
CHAPTER 6: ECONOMIC LINKAGES

The economy is inextricably linked to transportation and land use. Economic development, in general, refers to the creation and promotion of institutions, infrastructure, and policy which increase quality of life and foster conditions conducive to economic activity and innovation. Economic development activities are associated with growth in gross domestic product and employment, personal well-being and wealth, vibrant places that encourage engagement and connection, and fiscal health. Transportation infrastructure plays a critical role in making a region competitive in terms of both supporting industry and the ability to attract and retain new businesses and a talented workforce.

This chapter explores several facets of the economy as it interacts with where we grow and how we travel. It begins with the most obvious link, and that is, how transportation spending directly and indirectly impacts the economy. It moves on to how efficient transportation systems improve mobility and reduce costs to society. Next it describes how transportation relates to household finances and economic well-being. Then it delves into the importance of targeting investments to create attractive destinations where people want to live, work and play. And lastly, it explores the fiscal implications of where growth occurs and how municipal budgets are impacted.

6.1 Economic Impact of Transportation Spending

The *Connections 2040 MTP*, along with its short-term implementation plan, the 2020-2025 Transportation Improvement Plan (TIP), combine to program a total of \$6.6 Billion dollars in transportation investments over the next 20 years. These funds directly and indirectly contributes to a stronger economy. Whether it is through creating and sustaining construction jobs, supplying contract work to engineer and design firms for project planning, or through right-of-way and land acquisition, the dollars we put towards investing in our infrastructure ripples throughout our entire economy in the following ways:

- 1) Direct jobs are created among the firms that design and build the project.
- 2) Indirect jobs are created when those businesses purchase supplies and equipment and services from other businesses to support their work.
- 3) Induced jobs are created when the workers involved in the projects either directly or indirectly take the money that they earn and put it back into the economy by making purchases that support themselves and their families.

It is universally accepted that upgrading and maintaining transportation infrastructure is critical for mobility, safety, and access. It is important to also recognize the broader economic benefits of transportation investments, as clearly the impact is substantial. The following table illustrates the economic impacts of infusing new federal transportation dollars into our economy over the life of the 2025 TIP, which is the short range implementation of the MTP.

a. Economic Impact of the 2020-2025 TIP

The 2025 TIP programs an average of \$111 million dollars a year, or \$666 million dollars between 2020 and 2025. The impact of this spending is shown below:

Table 6-1: Economic Impacts of New Transportation Dollars (TIP 2020-2025), 2019 Dollars

Cumulative Benefits to Economy:	
<i>Additional Employment (by 2025)</i>	449
<i>Gross Regional Product (GRP)</i>	\$314,361,000
<i>Real Personal Income</i>	\$186,738,000
<i>Personal Consumption Expenditures</i>	\$160,511,000

TIP project spending is expected to result in an average of 449 new jobs per year that would not otherwise have been created. The cumulative impact of TIP projects results in an increase in GDP of \$314 million. Personal incomes are projected to rise by \$187 million, the majority which will re-enter the economy in the form of increased expenditures on goods and services. These benefits capture just the new dollars, and exclude the additional economic impact of an improved network which is illustrated in the following section. Several key indicators shown in the table are used to describe the economic impacts of transportation spending. These economic indicators are defined in the following table.

Table 6-2: Economic Indicators

EMPLOYMENT	Employment is the estimate for number of jobs. This includes both part time and full time jobs as well as those who are self-employed. Employment figures presented here do not include unpaid family workers or volunteers. In the REMI model, employment is affected directly by output and labor productivity and indirectly by various transportation efficiency improvements and access.
GROSS DOMESTIC PRODUCT (GDP)	GDP is the total value of consumption, investment, and government spending in the region. Investments and government spending not only impact GDP directly, but also help create jobs and spur further consumption. GDP can also be seen as the total value of final goods and services produced within the regional economy.
REAL PERSONAL INCOME	Real Personal Income is the current dollar value of all personal earnings from wages, investment, and other earning streams.
PERSONAL CONSUMPTION EXPENDITURE	This is the dollar amount of disposable income put back into the economy through purchases of goods and services by individuals. Higher wages lead to higher disposable income and generally higher levels of consumption.

b. Regional Economic Model (REMI) Indicators

To analyze the impacts of transportation spending, MRMPO uses the Regional Economic Model, Inc. (REMI) Model. REMI was designed to measure the impact of new jobs, policy shifts, or spending in an area and how these changes ripple throughout the economy. The REMI model is calibrated specifically to the MRMPO region and based on the most recent data available. The REMI model and its dynamic methodologies are well respected and used by organizations throughout the world to analyze regional economies. (See the appendix for a description of the REMI methodology).

6.2 Economic Impact of Network Efficiency

Proper provision of transportation infrastructure can be a valuable tool for fostering economic development and can result in a number of benefits. For example, roadway network efficiency improvements can be realized from strategies including expansion of the network, safety improvements, and Intelligent Transportation Systems implementation, which help manage congestion and improve efficiency of existing infrastructure. As shown in the previous section, economic gains are also incurred through the direct investment of federal dollars for the design and construction of transportation projects. Finally, economic benefits also may be realized through improvements in mobility and access provided by a roadway network, which can reduce the effective distances between locations and reduce overall transportation costs.¹ This is referred to as the economic impact of network efficiency.

a. Economic Impacts of MTP Projects

Economic impacts to the MRMPO region associated with the improved mobility, or “network efficiency” gained by building out the projects proposed in the *2040 MTP* are shown below. These benefits are in addition to the impact of the construction and maintenance dollars associated with building the projects, as detailed in the previous section. The figures presented in the table indicate increases over a baseline where the proposed long-term roadway network was not built.

