



In 1977, the Governor of Texas established the San Antonio-Bexar County Urban Transportation Study (SABCUTS), Transportation Steering Committee as the official Metropolitan Planning Organization (MPO) for the urbanized area. Today, SABCUTS is referred to as the San Antonio-Bexar County MPO. The Transportation Steering Committee, now referred to as the Transportation Policy Board, is comprised of 19 (ten elected and nine appointed) officials representing the State of Texas through the Texas Department of Transportation and the State Delegate Members, Bexar County, the City of San Antonio, Suburban Cities, the Northeast Partnership, Alamo Area Council of Governments, and VIA Metropolitan Transit.

The San Antonio-Bexar County MPO is committed to continuously improving the region's multi-modal transportation system. The Transportation Policy Board also recognizes the importance of a true needs-based plan for the area and adopted this Texas Metropolitan Mobility Plan (TMMP) on July 26, 2004. Individuals with questions or comments on this document, or those who wish to provide input into the planning process may contact the MPO through the following phone number, mailing address or e-mail address:

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**San Antonio-Bexar County
Metropolitan Planning Organization
TEXAS METROPOLITAN MOBILITY PLAN**

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Executive Summary

Transportation is a dominant factor in all our lives. How well we get to and from work, school, hospitals, shopping centers and recreational facilities is critically important to us all. The ability to travel directly affects our economic and social status as well as our overall standard of living. On a larger scale, the San Antonio metropolitan area's economy and environment depend heavily on the condition and efficient performance of our regional transportation system. Appropriate transportation planning, recognizing the mobility needs and identifying the available resources, will allow for the maintenance and improvement of our transportation system, therefore affecting our economy and quality of life.

Long-range transportation planning requirements are not new. Transportation planning by Metropolitan Planning Organizations (MPOs) dates back to the passage of the Federal Highway Act of 1962. Because the MPO is comprised of officials of the urban area's local governments and transportation agencies, it has become the forum for cooperative transportation planning and decision-making. In the past, the federal government has required the area to develop a fiscally constrained Metropolitan Transportation Plan (MTP). Although this plan is important to the area and continues to be developed today, the State of Texas has recognized the need for the Texas Metropolitan Mobility Plan (TMMP), which focuses on the transportation needs of the eight large metropolitan areas around the State. The TMMP will focus on the mobility needs of each area in order to address the funding "gap" that exist between traditional funding resources and the amount needed to reduce congestion to a locally acceptable level.

The TMMP process has shown that the San Antonio-Bexar County Region needs an additional 2,330 Lane Mile equivalents in order to reduce congestion to a locally acceptable level by 2030. This type of transportation system expansion comes at a cost of over \$8 Billion. That amount must be found above and beyond this area's traditional state and federal funding allocation. Additionally, the area must find over \$8 billion to rehabilitate the existing system over the next twenty-five years. This Plan is the first step in identifying the problem and looking for solutions to fund the true transportation needs of the region.



Introduction

As Texans, we all realize that the State's future is tied to an efficient and effective transportation system. In order to create and maintain a vibrant economy and fulfilling quality of life, we must provide reliable mobility, improved safety, streamlined project delivery and economic vitality.

Texas Metropolitan Mobility Plan Charge and Definition

Congestion in metropolitan areas is bad for Texas. The average citizen in San Antonio spends more than 18 hours stuck in traffic each year, an increase of 157% over the past decade (Urban Mobility Study, Texas Transportation Institute). Delays result in loss of productivity, reduced air quality, reduced quality of life and increased costs for services and goods. But the problem is not limited to San Antonio. Metropolitan areas across the state have experienced tremendous growth in the past decades without adequate funding to increase transportation system capacity. The 2000 U.S. Census found that 60 percent of Texans live in the state's eight major metropolitan areas (those with populations exceeding 200,000): Austin, Corpus Christi, North Central Texas (Dallas-Ft. Worth), El Paso, Lubbock, Hidalgo County, Houston-Galveston, and San Antonio -- that is over 12.4 million people.

The Texas Metropolitan Mobility Plan results in each of the major metropolitan areas developing locally conceived comprehensive regional mobility plans to improve traffic flow by using all modes of transportation. Each regional mobility plan includes strategies to reduce congestion and improve system mobility as well as overall system performance. The implementation of these regional mobility plans will be through a regional, baseline allocation of Texas Department of Transportation (TxDOT) metropolitan mobility funds and the locally generated "gap" funding.

The Texas Metropolitan Mobility Plan is a firm step in the direction of increased local control of metropolitan transportation planning and mobility funding to reduce urban congestion and improve quality of life. The plan allows each of the metropolitan areas flexibility to develop plans unique to their needs, anticipate realistic baseline allocation of funds, arrange for gap

funding and use new and improved methods for streamlined project delivery

Adopted Goals of the Texas Metropolitan Mobility Plan

The Texas Department of Transportation has adopted eight goals that the TMMP will strive to achieve. These goals are important to all citizens and are important to the success of any community.

- I. **Relieve Congestion** – Every large metropolitan community experiences some type of congestion. While some communities may experience heavier congestion than others, every region strives to improve the mobility needs of its citizens. In order to assist metropolitan areas in assessing their congestion and setting goals for congestion reduction, TxDOT will adopt a Texas Congestion Index. Focusing on surface modes of transportation, the index will be based on the delay time experienced by people and in the delivery of goods. The Texas Congestion Index will be defined in a later section of this document.

- II. **Improve Safety** – Each regional mobility plan will address safety improvement across all transportation modes. Some specific goals for safety for the San Antonio area include the:
 - Reduction of fatal/incapacitating crashes including those that occur on at-grade railroad crossings
 - Improved safety on transit systems
 - Reduction in vehicle-bicycle and vehicle-pedestrian fatalities and injuries

- III. **Improve Air Quality** – The degradation of our air quality will always be one of the outcomes of increased congestion. Therefore, one of the underlying goals of the Texas Metropolitan Mobility Plan is to improve air quality. Through established procedures and future refinements each of the metropolitan areas will assess the regional mobility plans for the impact on the area's air quality. It is a stated goal of the Texas Metropolitan Mobility Plan that air quality improvements in conformance with established guidelines will be a result of each regional mobility plan. Again, this will require comprehensive planning through the metropolitan area across all modes.

IV. Improve Quality of Life – A good quality of life can only be achieved through an effective and efficient transportation system. Beyond reducing congestion and improving air quality, each regional mobility plan will address the quality of life impacts of proposed projects and approaches. All projects should enhance the mobility of the community thereby improving the economic opportunities for the region. The issues and goals identified below direct planning efforts to consider transportation’s impact on the economy and the environment.

- Provide greater transportation choices
- Create a more cost-effective transportation system
- Promote livable neighborhoods, towns and cities
- Encourage efficient use of developed areas and preserve open space and natural resources
- Improve public awareness and communication on transportation issues
- Support a strong and sustainable economy
- Respect San Antonio’s natural environment

V. Improved Opportunities for Enhanced Economic Development – Reduced congestion and improved mobility is crucial to the economic vitality of the state’s metropolitan areas. Failing to solve metropolitan congestion problems will result in significant economic consequences for Texas’ existing and emerging metropolitan regions. The large metropolitan areas in this State must remain competitive in the attraction, expansion, and retention of business and industry. San Antonio must ensure that further growth is well planned and comprehensively integrated with all transportation modes.

VI. Enhance Infrastructure Maintenance – In adding additional capacity to a transportation system, each region must understand the importance of maintaining all current and future infrastructure. The Texas Metropolitan Mobility Plan strives to not only measure the future needs of the area, but also the cost of maintaining the entire system. Once the transportation facility needs of the area are met, a dedicated source to support their maintenance must also exist.

VII. Streamline Project Delivery – With a developed regional mobility plan consisting of a prioritized listing of projects, policies and identified funding

(allocated and gap), the citizens of Texas' metropolitan areas should see more timely delivery of improvements. The Texas Metropolitan Mobility Plan is intended to allow for expanded use of innovative tools for project delivery. Aside from the traditional public-private partnerships and more efficient cash-flow management techniques, other innovative tools for project deliver include:

- Streamlined environmental approval;
- Unrestricted use of exclusive development agreement authority;
- Specific exemption from the current restriction on toll equity for toll projects urban areas;
- Institute the concept of "shadow tolling" for the TxDOT portion of metropolitan projects;
- Seek blanket approval to add toll lanes to existing highways;
- Institute policies for allowing metropolitan entities to receive fund credits for their expenditures to construct off-state system projects; Streamline State/Federal oversight roles for small off-state system projects.

VIII. TxDOT Strategic Goals – The final goal of the Texas Metropolitan Mobility Plan is to fully consider the Strategic Goals adopted by TxDOT and to use those goals as a guide for developing a framework for this planning effort.

Relationship to the Metropolitan Transportation Plan

In order to meet state and federal planning requirements, Metropolitan Planning Organization's have been preparing long-range Metropolitan Transportation Plans for many years. Although there are many similarities between the Texas Metropolitan Mobility Plan and the Metropolitan Transportation Plan, the differences are very evident.

The Metropolitan Transportation Plan (MTP) is a comprehensive, multimodal blueprint for transportation systems and services aimed at meeting the mobility needs of the San Antonio-Bexar County region. This document serves as a statement of the ways the region plans to invest in the transportation system over the next 25 years. The MTP includes both long and short-range policies, strategies, and projects that lead to the development of an integrated intermodal transportation system that facilitates the efficient movement of people and goods. The MTP serves to guide the expenditure of federal, state, and local funds expected to be

available for transportation improvements through year 2030. The MTP is required to be financially constrained, which means that it must be balanced to anticipated revenue streams over time. One of the most important aspects is the identification and analysis of the financial resources available to implement its project recommendations. Because of the financial-constraint requirement, the MTP does not address or quantify unmet funding needs and does not typically look beyond what can be achieved with the amount of available funding, resulting in a realistic, yet constrained picture.

