High ◒ Medium ⊙ Medium Low ○ Low

Farmington MPO 2030 Financially Constrained Funding Level ($160 million)

RECOMMENDED 2030 VISION PLAN PRIORITIZATION *(fig. 11.2)*



to receive approximately 20 percent of the available District 5 funding. If extrapolated over the 25 year planning horizon period, this would equate to a potential funding budget of $160 million.

Financially Constrained Plan

In order to determine which of the Roadway Vision Plan projects should be included in the Financially Constrained Plan, each alternative was evaluated against the nine objectives of the MTP previously developed (Economic Vitality; Safety and Security; Accessibility, Mobility, and Congestion; Environment; Integration and Connectivity; Preservation, Efficiency, and Technology; Funding and Costs; Multi-modal; and Land Development Policies). The individual objective rankings were then combined into one composite ranking, allowing the individual alternatives to be prioritized. Figure 11.1 shows the projects in rank order and grouped by priority tier so that they can be constructed when funding becomes available. The alternatives are shown in Figure 11.2, with the highest ranked alternatives shown in green, the middle tier alternatives shown in orange, and the lower tier alternatives shown in red.

Since the United States Federal Highway Administration (FHWA) determines New Mexico's transportation funding level, and the New Mexico Department of Transportation (NMDOT) determines the funding levels by both District and areas within the District, the ranking will provide a guide as to which improvements are included in the Financially Constrained Plan.

If the Farmington MPO 2030 funding level of $160 million is realized, then there would be sufficient funds to implement the first 11 of the 19 projects identified in the Roadway Vision Plan. This would indicate that there would be sufficient funds to implement the Farmington MPO's Top Tier projects and the majority of the Middle Tier projects. The remaining Middle Tier projects and the Lower Tier projects would require additional funds through FHWA and NMDOT or local funds.

According to the Draft STIP, a portion of Project 17 - US 64 and Project 10 - NM 516 has partial funding for the next six years. Completion of these two projects based on anticipated funding levels would be within the 15 to 20 year timeframe.

It should also be noted that system preservation, operations/maintenance including Intelligent Transportation System, should be included in the Financially Constrained Plan. Candidate projects would include Project 18 – City of Farmington Signal Timing Improvements, Project 6 - operational improvements from Browning to Pinon Hills, and Project 13 - travel lane and parking changes for US 550 in Aztec.

Additionally, the MPO should purse other funding options, including from localities and other state funds, in order to augment the available revenue and allow more projects to be constructed.

Transit Costs

Transit costs include both capital and operating costs. Red Apple currently has a fleet of two Ford cutaway buses and six vans. The buses are used on the two largest fixed routes—the Red and Green Routes. Three vans are used to operate the Express, Bronco, and Tiger Routes. The vans are also used to provide demand-responsive Dial-a-Ride service throughout the Farmington city limits and paratransit service to Aztec and Kirtland routes. Additional fleet vehicles would be needed to operate the expanded service provided in the recommended alternative. The handy vans currently used by Red Apple cost $56,000 in year 2004 dollars, while the cutaway buses currently in use cost $85,000 in year 2004 dollars.

The recommended Transit Plan would require, at a minimum, four additional vehicles to operate the planned service. This estimate does not include spare vehicles which should represent 20 percent of the total fleet At a minimum, the capital costs for purchasing four vans would be $224,000. If spares are desired, and cutaway buses used instead of the vans, the cost would increase to $510,000. As shown in figure 11.3, the capital costs will ultimately vary depending on the fleet mix as well as the desire to have vehicle spares.

Often times, transit agencies are able to supplement orders or execute options placed by other transit agencies. Possible benefits include shorter delivery times as well as reduced costs resulting from bulk orders. These options should be fully explored before any bus purchases are made.

CAPITAL COST OPTIONS *(Fig. 11.3)*

Fleet Mix	Without Spare Vehicles	With Spare Vehicles
All Vans	$224,000	$336,000
All Cutaway Buses	340,000	$510,000

Red Apple Transit currently provides about 186,600 revenue bus miles annually. The recommended plan would represent a 48 percent increase in service over today with 275,300 bus miles. Figure 11.4 show the forecasted ridership and the potential operating costs associated with providing the proposed service level. Applying an operating cost per mile of $2.04 (the current operating cost per mile) to the annual revenue miles, the annual cost for providing the Transit Plan service would cost $561,612, or $7.08 per rider.

FIXED ROUTE OPERATING COST SUMMARY *(Fig. 11.4)*

Annual Revenue Miles	275,300
Annual Cost	$561,612
Annual Ridership (forecast 2030)	79,376
Operating Cost per Rider	$7.08

Transit needs are defined in terms of relative ridership and service characteristics.A more robust transit system with higher frequency bus service covering more of the area and serving more activity centers would result in more ridership. Better service would attract choice riders in addition to serving the transit-captive population.This in turn would reduce vehicular travel, which could be realized in terms of reduced or delayed roadway capacity improvements.