Table 6-3: Economic Impact of Network Efficiency Improvements (DRAFT)

Economic Impacts of MTP Roadway Expansion Projects between 2016 and 2040 (2019 Dollars)	
User Benefits (2016 - 2040):	
<i>Travel Time Savings</i>	\$470,331,781
<i>Vehicle Savings</i>	\$10,488,123
<i>Safety Benefits</i>	\$6,049,565

The table indicates that improved mobility resulting from investments in roadway infrastructure over the next 25 years translates into a travel time savings of approximately \$470 million over the life of the plan. In addition, vehicle operating expenses save an additional \$10 million, and safety benefits total approximately \$6 Million. These results demonstrate the role of transportation projects as an important aspect of the regional economy and a huge driver of economic activity.

b. REMI TranSight Model

MRMPO used the REMI TranSight model to evaluate the economic impact of projects listed in the *2040 MTP*. TranSight is an extension of the basic REMI model that is compatible with MRMPO’s travel demand model and uses the number trips, vehicle miles traveled, and vehicle hours traveled to calculate the economic benefits of transportation improvements. **Rather than actual project costs, as modeled in the previous section, economic impacts are based on increased labor market access, decreased commuting costs, and lower transportation costs for delivering goods and services.** More information concerning specific details and operation of the REMI TranSight model are included in the appendix.

¹ Laube, M.M., L. Rainville, and W.M. Lyons. “A Multi-Modal Approach to Economic Development in the Metropolitan Area Transportation Planning Process,” Volpe Center, 2014

The TranSight analysis presented in this section only measures the impacts of roadway capacity and expansion projects associated with the 2040 MTP. Impacts to alternative modes of transportation are not considered, nor are network efficiency improvements such as Intelligent Transportation Systems and intersection improvements. While these transportation improvements are clearly of great value, they are not reflected in this analysis because they cannot be accurately simulated within the travel demand model environment.

TranSight Economic Indicators

Several factors are commonly used to quantify economic benefits for roadway expansion or efficiency improvements. These are:

- 1) Travel Time Savings
- 2) Vehicle Savings
- 3) Safety Benefits

Travel Time Savings

Travel time savings provide individuals with more leisure time by effectively shortening necessary trips, like trips to work. Time savings create large economic benefits for businesses by providing cost savings for transporting goods and materials. Additionally, time savings makes communities more attractive for future business investments by reducing costs and allowing workforces to be drawn from larger areas. Time savings may induce new businesses to form or existing businesses to expand by reducing costs that had made operations prohibitively expensive.

Vehicle Savings

When roadway improvements reduce congestion and allow drivers to reach their destinations in less time there may be fuel and vehicle operation savings for individuals and businesses. These savings come in the form of fuel savings and general wear and tear on the vehicle that can be incurred by more trips, longer trips, and stop-and-go traffic.

Safety Benefits

Although evidence is mixed, reduced congestion generally reduces the number of vehicle accidents but increases accident severity.^{2, 3} Vehicle accidents cause undue repair costs, property damage, lost earnings, travel delays, medical and injury expenses, and may result in undue loss of life. Each of these factors hinders the local economy and places financial strain on individuals. Transportation projects promoting safety result in sizable increases in economic benefits.

² Ibid.

³ Cambridge Systematics, "Crashes vs. Congestion - What's the Cost to Society?" AAA, 2011

6.3 Economic Well-Being

Economic well-being refers specifically to the relationship between the economic health of the region's households as it applies to housing and transportation expenses.

a. Housing Affordability

In a report published in May 2002 by the Millennial Housing Commission it was asserted that, "Affordability is the single greatest housing challenge facing the nation" (millennial Housing Commission 2002). According to the Department for Housing and Urban Development (HUD),

"...families who pay more than 30 percent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care."⁴

This 30 percent standard has become the most widely accepted measure of housing affordability in the United States. In the AMPA, one of every three households (32.3 percent) spend over 30 percent of their income towards housing expenses. Included are households considered to be facing an extreme housing cost burden; **17.5 percent of AMPA households spend 50 percent or more of their income on housing.** The hardest hit are households that rent their homes. Approximately 35 percent of households in the AMPA are renters which is on par with the national average. However, almost **half of all renters in the AMPA exceed the 30 percent standard (48.6 percent).** This is due to the relatively low median incomes of renters when compared to owners (\$33,000 compared with \$66,000).