As described in previous sections, the Texas Metropolitan Mobility Plan (TMMP) is a state-based requirement intended to serve as a framework for identifying unmet transportation needs in the state's larger metropolitan areas. The TMMP requires the eight Transportation Management Areas (TMA's) in Texas to develop a comprehensive, locally developed, visionary, realistic, and financially unconstrained plan to reduce congestion and improve mobility and air quality. While the MTP serves as a financially constrained plan identifying only what can be afforded given anticipated funding streams, the TMMP goes one step further and becomes a needs-based plan, which quantifies transportation needs beyond the fiscal constrained barrier. Instead of taking a conservative approach and focusing only on what funding can be predicated to be available, the TMMP focuses on the magnitude of unmet needs and provides decision-makers with a better feel for the total transportation needs for each region and shows that we are not currently meeting mobility needs adequately and that additional funding is needed.

Texas Congestion Index: Definition

The Texas Congestion Index was developed in order to have a single congestion measure that addresses the transportation of persons and freight by all modes within the major metropolitan areas of the state. This measure shows the effect of spending to relieve congestion by all agencies and the private sector in a given metropolitan area. It is intended to be a uniform measurement of congestion that will serve as a catalyst in identifying the needs of each region.

Some of the key elements of the index include speed and/or travel time, person-miles moved, dollar value of improvements, travel delay, and the variation in speed or reliability of travel time. The normal travel time associated with a trip would be defined as 1.0. Therefore, a congestion index of 1.15 means that a peak-period trip would take no more than 15 percent longer than off-peak, or free-flow, travel.

Because a single index can obscure some elements or characteristics, the TCI process creates several measures aimed at assessing various elements of metropolitan transportation services. The index will help evaluate the programs and strategies that should be pursued to accomplish mobility objectives. It is designed to complement existing tools, procedures, measures and practices to improve congestion relief analysis.

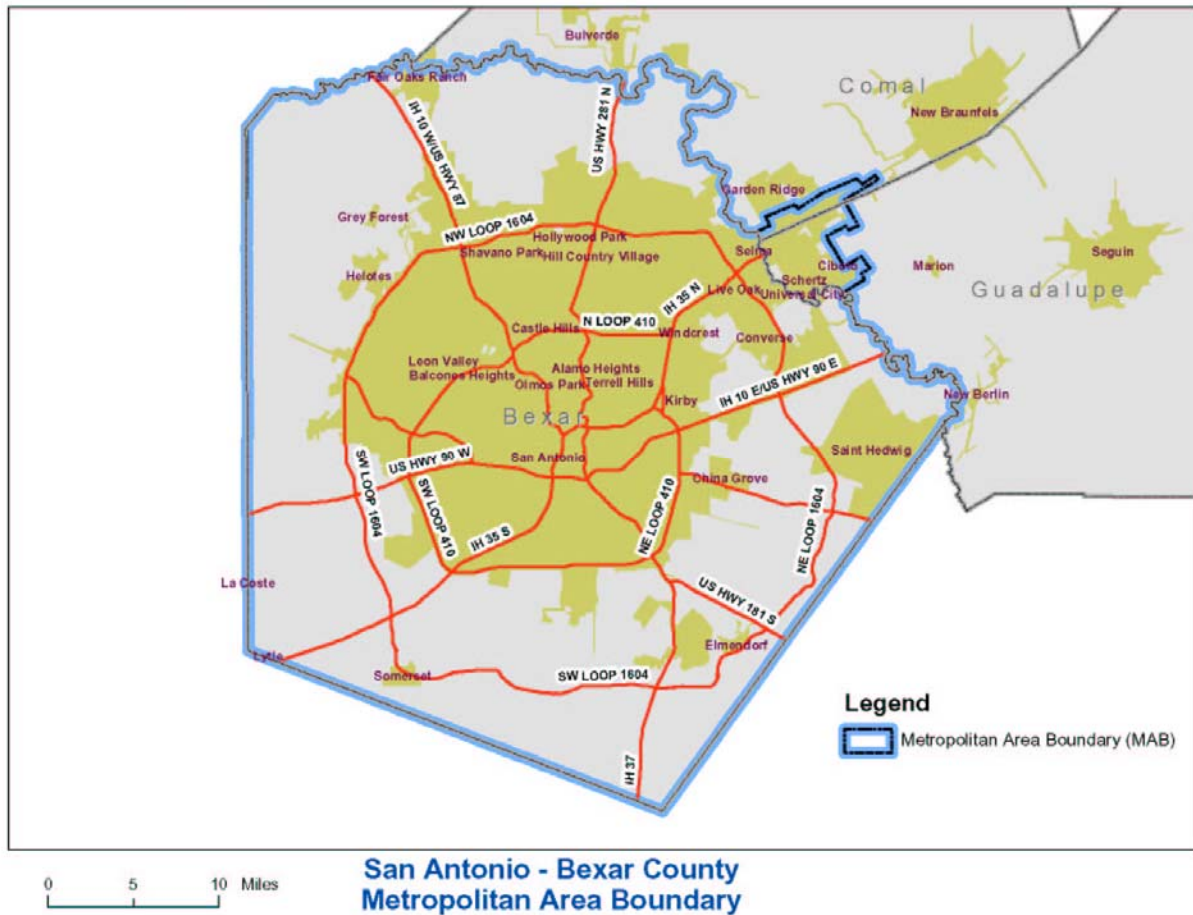
Basic Process for Development

The planning process that drives the Texas Metropolitan Mobility Plan was developed through a joint coordinated effort between the Texas Department of Transportation (TxDOT), the Metropolitan Planning Organizations (MPO) representing the eight Transportation Management Areas, and the Texas Transportation Institute. Based on guidance issued by TxDOT and its Commission, the specific elements of the TMMP were identified and detailed processes were developed so that each MPO would be able to follow the exact same process, providing a consistent level of analysis across the state. From a technical standpoint, detailed travel demand models were used to help identify and solve for the various levels of congestion and were used as direct input into the calculation of the Texas Congestion Index values.

TMA Planning Area

The San Antonio-Bexar County MPO has a Metropolitan Area Boundary that encompasses all of Bexar County as well as small portions of Comal and Guadalupe Counties as shown in Figure 2.1. This area includes the City of San Antonio, as well as twenty-five suburban cities. On September 22, 2003 the MPO Transportation Policy Board took formal action adopting this same area as the area under consideration for the Texas Metropolitan Mobility Plan. It is very likely the area will be expanded for future updates of the Texas Metropolitan Mobility Plan. Also, on September 22, 2003, the MPO Transportation Policy Board took action identifying the Steering Committee as the regional planning board responsible for the Texas Metropolitan Mobility Plan.

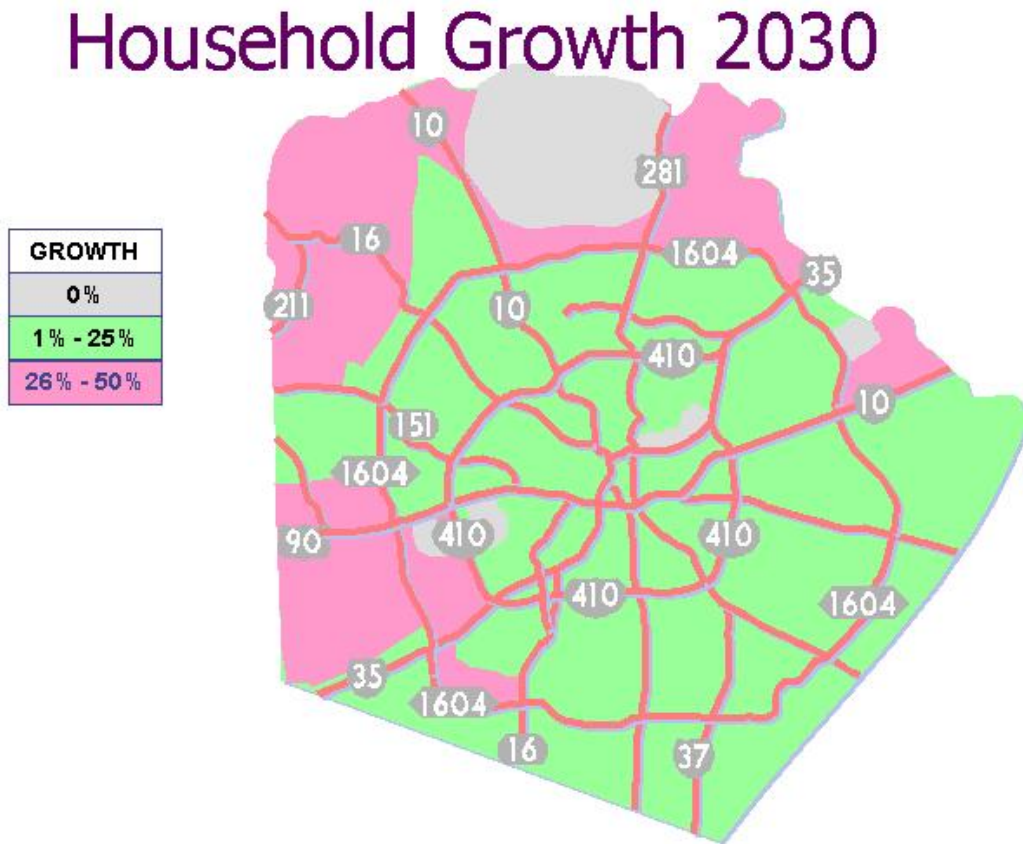
Figure 2.1 TMMP Regional Planning Area



Demographics

The basis of any effective planning effort rests primarily on an initial determination of the area's demographics (population, household size, employment, household income, and land use) and future projections of those demographics. The San Antonio-Bexar County MPO used 2000 as the base year for the Texas Metropolitan Mobility Plan. For the out-years, various federal and state government data sources were used for the basis of population and employment control totals for the region, in five year increments to the year 2030. Although demographic projections are done as accurately as possible, there is no exact science for this process. Various assumptions must be made in order to output reliable demographic forecasting data. The San Antonio-Bexar County MPO's local planning partners played a major role in this forecasting process.