The current bus transit system in Farmington represents a minimum service for a community of this size. Maintaining this service over the life of the MTP with increases to accommodate new growth and enhance the system is estimated to cost approximately $11.8 million (year 2004 dollars) in operating costs. This assumes incremental service enhancements to keep pace with the region's growth, fully realizing the recommended Transit Plan in the year 2030. The Transit Plan will incur between $224,000 and $510,000 in capital costs by the year 2030 to support the added service,

resulting in a total cost of approximately $12.3 million. These figures do not include the additional costs that would be incurred by relocating the transit center closer to downtown Farmington.

Bicycle and Pedestrian Costs

The Bicycle Corridors identified by the MTP identifies several million dollars worth of improvements to complete the MPO's bicycle system through a combination of recreational trails, on-street bicycle lanes, and bicycle routes along arterial corridors. In addition, the MPO has a significant amount of missing or deteriorated sidewalks in critical locations along arterial corridors, within neighborhoods, and in and around activity centers. Although not fully documented, the cost of addressing these pedestrian needs is expected to total in the millions of dollars. However, many of the bicycle and pedestrian needs of the Farmington MPO can be addressed by implementing the projects in conjunction with roadway improvements. As identified in the bicycle and pedestrian action items, bicycle and sidewalk facilities should be included in the design of all new roadway facilities or major improvements.

Implementation

As is the case in virtually every community across the nation, there are not sufficient revenues to meet all of the transportation needs in the Farmington MPO region. As presented previously, the total estimated transportation costs to meet the needs of the Farmington MPO region are over $205 million and estimated revenue is approximately $160 million.

The recommended financial plan for the MTP provides a series of action items for consideration and implementation by the Farmington MPO and the local jurisdictions in the region.

FINANCIAL ACTION 1: INCREASED LONG-TERM ALTERNATIVE MODE FUNDING

Adjust the allocation of transportation funding resources to provide a more equitable share for transit, bicycle, and pedestrian modes.

FINANCIAL ACTION 2: ADJUST SHORT-TERM FUNDING ALLOCATIONS IN THE TIP

The resource allocations recommended in 2030

Farmington MPO Metropolitan Transportation Plan should be reflected in the region's Transportation Improvement Program (TIP) to the extent possible. The resource allocation should be reviewed each year as the TIP is prepared. Multi-modal components of roadway projects should be credited to the appropriate modal category - transit, bicycle, or pedestrian.

FINANCIAL ACTION 3: PURSUE DISCRETIONARY FUNDING

Vigorously pursue discretionary State and Federal funding. There are a number of Federal and State funding categories the Farmington MPO and member jurisdictions might be eligible to receive. These funds typically require a modest local match. The proposed action item would be to continue to seek these discretionary State and Federal funding sources.

FINANCIAL ACTION 4: ADDRESS OPERATIONS AND MAINTENANCE NEEDS

Explore dedicated funding sources to address transportation operations and maintenance needs.

CONSULTANT TEAM

LSA Associates, Inc.

LSA Associates, Inc. is a diversified transportation, environmental, and community planning consulting firm with over 200 employees located in ten offices in California and Colorado. The Farmington MPO Metropolitan Transportation Plan was prepared by LSA's Fort Collins, Colorado office. The Fort Collins office focus is long-range transportation planning and implementation, travel model development and application, and GIS. LSA's market is nationwide for long-range transportation planning. LSA's Fort Collins office was recipient of the Institute of Transportation Engineers (ITE) "International Best Practices Planning Study Award" in 2001 and 2004.

LSA specializes in the development of long-range transportation plans for Metropolitan Planning Organizations and communities that prioritize planning in their land development and transportation improvement processes. These plans provide the fundamental basis for decision-making to improve the quality of life for pedestrian, bicycle, transit, and roadway transportation. LSA also specializes in the development of travel demand models.

Manuel Padron & Associates, Inc.

Manuel Padron & Associates, Inc. (MPA) is a consulting firm specializing in transit systems and operations planning. The firm also is capable of providing services in the areas of financial and economic analysis, ridership forecasting, facilities planning, and project management oversight. Established in 1982, the firm today has 16 employees and offices in Atlanta, Los Angeles, Denver, Orlando and the San Francisco Bay Area. MPA's client list includes public agencies, municipalities in both small and large urban areas, as well as national and international engineering and consulting firms. MPA is certified as a D/MBE by more than 60 state and local agencies.

Souder, Miller & Associates

Souder, Miller & Associates (SMA) is a 79-person civil/environmental science and engineering consulting firm with four offices located in the Four Corners states of New Mexico, Colorado, and Utah. The Four Corners Region office is located in Farmington, New Mexico. The firm was founded in Farmington in 1984 as Miller Engineers, Inc. In 2002 SMA merged with On Site Technologies, Ltd., and acquired an interest in iiná bá, a Native American-owned firm with equivalent experience in environmental science and engineering. Both companies are based in Farmington. The merger provided SMA with a staff of more than 30 experienced and qualified civil and environmental engineering professionals to service the Four Corners area.