Multi-Family Housing

Multi-family housing in the AMPA is often not an affordable alternative to renting a single-family home. Rents across the AMPA have increased five percent in the last year with apartments at a 96.4 percent occupancy rate. Much of the multi-family housing currently under construction is being built to serve above average income earners and is less accessible to households with limited financial means. While Albuquerque is "under-served" by multi-family housing in that its share of the market is lower than the national average and other cities of similar size, it is over-represented by mobile and manufactured housing. In the AMPA there are 33,000 households living in mobile homes (8.6 percent of households compared with 6.2 percent nationwide). It is likely that the sizable share of mobile homes among our overall housing stock indicates that this may be a viable alternative to households seeking affordable housing.

b. Housing and Transportation Costs

Housing affordability is an important component to the issue of economic well-being and is vital to ensuring that the region is livable for current and future residents. However, it is an incomplete picture without consideration of transportation expenses. Transportation is typically a household's second largest cost, and a family that lives far away from their places of work in order to find affordable housing may be losing those savings due to higher spending on transportation.⁵

Center for Neighborhood Technology (CNT) Housing + Transportation Affordability Index

The Center for Neighborhood Technology (CNT) and HUD have developed tools that integrate both costs in order to show how truly affordable, or not, an area is for a variety of household types. CNT's tool is called the Housing + Transportation Affordability Index and HUD's is the Location Affordability Index. CNT has found 15 percent of income to be an attainable goal for transportation affordability.

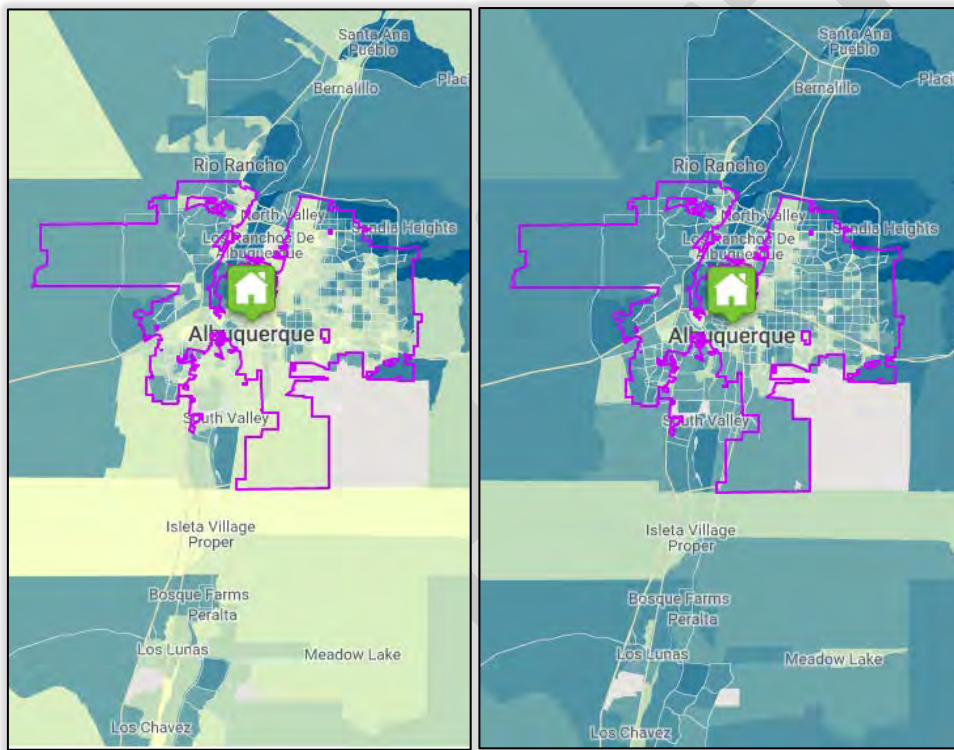
⁴ Department of Housing and Urban Development, http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/affordablehousing

⁵ Center for Neighborhood Technology, <http://htaindex.cnt.org/about.php>

Therefore, by summing the guidelines that a family should spend no more than 30 percent of their income on housing and 15 percent on transportation, CNT has established that no family should spend more than 45 percent of their income on combined housing and transportation costs. The following maps were produced using CNT’s Housing and Transportation Affordability Index data and demonstrate how geographic areas that may seem affordable when looking only at housing costs, are revealed as unaffordable when combined with estimated transportation costs. Looking only at housing affordability, 89 percent of block groups in the AMPA are considered affordable for a family of four (using 30 percent or less of a household’s income spent on housing as the threshold for what is considered affordable). **When household and transportation costs are combined, however, only five percent of block groups are considered affordable and fall within the 45 percent combined cost guideline.** This is primarily because block groups with lower housing costs are located

Figure 6-1: Housing Affordability (left graphic) compared with Housing and Transportation Affordability in the AMPA (right graphic), 2017 (DRAFT)

Source: Center for Neighborhood Technology



further from jobs and other trip purposes, thus increasing transit costs to the average household. If a household is transit dependent this further exacerbates the household burden given the limited transit service outside of the urban core. This underscores the importance of looking at land use and access to reduce trip lengths as well as minimize the need to own a vehicle, two strategies that will do a lot to reduce transportation costs. The graphic on the left shows these affordability comparisons in the AMPA. The lightest

shaded areas in the figure on the left shows the areas that are considered “affordable” when just considering housing costs. The figure on the right adds transportation costs into the mix, and the lightest shades show areas where a household earning median income would be expected to spend under 45 percent of their income on housing and transportation combined. These maps show that when the costs of housing and transportation are considered together the metropolitan area becomes much less affordable.