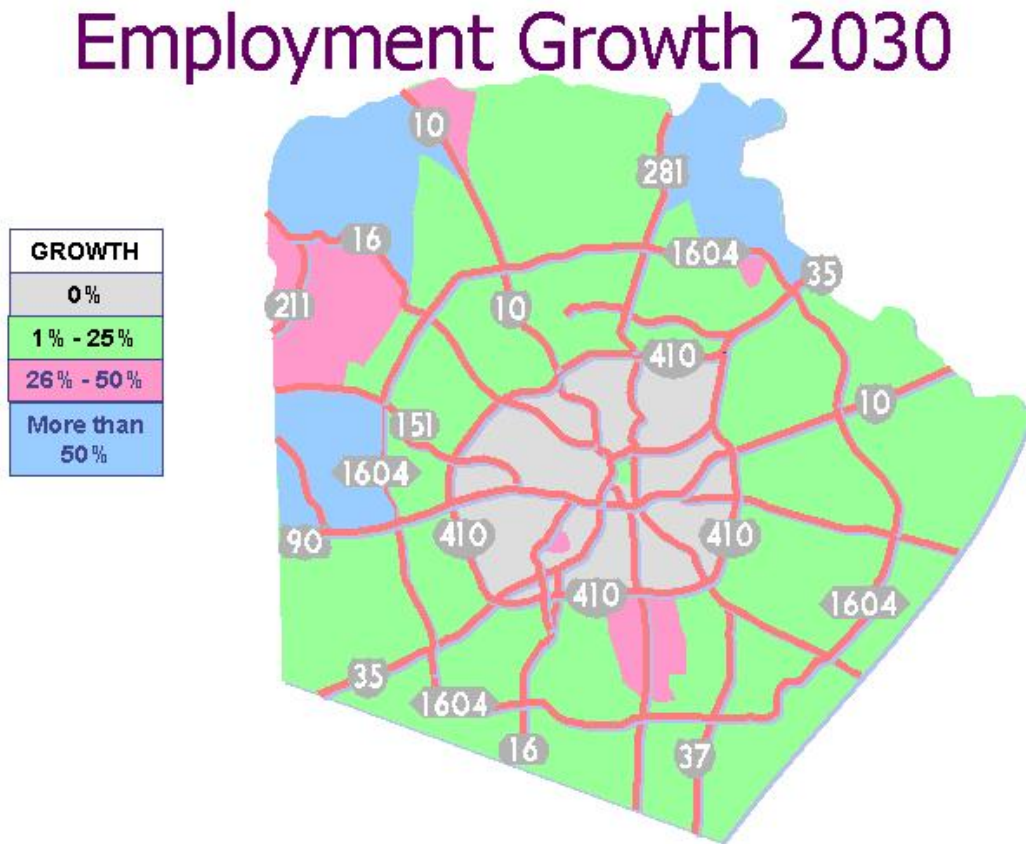
Figure 2.2 - 2030 Bexar County Household Growth



In 2000, the population of the MPOs Metropolitan Area Boundary was approximately 1.4 million people. That figure is expected to increase to 2.4 million by 2030. Employment figures show the area with a workforce of 720,000 in the year 2000. That number is expected to nearly double to approximately 1.3 million individuals by 2030. Historically, employment has been growing much faster than the area's population. This is due to more women joining the workforce, more people remaining in the work force longer, and people living in adjacent counties but working within the MPO study area.

The San Antonio-Bexar County MPO currently uses the METROPILUS Software package as the model that provides the most reasonable and disaggregated data for future years. METROPILUS is an evolution of the DRAM (Disaggregated Residential Allocation Model)/EMPAL (Employment Allocation Model) package and combines employment, residence location, and land consumption in a single comprehensive package embedded in a Geographic Information Systems (GIS) environment.

Figure 2.3 - 2030 Bexar County Employment Growth



The initial demographic input for METROPILUS came from the 2000 Census. The approved population control totals, in five-year increments to year 2030, are from the Texas Water Development Board and the Texas State Data Center. A primary source of base year (2000) employment information was the Texas Workforce Commission's (TWC) files. The information was geo-coded based on the addresses provided. Where street addresses were not available (i.e. post office boxes) telephone books and telephone surveys were made to collect information from those employers. For the areas outside the Bear County area, the Guadalupe/Comal area telephone books, and TWC data were also used to the extent possible. In addition, an intensive windshield survey of businesses in the study area outside Bexar County was conducted, geo-coded, and formatted into a database. The approved future employment control totals, in five-year increments to year 2030, are from Dr. Ray Perryman's published employment forecast. One of the integral components of the METROPILUS forecasting process is land use. This model reflects current state of the art in modeling in that it connects land use and the

transportation system. In order to develop this data as input into the model, the Alamo Area Council of Governments (AACOG) acquired a computerized land use file from the City of San Antonio. This data reflected land uses throughout Bexar County and a large portion of the study area in Guadalupe and Comal counties. The balance of the land use in the study area was generated from additional aerial photos and windshield surveys by AACOG staff.

Table 2.1 Summary of Demographic Forecasts

	2000	2005	2010	2015	2020	2025	2030
Population (in millions)	1.42	1.58	1.74	1.91	2.07	2.23	2.39
Households (in millions)	0.50	0.56	0.62	0.68	0.75	0.82	0.89
Employment (in millions)	0.72	0.80	0.89	0.98	1.08	1.18	1.26

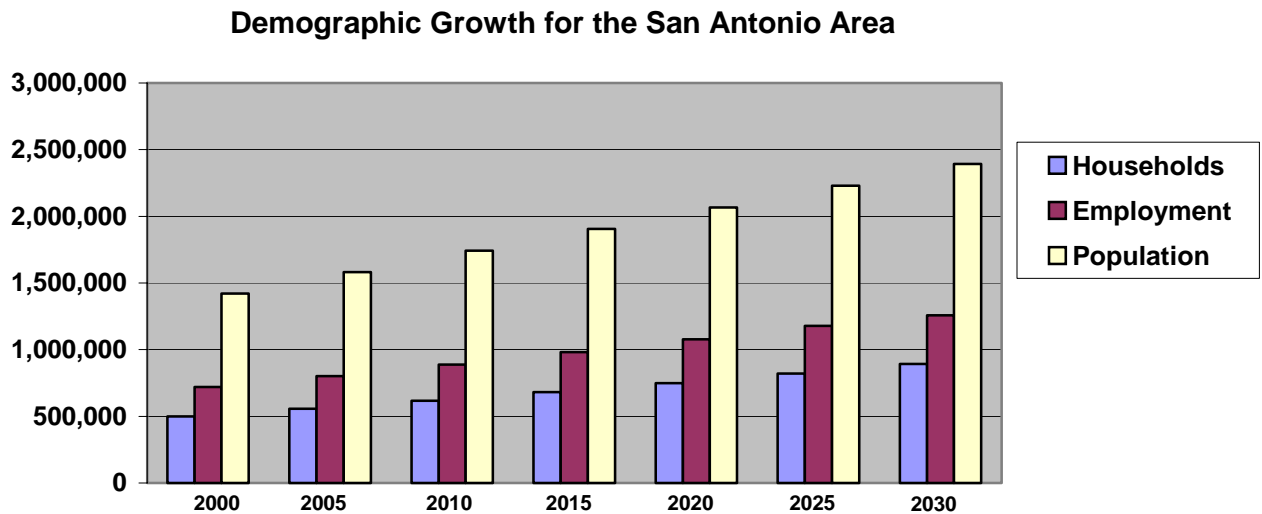


Figure 2.4 Demographic Growth Trends

Travel Forecasting Process

Travel Demand Model Platform and Forecasting Procedures

The San Antonio-Bexar County MPO has utilized TranPlan software to complete the travel demand modeling aspect of the TMMP. TranPlan is a set of integrated programs for the transportation planning process. It encompasses the traditional four-step modeling process of trip generation, trip distribution, mode choice, and trip assignment for both highway and transit systems. The public transit software utilizes coding and analysis techniques similar to the U.S. Department of Transportation's Urban Transportation Planning System (UTPS).

The travel modeling process begins with estimating trip frequency, or trip generation, which converts population and employment data to a total number of weekday person trips

produced by and attracted to each traffic serial zone (TSZ). The trip distribution model uses roadways zone-to-zone travel time information to distribute the trip productions and attractions from trip generation to and from each zone to estimate the weekday travel patterns between each zone. The third step in the process is to estimate the share of trips between each pair of zones using available travel modes. The final step consists of roadway and transit assignments. The results of the travel model are input directly into the Texas Congestion Index model to calculate a corresponding TCI value.

TRAVEL DEMAND FORECASTING PROCESS

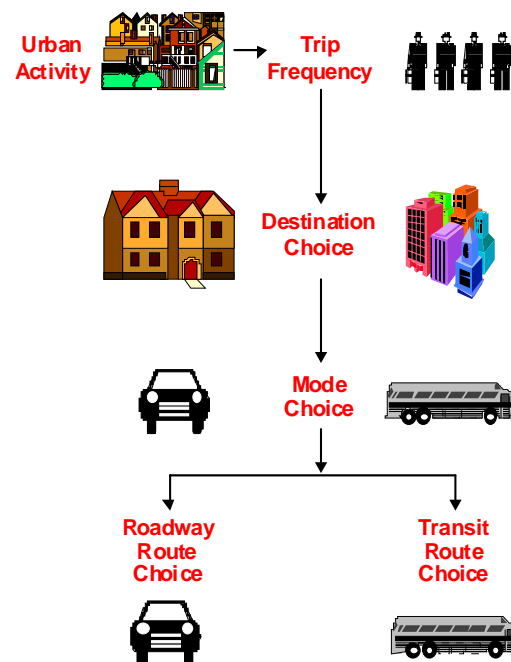


Figure 3.1 Travel Demand Process

Figure 3.2 TCI Graph

Modeling Results

The attached graph shows the different modeling efforts that were undertaken in order to appropriately show the needs for the San Antonio region. Each point on the graph depicts a separate model run with distinct variables. Each input measures a new level of investment and each model run shows the corresponding level of congestion. The table below details the test and results that were conducted for each Network Year.