Location of Historical Growth

Building permit data show that over the last 20 years, growth has occurred in peripheral parts of the metro area that are great distances from transit hubs, major activity centers, and job-dense areas. The development patterns typical in these areas make it challenging to offer viable transit services there. These factors contribute to longer trip lengths as well as the increased necessity of personal vehicles to carry out everyday activities. The relationship between trip lengths and affordability is clear:

- a. Costs are a function of vehicle ownership and operating expenses.
- b. Operating costs are higher if more travel is required.
- c. Vehicle ownership is a necessity if distances are too great for trips to be achieved by other modes.

Even if individuals choose to drive for all trips regardless of length, operating expenses can be reduced if those trips are shorter. Hence, reducing trip lengths can improve affordability by either reducing vehicle ownership rates (increasingly observed in households with more adults than vehicles) or by reducing vehicle operating costs. The following map highlights the importance of lessening the cost burden of transportation in the AMPA and emphasizing future growth in areas that are closer to job sites and existing amenities and services. It is also crucial to target growth in areas that are easily serviceable by transit, and to fill in gaps in the bicycle and pedestrian networks to expand transportation options.

Map 6-1: Combined Housing and Transportation Affordability and Recent Building Permits
[In proces of being updated]

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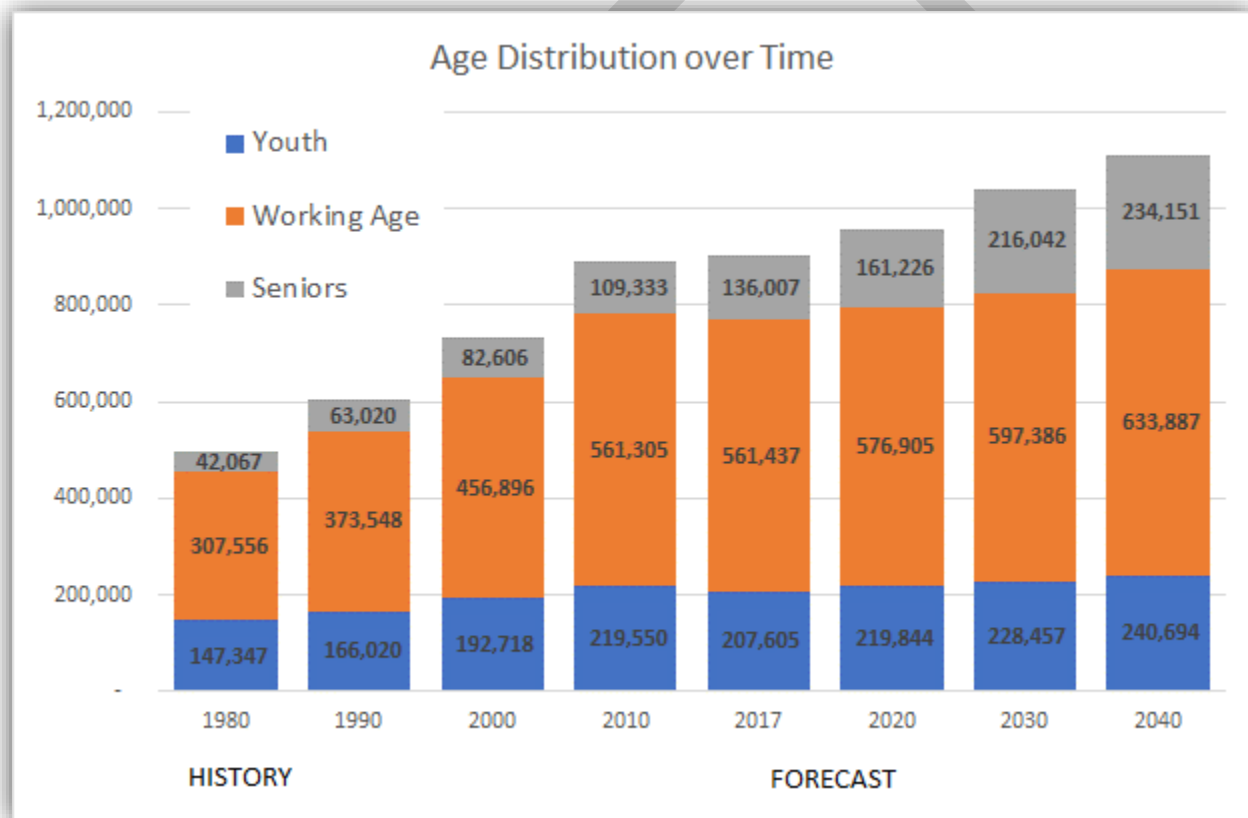
6.4 Place-Making as an Economic Driver

Perhaps the biggest source of economic uncertainty facing central New Mexico is changing population demographics and economic migration. Recent trends demonstrate declining birth rates and increases in out-migration. These trends suggest the potential for a decreasing labor force and a future imbalance between an aging and increasingly dependent population and fewer workers to support them. This creates uncertainty about the future of business and industry in central New Mexico as well as the local economy.

a. Declining Workforce and Aging Population

New Mexico has historically had one of the youngest populations of all states. This provided the regional economy with young professionals, a solid base for the workforce, and attracted business and industry. However, a look at the changing age composition reveals an emerging regional challenge; a declining workforce and an aging population.

Figure 6-2: Shifting Age Composition in the Region: Age Distribution over Time



The trend in Albuquerque is towards a declining share of youth and working age professionals and an aging population. In 1980, 30 percent of the population was under 18, 62 percent were between the ages of 18 and 64, and 8 percent were over the age of 65. Today 23 percent of the population is under 18 and 15 percent is over 65. By 2040, 57 percent of the population is expected to be between the ages of 18 and 64, and 21 percent are expected to be over the age of 65.⁶

⁶ 2040 Population figures are based on population projections by BBER

d. Place-Making and Transportation Benefits

Retaining young professionals and providing support for the senior population can be aided by transportation and transit investments that make New Mexico a more desirable place to be. Rather than thinking of the transportation network as simply a means of conveyance, it can also build communities and make critical connections. In a regional context, the experience of a place is from the time that you leave home until you arrive at your destination, and the fabric in between. In 2018, Brookings established the “Bass Center for Transformative Placemaking,”⁷ in order to create place-led policies and practices that will bridge the nation’s increasing spatial divides shaped by market disruptions, and changing demographic and household compositions. This approach has a strong regional focus by connecting residents and businesses to regional markets, and is described, in part, as aiming to, “Nurture an economic ecosystem that is regionally connected, innovative, and rooted in the assets of its local residents and businesses.”

Transformative Place-Making

The rich cultural history of the AMPA provides a unique opportunity for transformative place-making. By incorporating the history, culture, system, and quality of place, strategies can emerge to invigorate social, economic, and civic life. Targeting growth, and coordinating a mix of land uses in areas identified in the target scenario as being “regionally significant,” can promote communities with dense walkable areas while preserving open space, ecosystems, agricultural areas, and places with cultural and or historical significance.

Future Workforce

Transportation systems can be designed to strategically make areas attractive for businesses and housing while connecting communities. **Walkable and transit-friendly communities may be more attractive to a younger workforce.** This dynamic is important given the findings of the MTP Questionnaire, which show that young residents are least satisfied with the available transportation options and demand investments in alternative modes at higher rates than other age groups. Cities around the world have recognized the benefits of transportation in creating communities that are attractive to younger residents, which strengthens the future workforce. Such investments that promote a sense of place also have the benefit of improving quality of life for all members of the community.

In addition, a study conducted by George Washington University and Smart Growth America⁸ found a significant correlation between the educational attainment of its workforce and the gross domestic product per capita (GDP). **Metro areas with higher levels of walkability tend to have a population with higher educational attainment.** While it is uncertain whether there is a causal connection between walkability and the attractiveness of a place to a more educated workforce, there does appear to be a relationship between the two. Transportation systems can be utilized to create connected communities that are more attractive to businesses, and a younger, more educated, workforce.

Supporting Innovation

It is also important that transportation projects help build an environment that is friendly to innovation and business. Projects that emphasize access and mobility are of particular value to private enterprise by reducing the costs of doing business and make the region more attractive to new industry. MRCOG, in coordination with other government entities, has undertaken an economic branding campaign to guide future policy and investment in such a way that Albuquerque becomes a destination for innovation.

⁷ Vey, J. S., H. Love, “Transformative Placemaking: A framework to create connected, vibrant, and inclusive communities,” 2019

⁸ Hadden Loh, T., C. B. Leinberger, & J. Chafetz, “Foot Traffic Ahead: Ranking Walkable Urbanism in America’s Largest Metros,” 2019

Ingenuity Central

The “Ingenuity Central” campaign is focused on economic development, planning, and policy making which encourage entrepreneurship and foster collaboration between business, government, and individuals. MRMPO and the region can support these economic development efforts through transportation projects that connect key destinations and improve the users’ experience by offering multiple modes that are both safe and accessible.

Target Scenario Vision

The Target Scenario represents a 30,000-foot view of the region by establishing high level guiding principles that have been developed collaboratively with the intent of making the AMPA a more desirable place to be and traverse. By honoring unique places and emphasizing the importance of viewing the region as a whole system, the Target Scenario sets a tone for the region. And by emphasizing transportation and housing choices, diversity, and balance, it also sets a direction. MRMPO believes that by addressing transportation needs with a keen focus on other aspects that impact quality of life, this transportation plan is an important element of the region’s overall economic health.