**Texas Metropolitan Mobility Plan
(Texas Congestion Index)
(July 1, 2004)**

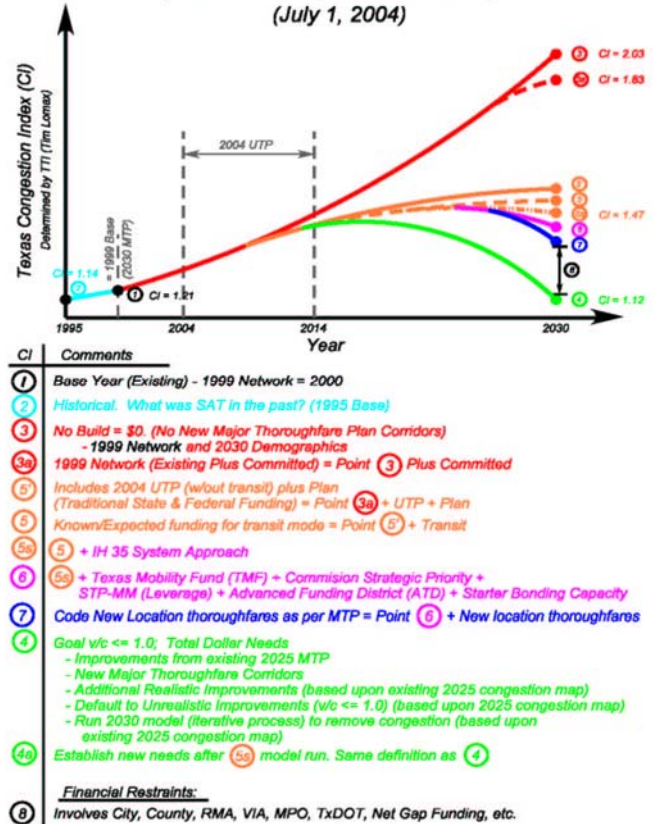


Table 3.1 Model Run Description

Network Year	Test Conducted
1995 Point 2	This test established ideal travel conditions; conditions that the area would like to return to should sufficient funding became available.
2000 Point 1	This test established a base-year that was comparable to the base year of the seven other metropolitan areas.
Existing + Constructed since Year 2000 + Committed in the FY 2004-06 TIP Point 3A	This test provided a refinement of the base-year plus quantified improvement that had been made since the base year model run and the impacts of added capacity projects for which funding had already been committed.
2025 Metropolitan Transportation Plan Point 5s	This test provided a benchmark of committed funds for a realistic funding scenario. A reassessment of funding showed some projects, which were originally expected to be funded through 2025, were not realistic. The 2025 MTP was “backed off” to a more realistic funded plan.
Complete Needs Assessment Point 4	This test established the area’s future funding needs in “lane mile equivalents” which were then used along with average costs to estimate the area’s future funding shortfall.

Target Mobility Level

The Texas Congestion Index is a variation of the Travel Time Index developed by the Texas Transportation Institute for the Annual Urban Mobility Report. This index compares the travel time in peak period to the travel time that would be required for the same travel at free-flow speeds. This formula identifies the travel time penalty for peak period congestion. The graph below shows the relationship between average travel speeds and levels of congestion, indicated by colored shading. Level of service “F” conditions begin when freeway speeds enter a range between 50 to 30 miles per hour. As an initial starting place for this first round of TMMP development, it was agreed upon that all MPO’s would identify a target level of congestion consistent with eliminating and removing all level of service “F” conditions region wide.

Summary of Freeway Traffic Condition Ratings (Density-Based Level-of-Service)

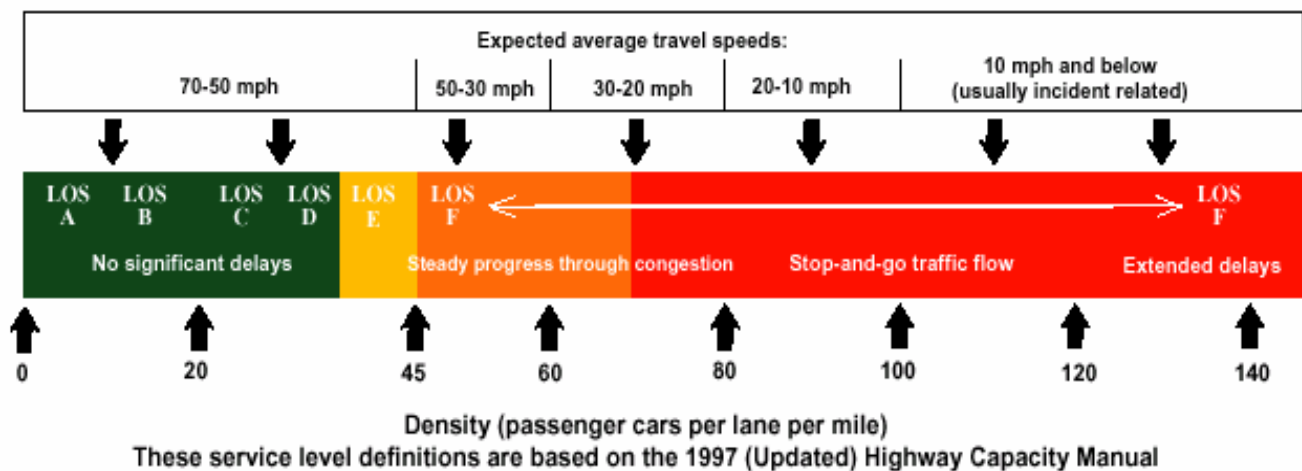


Figure 4.1 Relationship Between Average Travel Times and Levels of Congestion

Texas Congestion Index

The San Antonio-Bexar County MPO has been working cooperatively with the TxDOT – San Antonio District Office, the Texas Transportation Institute, and other local planning partners to forecast the appropriate congestion index for the region. It is important to accurately compute the congestion index since it will impact and forecast the future outlook of the area's transportation system in relation to congestion levels and travel times.

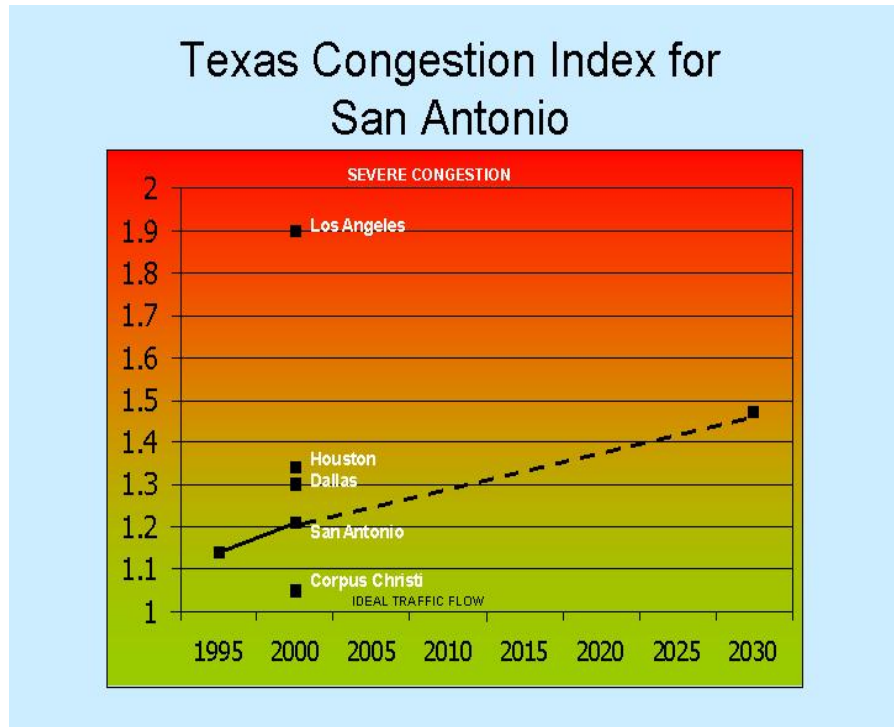


Figure 4.2 Texas Congestion Index

As described in previous sections of this report, each MPO completed several model runs in order to produce the following scenarios: 1) an existing “baseline” condition; 2) a no-build condition; 3) a scenario which includes recommendations from the MTP financially-constrained plan; and 4) a scenario which eliminates all level-of-service “F” conditions throughout the entire roadway network. Each of these four scenarios is input directly into the calculation of TCI values and represents the amount of congestion present at any given level of investment.

A congestion index at 1.0 has been defined as the desirable level for any given area. When congestion reaches a level of 2.0, the area has reached gridlock, which of course hurts growth and economic development opportunities. In 2000, the San Antonio-Bexar County region had a congestion index of 1.21. However, by 2030, if nothing is done and projects are not built or added, congestion is forecasted to reach 2.03.

Reaching this level of congestion is unlikely since federal and state funds will continue coming to the area, at least at current levels. If all funding streams remain the same as today and all projects are constructed as scheduled, the index is expected to reach 1.47. What this translates too is that at present time, a

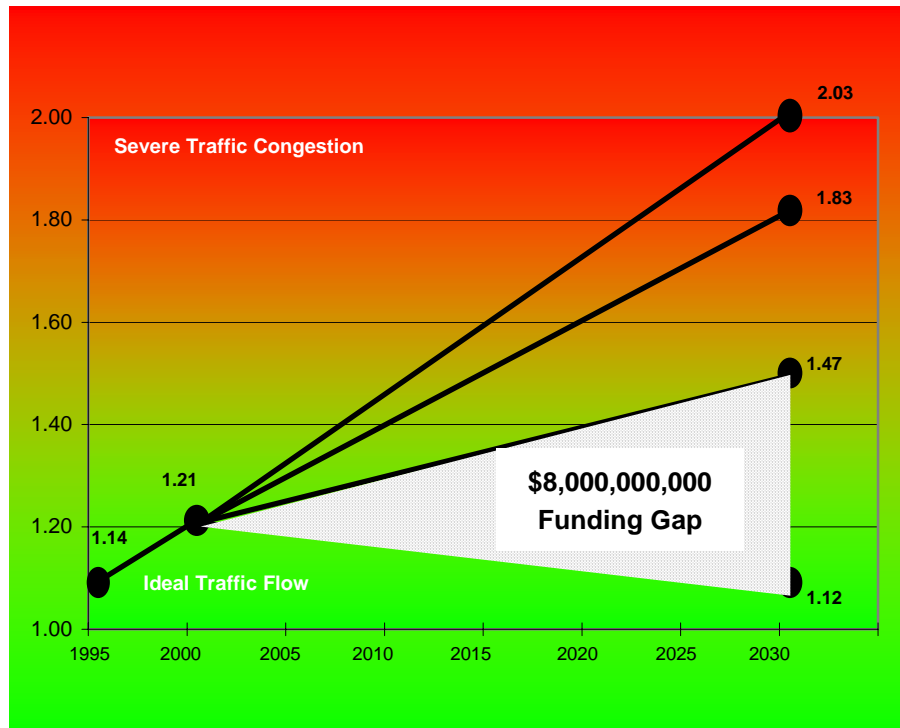


Figure 4.3 Texas Congestion Index Points

20-minute trip with congestion takes about

34 minutes. In 2030, that same trip will take about 58 minutes. In order to build the projects that are needed to bring congestion down to a tolerable and locally acceptable level, the region must find an additional \$8 billion in funding. This figure includes added capacity, transit projects, the addition of several key interchanges around the region, and the right of way needed to expand the system. However, this figure does not include the cost associated with rehabilitating the existing transportation system. It is important to note that although it may be impossible to achieve a funding level of this magnitude, everyone must realize the funding needs of the region and the State, and come up with ways to close the funding gap.