6.5 Fiscal Stewardship

Financing transportation projects and providing maintenance and upkeep of transportation and transit systems is a challenge for local governments. Jurisdictions in the AMPA are reliant on federal transportation dollars to fund most transportation projects. However, reliance on federal and state discretionary funding to build and maintain a transportation network introduces uncertainty and makes planning future roadway projects difficult. This is particularly true at a time when a decline in federal spending has been particularly devastating to New Mexico, a state that relies heavily on federal dollars.

a. Maximizing Existing Infrastructure

To help alleviate some of the financial burden on local governments, metropolitan areas are increasingly pursuing projects and development patterns that both maximize existing infrastructure and minimize infrastructure expansion. **This serves two goals: one, it reduces upfront capital costs for new roads and other infrastructure, and two, it limits the future inventory of roads and infrastructure that need to be maintained and operated over time.**

The idea that municipal financial benefits are achievable through land use and development strategies has existed in planning since the 1970s. Infrastructure development (e.g., new roadways, utilities, water, and sewer) and maintenance represent significant costs to municipalities. Compact development in targeted locations has been widely used as a strategy to serve larger populations with transit, alleviate the demand on already stretched emergency services, and reduce upfront capital costs for infrastructure as well as ongoing maintenance.⁹

A national survey of literature supports this and demonstrates through multiple case studies that compact development has saved municipalities an average of 38 percent in infrastructure spending and an average of ten percent for providing public services compared to more traditional development patterns.¹⁰

b. Fiscal Indicator Tool (FIT)

In its efforts to better understand and illustrate the impacts of growth patterns on infrastructure costs and services, MRMPO has developed a new model called the Fiscal Indicator Tool (FIT). This model is designed to compare the upfront and recurring costs between different growth scenarios with the goal of contributing to the discussion regarding the efficient use of public dollars. Rather than relying on national studies and cost assumptions, the FIT Model provides regional decision-makers with figures that are based on local land use data and cost factors compiled through local documentation and personal interviews with experts in the field.

Capital and O&M Costs

FIT is an Excel-based model that calculates the major capital and ongoing operation and maintenance (O&M) costs of infrastructure under different growth scenarios. To perform this calculation, the geographic location of households and job growth that result from MRMPO land use scenarios (e.g., the Trend and Target Scenarios) are inputs to the model, along with various factors related to the cost of infrastructure.

⁹ Burchell, R.W., G. Lowenstein, W.R. Dolphin, C.C. Galley, A. Downs, S. Seskin, K.G. Still, and T. Moore, "Costs of Sprawl - 2000"

¹⁰ Fulton, W., I. Preuss, A. Dodds, S. Absetz, and P. Hirsch. 2013. "Building Better Budgets: a national examination of the fiscal benefits of smart growth development," 2013

The infrastructure types considered in FIT are:

- Roads
- Transit
- Schools
- Fire Stations

FIT calculates the total capital costs and annual O&M cost for each infrastructure type under each growth scenario as well as the difference in costs between the scenarios. Calculations are driven by an estimate of additional infrastructure triggered by growth in newly developed areas, as well as an estimate of service improvements necessary in existing built areas.

Limitations

The focus of the FIT model is on specific types of infrastructure that are wholly or partially funded by local taxes and impact municipal budgets. FIT is not intended to measure all costs of growth to society, nor is it an exhaustive look at all infrastructure needed to support growth. For example, municipal services such as parks, libraries, and community centers are also influenced by the location of growth but were excluded from the model. In addition, FIT does not estimate the cost of infrastructure funded mostly by user-charges such as water and wastewater infrastructure. In these cases, costs are more visible to and internalized by individual households who eventually absorb the cost of infrastructure expansion regardless of the growth scenario. Nonetheless, issues related to water use and infrastructure are integral to the broader discussion related to growth in the region.

The FIT model also does not estimate the revenue side of the growth equation. The revenue side would include both Gross Receipts Taxes (GRT) and property taxes. These are not considered in this analysis because MRMPO assumes land use scenarios incur the same amount of growth (population and jobs) added to the region by 2040. That is, the level of growth is “net neutral” to the scenario, and only the distribution changes. Holding this constant has the advantage of being able to attribute the measures of the scenario performance (cost, miles traveled, commute times) to the one factor that did change; the actual distribution of growth. In terms of GRT, the same population between scenarios is assumed to generate the same GRT. And while property tax revenues are indeed affected by location (development in key locations garner higher taxes), the FIT model does not attempt to forecast variability in property tax revenues based on location or density of growth.

The FIT model could be expanded to quantify other benefits of land use scenarios such as savings related to increased safety and reduced travel times. At this point MRMPO calculates these types of cost savings outside of the model, and they are presented in this chapter to quantify the benefit of the MTP build scenario versus the no build scenario.

Defining Infill

The FIT model is based on several tailored geographic boundaries and service area definitions in order to most accurately capture the costs associated with different development patterns. One important distinction needed to perform this analysis is whether or not an area was determined to be serviced by existing infrastructure. In order to make this determination, MRMPO developed a geographic boundary that depicts land that can reasonably be considered “infill”. This section describes how infill is defined for the purposes of the FIT model.

The American Planning Association (APA) describes infill as new development or “redevelopment that optimizes prior infrastructure investments and consumes less land than is otherwise available.” The National League of Cities describes it as “new development that is sited on vacant or undeveloped land within an existing community and that is enclosed by other types of development.” The general agreement found in the literature allowed MRMPO to identify land as infill if it is:

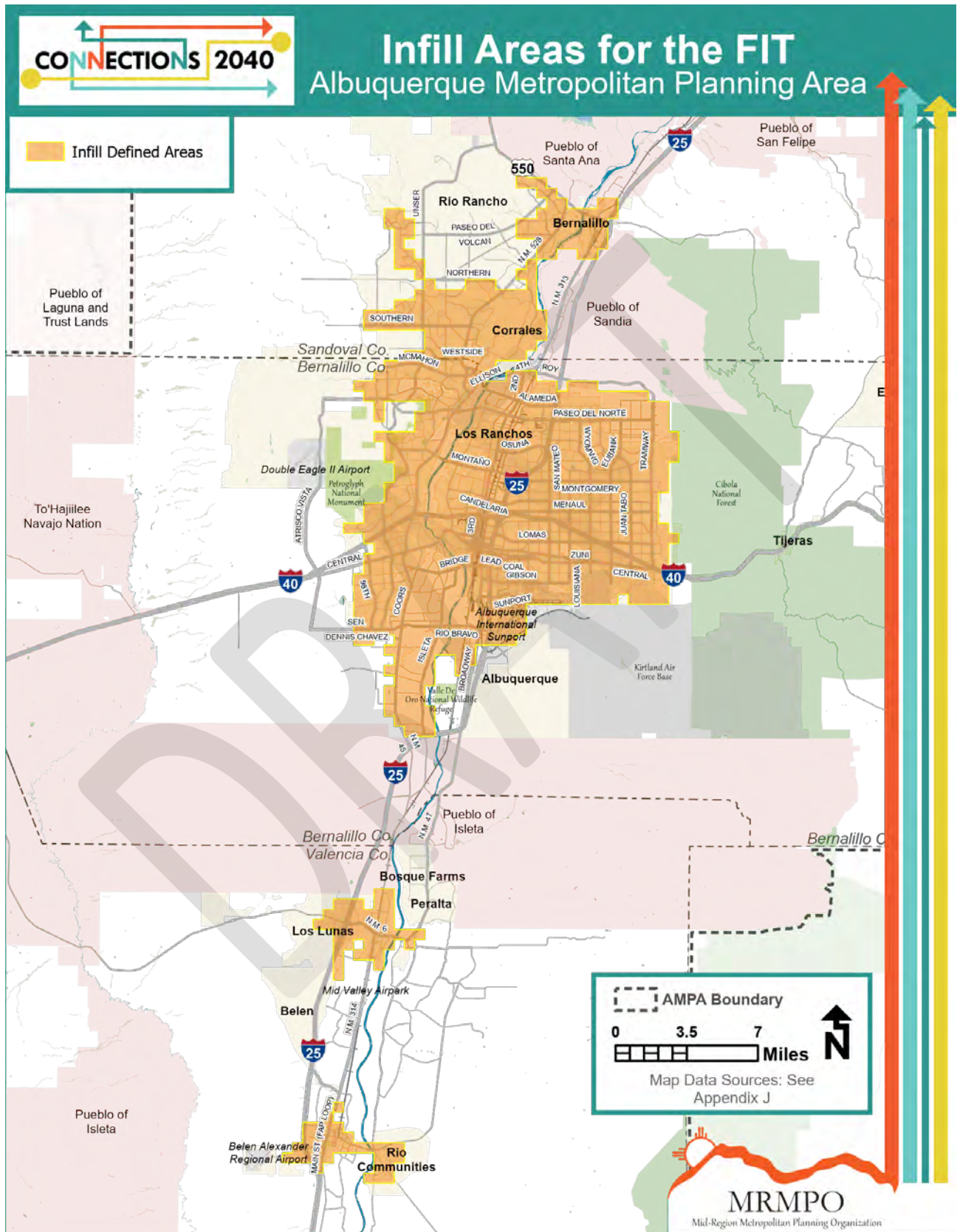
- 1) Located within an established community or urban area;
- 2) In close proximity to or surrounded by existing development;
- 3) Served by road, water, and sewer infrastructure.

Using these guidelines, MRMPO developed a geodatabase of infill parcels in the region. Land was determined to represent infill if it was located in an area that has public water service, sewer service, is on a paved road, and is in a contiguous and established development of housing units or jobs. There were a handful of modifications applied to these criteria based on local knowledge. These are described below.

- Paved roads data was unable to be obtained in Los Lunas and Belen so water and sewer service data were used to create the infill boundary and paved roads were spot checked with aerial imagery.
- The Town of Bernalillo, Belen and Rio Communities do not yet have spatial files for water and sewer service. As a result, municipal boundaries and the paved roads file were used to estimate infill. These municipalities have their own water and wastewater systems so the municipal boundary should be a reasonable proxy for the service area.
- A household density threshold, combined with a paved road density threshold, was used instead of water and sewer service in order capture areas such as Corrales and North Albuquerque Acres. These areas have a road density similar to neighboring infill areas and are surrounded by existing development, however they do not have municipal water and sewer service.

MRMPO visually inspected the resulting map to ensure results were consistent with local knowledge. The map and corresponding definitions were then vetted by member governments through individual interviews and before its technical committees. The following map shows the infill boundary, outside of which would be considered greenfield for the purposes of FIT.

Map 6-3: Infill Areas for the FIT



c. Capitol, Operating, and Maintenance Costs

In total, the Trend Scenario is estimated to require approximately \$420 million more in infrastructure than the Target Scenario to support projected growth through 2040 in the MRCOG region. When this figure is put in the context of our population, it equals approximately \$785 more dollars per household. This total value includes the cost of local roads, schools, and fire stations as well as major road and transit improvements.