Findings

The results of this integrated, coordinated TMMP process are reflected in the tables and graphs represented below. As reflected in the table, the financially constrained transportation plan adds 430 total lane mile equivalents of roadway improvements to the base year (2000) transportation system for the entire San Antonio-Bexar County region. After running the travel demand model and having it identify all level-of-service “F” facilities, and then allowing the model to add capacity in increments of whole number lanes until that level of congestion is eliminated, the resulting additional lane mile equivalents needed under this needs-based plan are 2,330.

Facilities by Area Type	Base Year Lane Mileage	Traditional Funding Levels Additional Lane Mile Equivalents	Eliminate all LOS F Facilities Additional Lane Mile Equivalents
CBD Freeway	30	0	20
CBD Arterial	70	0	0
Urban Freeway	690	180	280
Urban Arterial	1,800	70	720
Suburban Freeway	340	140	300
Suburban Arterial	650	20	540
Rural Freeway	140	20	60
Rural Arterial	471	0	410
Total	4,190	430	2,330

Table 5.1 Comparison of Lane Mile Equivalent Needs

The process used to identify this additional need is based on an all-or-nothing travel demand model run, which has a tendency to make the freeway facilities overly attractive due to faster speeds, which adds the majority of trips to these faster facilities. It is anticipated that congestion will ultimately be alleviated through a mixture of modes. Transit will play a large role in

accommodating additional transportation needs where additional capacity is cost prohibitive or undesirable. This analysis provides a good representation of overall needs, but does not clearly identify where those needs will eventually be accommodated.

2030 Transportation Needs

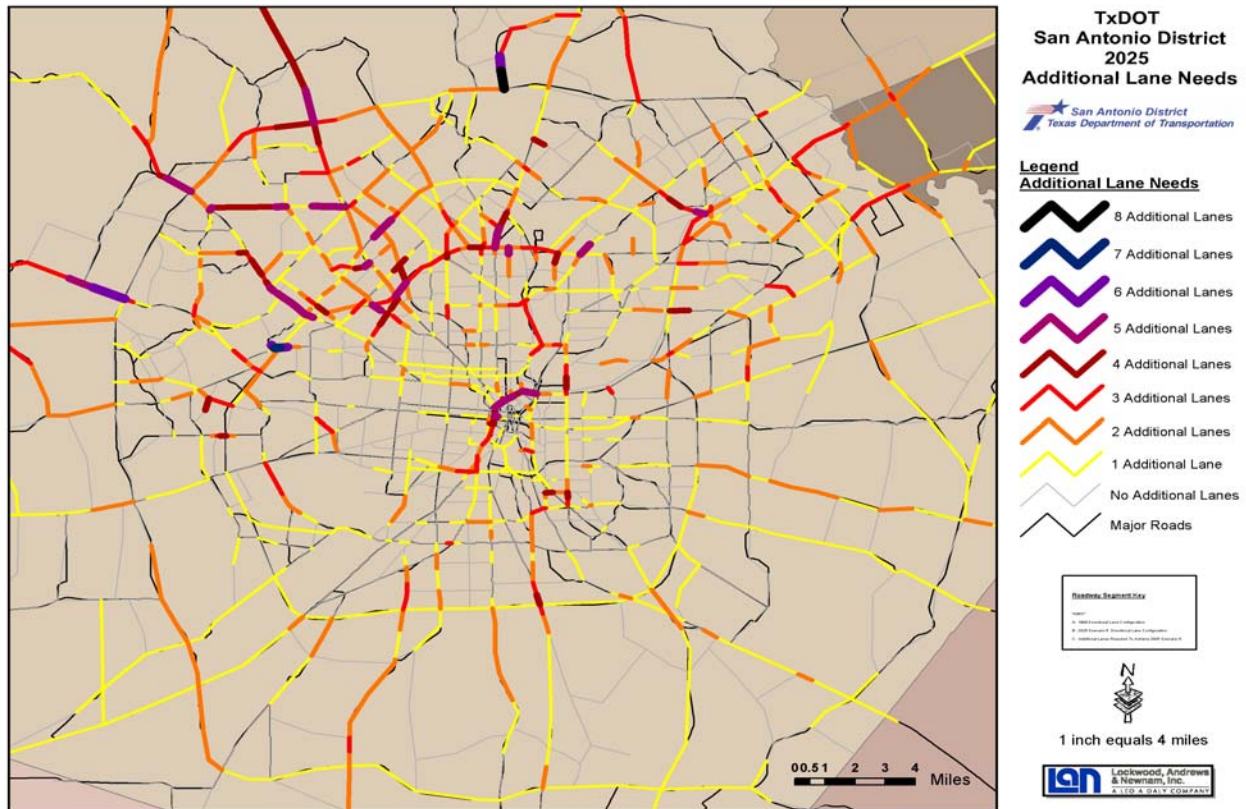
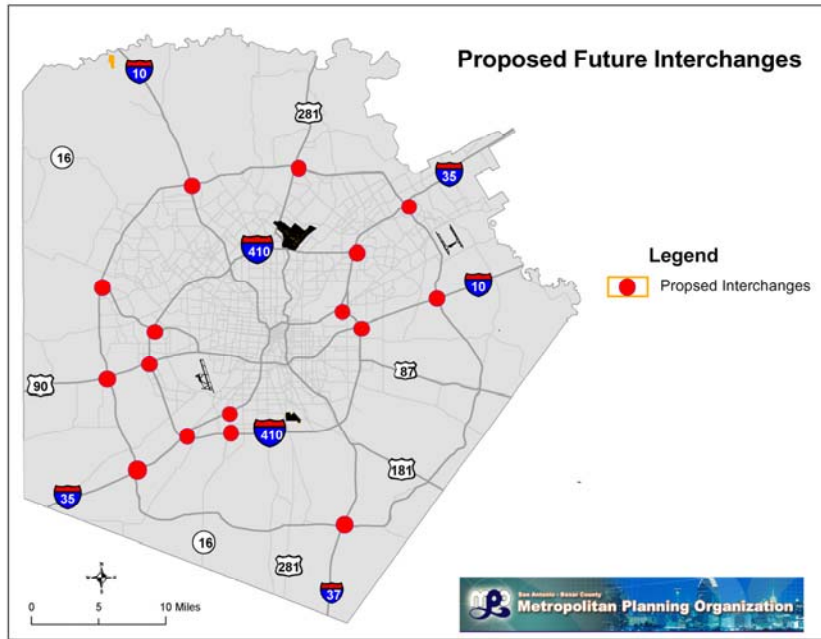


Figure 5.1 Additional Lane Mile Equivalents Needed in 2030

Figure 5.1 depicts the lane mile equivalents needed by specific facility in order to accomplish the goals of the TMMP. Again, it is important to note that these are lane mile equivalents, and not actual lanes needed on each facility. In other words, even though the graphic shows that some areas of Loop 410 need up to 4 additional lanes, the right-of-way or construction costs may make this expansion unattainable. Therefore, other congestion reduction strategies such as transit, vanpool, or improvements to adjacent facilities would need to be implemented in order to improve mobility in that area. This graph should not be interpreted as a future road expansion tool, but rather an unconstrained need of transportation options and solutions needed by facility in the Bexar County region.

Figure 5.2 San Antonio-Bexar County Proposed Future Interchanges



Proposed Interchanges

Also included as part of the needs based portion of the TMMP are interchanges in the San Antonio-Bexar County area. These system wide freeway-to-freeway interchanges have been identified as high priority needs through public meetings, the MPO planning process, and the Texas Department of Transportation

San Antonio District Office. These interchanges will improve the mobility of the region by reducing travel time and congestion.



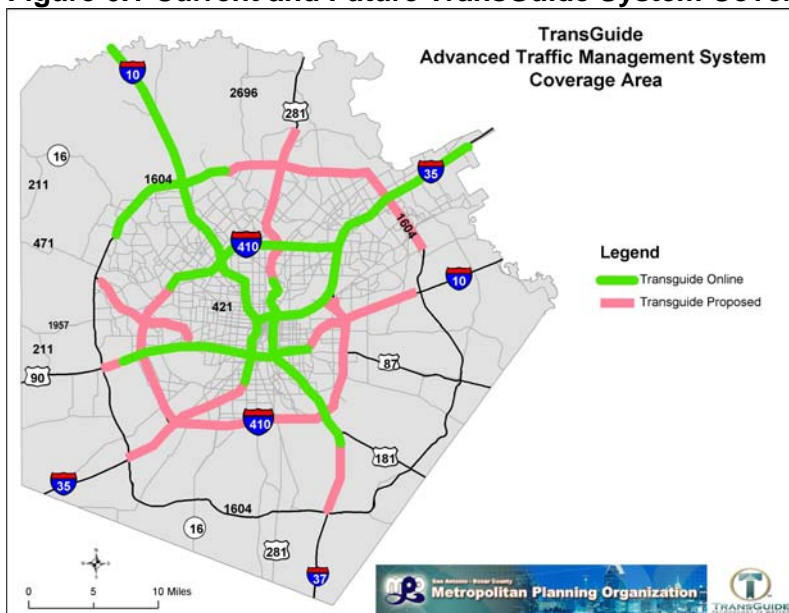
Strategies to Reduce Congestion and Improve Urban Mobility

Transportation System Management and Operations

The Transportation System Management approach to congestion mitigation seeks to identify improvements to new and existing facilities of an operational nature. These techniques are designed to improve traffic flow and safety through better management and operations of transportation facilities. Compared to major capacity and infrastructure improvements, these projects are usually lower in cost and can be implemented or constructed in less time. Some examples of traditional operational improvements include traffic signal enhancements, removal of freeway and arterial bottlenecks, and intelligent transportation system (ITS) deployment.