Local road infrastructure represents the largest additional capital cost at \$164 million, followed by major road projects at approximately \$142 million, schools at approximately \$102 million, and, finally, fire stations at \$16 million of additional cost. It is assumed that the Trend and Target Scenarios will have the same level of transit investment – though the Target Scenario is assumed to have a higher level of transit service and, as a result, higher operations, and maintenance costs.

Local road costs are often funded by the developer of the housing project and directly through public revenue. Excluding local roads from the capital cost comparison, the Trend Scenario costs approximately \$260 million more than the Target scenario, or approximately \$481 per household.

Table 6-4: Capitol Cost Estimates, 2016-2040

Indicators	Scenarios		Comparison	
	Trend	Target	Difference	% Difference
Cost				
Local Roads	\$861,000,000	\$697,000,000	-\$164,000,000	-19%
Schools	\$2,545,394,519	\$2,443,103,037	-\$102,291,482	-4%
Fire Stations	\$340,000,000	\$324,000,000	-\$16,000,000	-5%
Transit Extension	NA	NA	NA	NA
Transit Expansion	\$65,000,000	\$65,000,000	\$0	0%
Major Road Projects	<u>\$141,971,431</u>	<u>\$0</u>	<u>-\$141,971,431</u>	<u>-100%</u>
Total	\$3,953,365,950	\$3,529,103,037	-\$424,262,913	-11%
Cost Per HH				
Local Roads	\$1,592	\$1,289	-\$303	-19%
Schools	\$4,708	\$4,518	-\$189	-4%
Fire Stations	\$629	\$599	-\$30	-5%
Transit Extension	NA	NA	NA	NA
Transit Expansion	\$120	\$120	\$0	0%
Major Road Projects	<u>\$263</u>	<u>\$0</u>	<u>-\$263</u>	<u>-100%</u>
Total	\$7,312	\$6,527	-\$785	-11%

Source: MRCOG; BHI; Economic & Planning Systems

The Target Scenario is projected to cost approximately \$2.6 million per year more to operate and maintain than the Trend Scenario. This represents approximately \$5 more per household per year. Higher operating and maintenance costs in the Target Scenario are exclusively a result of higher costs of transit operation. These higher costs stem from an assumption of better and more frequent transit service in the Target Scenario, which helps support denser land use patterns. The Trend Scenario has higher operating and maintenance cost for each of the other infrastructure types included in the analysis. If transit is excluded, then the Trend Scenario costs approximately \$28 million per year more than the Target Scenario. In short, the more frequent transit service can almost be completely funded by a reduction in the operating costs for other infrastructure types.

While more frequent and better transit service costs more, it also represents and creates other regional benefits, including reduction in congestion both through more frequent transit service and a reduction of cars on the road as well as a reduction in the number of car accidents. To put the increased operations and maintenance costs in perspective, it would take 157 years at \$5 per household per year for the Target Scenario to be as expensive as the additional capital costs in the Trend Scenario at \$785 per household.

Table 6-5: Annual Operation and Maintenance Cost Estimates

Indicators	Scenarios		Comparison	
	Trend	Target	Difference	% Difference
Cost				
Local Roads	\$50,000,000	\$40,000,000	-\$10,000,000	-20%
Schools	\$179,842,573	\$173,791,974	-\$6,050,599	-3%
Fire Stations	\$141,666,667	\$135,000,000	-\$6,666,667	-5%
Transit Extension	\$28,792,694	\$24,288,641	-\$4,504,053	-16%
Transit Expansion	\$42,772,613	\$73,227,099	\$30,454,487	71%
Major Road Projects	\$620,071	\$0	-\$620,071	-100%
Total	\$443,694,617	\$446,307,714	\$2,613,097	1%
Cost Per HH				
Local Roads	\$92	\$74	-\$18.49	-20%
Schools	\$333	\$321	-\$11.19	-3%
Fire Stations	\$262	\$250	-\$12.33	-5%
Transit Extension	\$53	\$45	-\$8.33	-16%
Transit Expansion	\$79	\$135	\$56.33	71%
Major Road Projects	\$1	\$0	-\$1.15	-100%
Total	\$821	\$825	\$4.83	1%

Source: MRCOG; BHI; Economic & Planning Systems

Cost per Acre

The Target Scenario costs 11 percent less in capital expenses over the life of the plan, a savings of approximately \$420 million. Given that it consumes 13,000 fewer acres than the Trend Scenario, that equates to a savings of \$35,600 per acre over the next 20 years. **Simply put, higher densities in certain locations and improving transportation connections between key destinations results in significant cost savings for municipalities.** Intuitively, this makes sense. For instance, fire stations are services that rely on fast incident response times; reducing the size of the service area alleviates the pressure to build new stations. Likewise, new roads and schools are necessary to serve new growth in undeveloped areas; by accommodating some of this growth in areas that are already well-established and oftentimes have excess capacity, fewer new facilities are required.

d. Fiscally Responsible Development Patterns

In an era of fiscal uncertainty and reliance on federal and state discretionary funds, it is more important than ever that transportation projects be planned and undertaken to minimize future financial risk while providing needed transportation services. Given that growth will occur, planning for and promoting a more efficient development pattern for service delivery may provide local jurisdictions significant cost savings while providing comparable services.