Improved traffic flow and reduction of delay can have positive air quality benefits as well. Improvements at intersections and in signal retiming, which reduce delays at those locations, limit the amount of vehicle emissions. Reducing traffic jams caused by incidents on the freeways through better traffic management also eliminates the amount of pollutants by reducing the number of idling vehicles.

Figure 6.1 Current and Future TransGuide System Coverage in Bexar County



TransGuide is San Antonio's Advanced Traffic Management System. When it went online in July 1995, it was the first system of its kind in the nation. Now operational on 87 miles of IH 10, IH 35, IH 37, US 90, US 281, IH 410, and Loop 1604, the system will eventually cover about 200 miles of freeway in Bexar County.

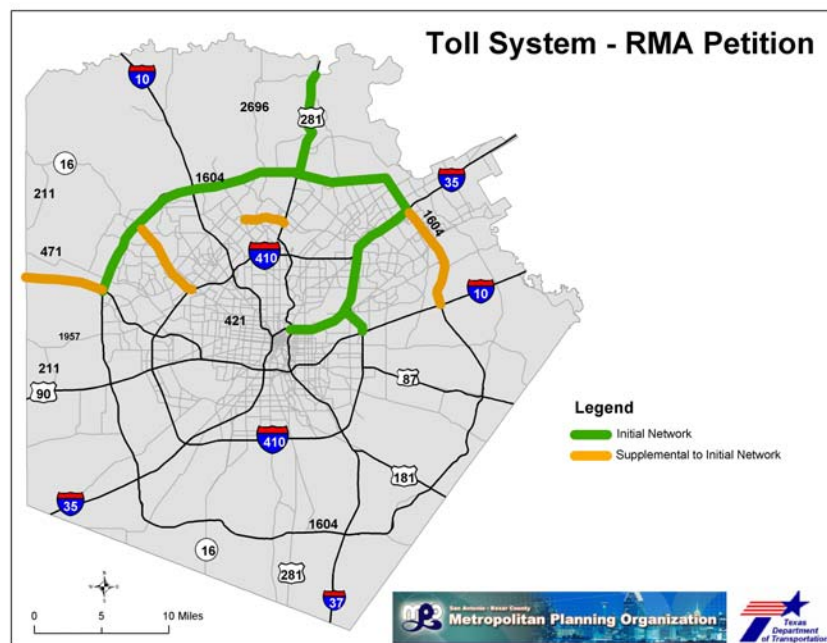
The San Antonio area continues to implement other operational improvements throughout the region as well. These operational improvements include signal coordination and the installation of right or left turn only lanes. While these improvements have not been specifically incorporated into the Congestion Index calculation to date, it is expected they will play a role in the calculation in future years.

Freeways and Tollways

The driving public in San Antonio relies heavily on the area's freeway system. It is estimated that although the expressway system only comprises approximately 20% of all roads in the area, it accounts for 65% of all vehicle miles traveled in Bexar County. Despite a growing number of transportation choices, this trend is expected to continue. Even with an expanded transit system, and increased awareness/sensitivity to environmental concerns, there is still a significant demand placed on the freeway system to warrant continued system improvement and expansion.

Figure 6.2 Regional Mobility Authority – Toll System Petition

Inherent to the region's freeway system are high-cost improvements and maintenance. While there may be little operational costs once constructed, building, maintaining, and expanding freeway facilities is very expensive. Over the last few years, the idea of user-fee based roadways has been growing in



popularity and acceptance around the State. Although San Antonio has not implemented any toll facilities to date, the Texas Transportation Commission recently adopted a favorable toll road policy to promote the future study of additional toll roads throughout the state. The Bexar County region has taken advantage of these new policies and has formed a Regional Mobility

Authority (RMA), which will soon begin looking at the toll viability of this area's transportation system. The map shown above depicts the roadways that the area felt could be tolled when the petition was originally submitted. The toll system that is eventually studied or built by the RMA could begin with these corridors or could come from a completely different set of roadways.

Arterial Streets

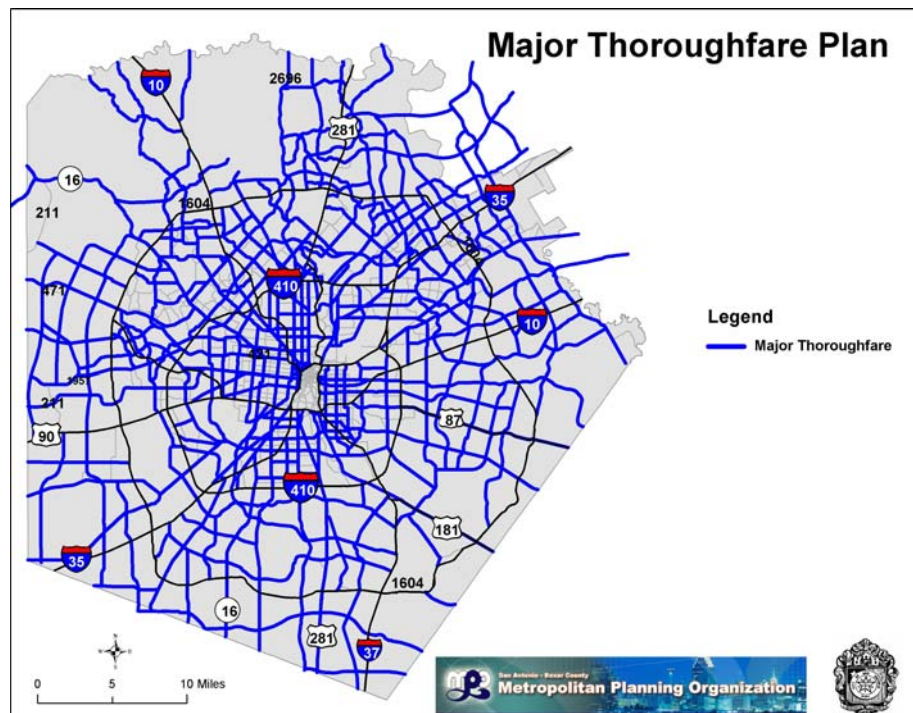


Figure 6.3 City of San Antonio Major Thoroughfare System

The area's Major Thoroughfare System is included in this process in recognition of its role in complementing and enhancing the area's freeway and transit systems. This system, composed primarily of principal and major arterial streets, provides the necessary transportation support and access to and from local land uses. By 2030, this system of

arterials is forecast to carry approximately 28 percent, of all vehicular traffic in the region. Since many major expressway corridors in the region are constrained from acquiring additional right-of-way, much of the additional out-year demand will likely have to be accommodated through a better connected and more efficient arterial street system. Changes to the major thoroughfare plan are done through a collaborative effort among all regional planning partners including the City, County, and MPO. Many of these major and minor arterials are expected to be constructed by developers interested in expanding commercial and residential development outside of already built-up portions of the City.

Transit

The transit component of this plan includes local bus, express bus, and some form of bus rapid transit technologies yet to be determined. Currently, traditional transit service in the Bexar County region is provided by the VIA Metropolitan Transit Authority and other small rural transit providers. VIA collects sales taxes from San Antonio and other smaller suburban cities to aid in funding transit system

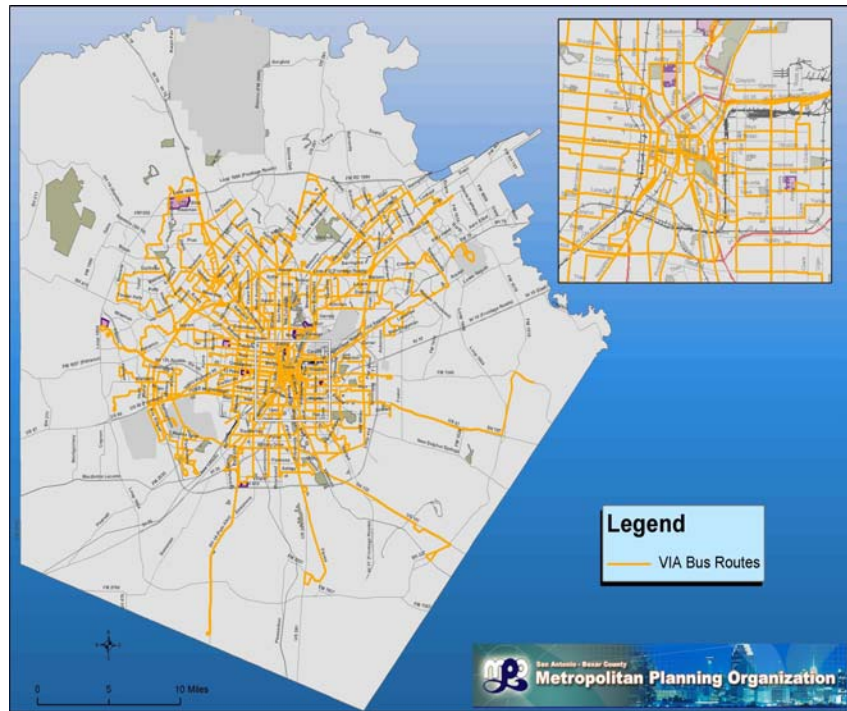


Figure 6.4 VIA Metropolitan Transit System

improvements, maintenance, and operations in its respective jurisdictions. The public in this region relies on transit to make home-to-work trips, as well as non-work related trips. Transit in the area serves as a viable option for those who do not have a vehicle, wish to remove themselves from congestion, and/or travel in a way that helps the environment.

A regional commuter rail system connecting the Austin and San Antonio metropolitan areas is being planned as a way to improve mobility in the IH-35 Corridor. The proposed commuter rail system may run on existing Union Pacific right-of-way that parallels IH-35. The rail system would run from Georgetown to San Antonio with 12 stations in between, including locations in Austin, Round Rock, Buda/Kyle, San Marcos, and New Braunfels. Aside from providing a safe, predictable and dependable transportation alternative to IH-35, the commuter rail system also aims to assist in maintaining the region's air quality and allowing better workforce distribution and increased employment opportunities for residents in the region. Twenty-two miles of the 110-mile system would lie within the San Antonio-Bexar County MPO study area.

Freight Movement

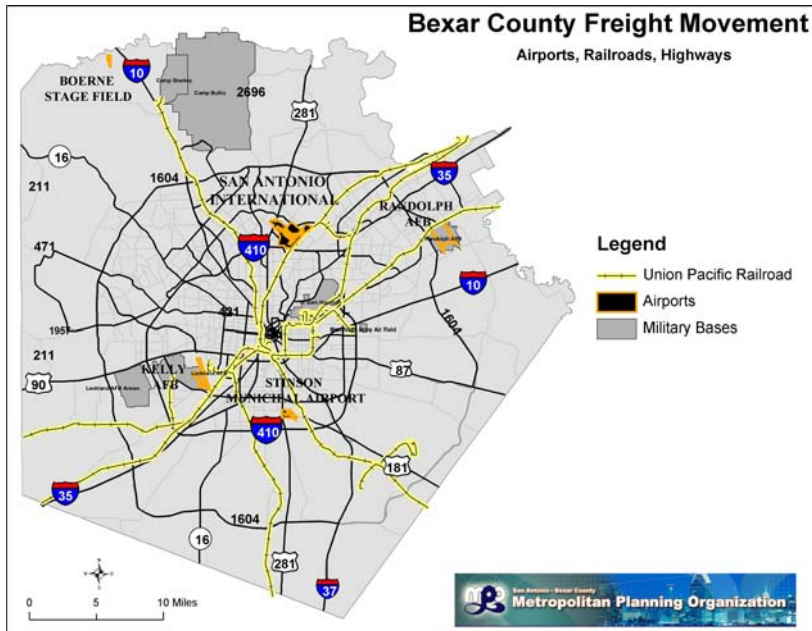


Figure 6.5 Freight Movement Map

One of the primary economic development strategies for San Antonio has been the development and promotion of San Antonio as an inland port and center for trade processing activities. With considerable advantages arising from its unique geographic location, world-class infrastructure, bilingual-bicultural workforce, and low cost business climate,

San Antonio is ideally situated as an inland port and center for

trade-related logistics activities. As the overall level of logistics and distribution related activities increase through the inland port initiative, the economic benefits will permeate throughout the entire San Antonio economy.

Hazardous Cargo Routes

In June 2001, the Texas Transportation Commission adopted the City's Hazardous Cargo Routing Plan. The attached map depicts the adopted hazmat plan. Vehicles with hazardous cargo are permitted to travel on freeways highlighted in green only when traveling through the City, making local

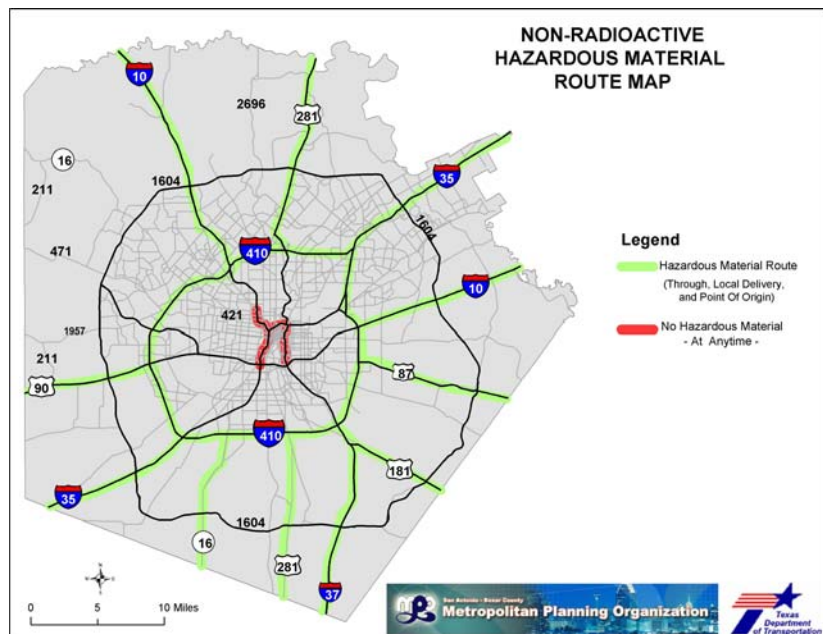


Figure 6.6 Hazardous Material Route Map

deliveries, or originating on a point along these corridors. Vehicles with hazardous cargo are completely banned from traveling on the routes outlined in red. This area was restricted to diminish accidents in the downtown area.

Air Cargo

The City of San Antonio is focused on promoting the growth and expansion of its aerospace industry by maximizing economic development opportunities and leveraging assets at its aviation facilities: San Antonio International Airport, KellyUSA, and Stinson Municipal Airport. In November 2000, the City

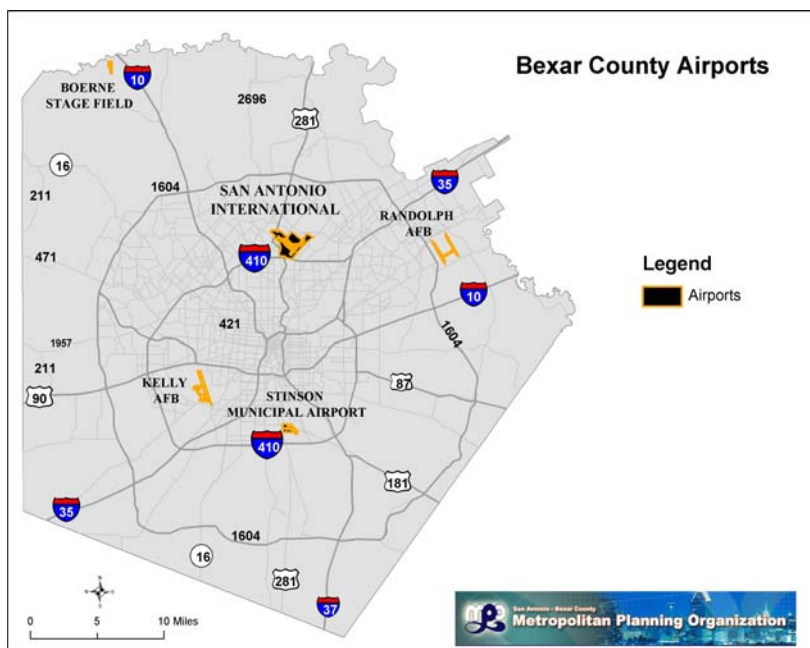


Figure 6.7 Bexar County Area Airports

completed an Aviation Industry Strategic Plan. This planning document contains specific goals and objectives that will help San Antonio's aviation facilities become a premier economic generator by capitalizing on development opportunities in the areas of passenger air service, air cargo, general aviation and aircraft maintenance, repair, and overhaul (MRO).

Pedestrian and Bicycle Facilities

While not incorporated into the Congestion Index, the San Antonio area continues to encourage pedestrian and bicycle projects be constructed both as stand-alone projects as well as incorporated into new roadway capacity or reconstruction projects. It is not intended that pedestrian and bicycle programs and facilities will solve the congestion problems in any particular corridor, but will offer an option to those whose travel is conducive to walking and biking.

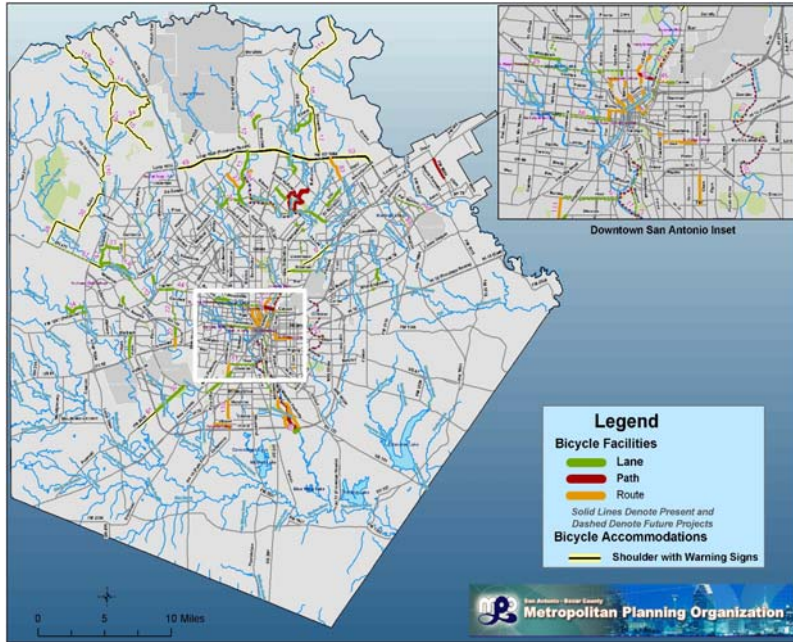


Figure 6.8 Existing Bicycle Facilities in Bexar County

takes bicycle issues into consideration. The MPO also continues to annually update the Pedestrian Amenities Plan, and is currently inventorying all sidewalks within the planning area while working to improve safety through the Safe Routes to School Program.

The MPO is currently working with other transportation planning agencies in the region to develop a Bicycle Master Plan. If approved, the Bicycle Master Plan will become part of the City's Unified Development Code (UDC), which enforces development standards for all projects within the city limits of San Antonio. The County has also expressed interest in adopting the Plan in order to ensure that development, which occurs within the County's limits



Needs-Based Plan Cost Estimates

Table 7.1 Cost Associated with Additional Lane Mile Equivalents Needed in Bexar County

Facilities by Area Type	Base Year Lane Mileage	Traditional Funding Levels		Eliminate all LOS F Facilities	
		Additional Lane Mile Equivalents	Cost (in millions)	Additional Lane Mile Equivalents	Cost (in millions)
CBD Freeway	30	0	\$0	20	\$126
CBD Arterial	70	0	\$0	0	\$0
Urban Freeway	690	180	\$558	280	\$868
Urban Arterial	1,800	70	\$175	720	\$1,800
Suburban Freeway	340	140	\$420	300	\$900
Suburban Arterial	650	20	\$24	540	\$648
Rural Freeway	140	20	\$32	60	\$96
Rural Arterial	471	0	\$0	410	\$451
Subtotal	4,190	430	\$1,209	2,330	\$4,889
Freeway to Freeway Interchanges				16	\$2,705
Right-of-Way Costs					\$782
Lane Miles to be Rehabilitated w/Mobility Improvements				2,790	\$6,183
Other Lane Miles to be Rehabilitated over time period				950	\$2,305
Total Unfunded Needs (does not include Traditional Funding Level costs)					\$16,864
Notes: 16 total interchanges (13 urban, 1 suburban, 2 rural) and used TTI's Interchange costs ROW costs are 16% of total cost to 'Eliminate all LOS F Facilities' All lane mile costs use TTI's Table 2 costs Rehabilitation costs use TTI's Table 2 costs and 100% of point 3a LOS F and 60% of point 3a LOS A-E					

From a financial standpoint, it is important to not only identify the long-term needs for this Plan, but to also identify the levels of funding needed to reach such a goal. The table above reflects

the lane mile equivalents needed as a result of the financially constrained Metropolitan Transportation Plan (MTP) and the needs-based TMMP, along with the estimated total costs of the unfunded portion of the TMMP. The unit costs assumed for this report were developed by the Texas Transportation Institute and are representative of average lane mile construction costs, by facility type specific to the San Antonio-Bexar County region in 2004 dollars (The tables can be found in the appendix of this report).

As shown in Table 7.1, approximately \$4.9 billion dollars is needed to eliminate all Level of Service “F” congestion. Another \$2.7 billion is needed to build future proposed freeway-to-freeway interchanges for the area and \$782 million is needed to purchase the right-of-way to construct these new improvements. This calls for a total need of \$8.38 billion for new capacity as a result of this needs based plan. It should be noted that this figure is above and beyond traditional funding sources.

Furthermore, when completing a future needs assessment it is important to not only account for the addition of new capacity to the system, but to also consider that most of the current facilities will be in need of some degree of partial or total rehabilitation over the next 25 years. As transportation infrastructure continues to age and begins to fail, the area must find the dollars to continually maintain the current system. It is estimated that rehabilitation of this area’s transportation system will come at a cost of approximately \$8.49 billion over the span of the TMMP. This brings the total needs of San Antonio-Bexar County area to approximately \$16.86 billion over the next 25 years.

The Mechanisms for Funding chapter of this document outlines the traditional funding source categories and details some strategies for closing this funding gap.

Prioritized List of Short-Range Improvement Projects

The Texas Metropolitan Mobility Plan includes both long-range and short-range objectives and components. The short-range component is a result of the Texas Department of Transportation's Year 2005 Unified Transportation Program (UTP). Specifically, projects identified for construction in years 2005-2015 represent the prioritized listing of improvements and are a component of the 2005 Statewide Mobility Program (SMP). The appendix to this report contains the prioritized listing of short-range improvement projects as identified in the 2005 SMP.

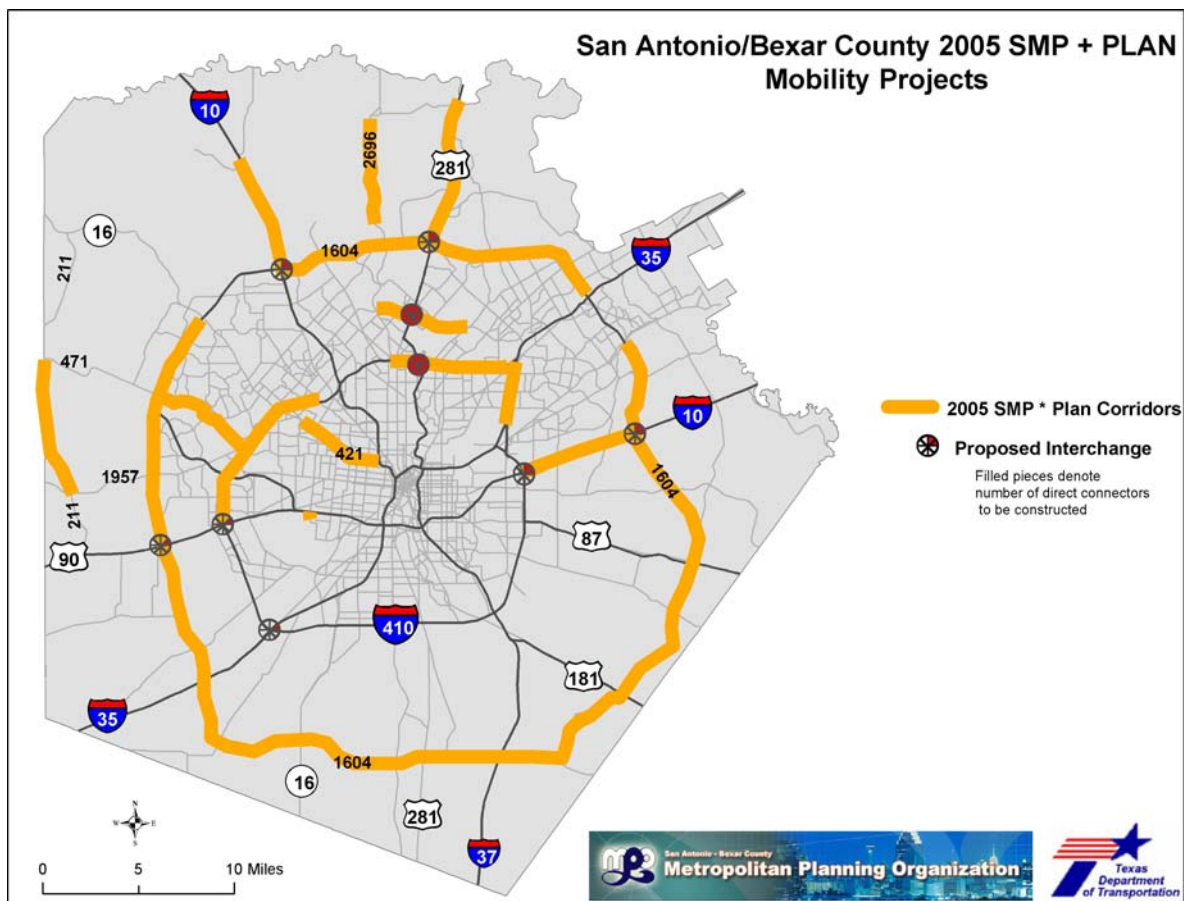


Figure 8.1 - 2005 Unified Transportation Program Project Recommendations



Goal Attainment

Relieve Congestion

Through the long-range implementation of projects, programs and policies as identified and contained within the Texas Metropolitan Mobility Plan process, the San Antonio-Bexar County region will experience significant improvements to mobility and congestion relief. By eliminating level-of-service “F” conditions region wide, the resulting transportation system will be able to provide more reliability and offer greater benefits to the general public.

Improve Safety

Safety concerns are another consideration for the Texas Metropolitan Mobility Plan and points to the need to provide a safe and reliable transportation system. Based on results from this analysis and taking into consideration the elimination of all level-of-service “F” facilities, it is apparent that mobility will be improved and that a higher degree of reliability will be built into the system, which translates into a safer overall regional transportation system. As described earlier, operational improvements such as intersection improvements, traffic signal enhancements, and intelligent transportation system (ITS) deployment will also work to improve this system.

Improve Air Quality

The San Antonio-Bexar County MPO has been working closely with the Alamo Area Council of Governments to monitor the region’s air quality and reduce emissions that could result in an official non-attainment designation for the area. This region has been proactive in cleaning its air through the Early Action Compact (EAC), entered into with the Environmental Protection Agency. The EAC allows the area to achieve clean air by 2007 through locally developed transportation control measures.

The level of air quality analysis conducted for the Texas Metropolitan Mobility Plan is not intended to compete or be confused with the federally-required conformity analysis process, but is rather a cursory review of overall air quality trends to show that there is reason to believe that no worsening air

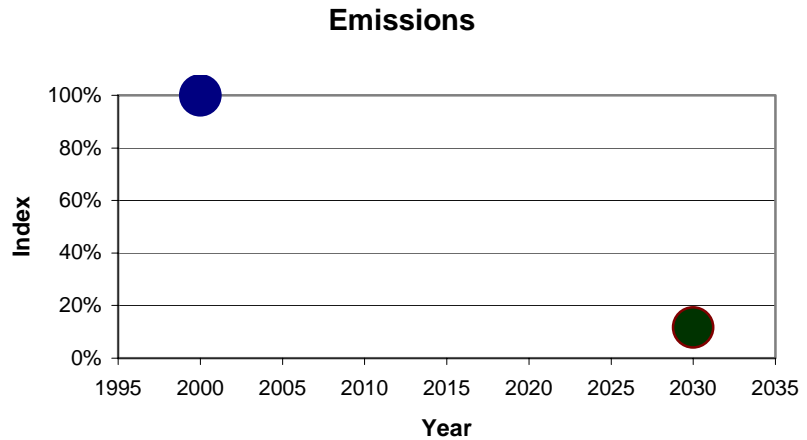


Figure 9.1 TMMP Emissions Analysis

quality standards are anticipated due to the implementation of the recommendations contained within this report. The Emissions Graph shown above was created by the Texas Transportation Institute to show the ratio of all base year emissions to future year emissions expected in 2030. The ratio uses tons of emissions over vehicle miles traveled (VMT), with the base year set to equal 100%. In 2030, that percentage drops to 12%. Again, although this is not a conformity determination, the graph shows that projects completed due to the TMMP will reduce congestion and emissions, thereby improving air quality.

Improve Quality of Life

Every regional vision or plan should strive to enhance an area's quality of life, and the Texas Metropolitan Mobility Plan is no exception. Reducing congestion, while simultaneously increasing the reliability and safety of the transportation system is crucial to the efficient mobility of the driving public. However, it is important to note that investment in transportation projects and programs impact other areas of urban living, not just mobility. It is recognized that, while transportation investment directly impacts things such as urban mobility, air quality, and economic development, there are other less direct, but equally important, impacts of transportation systems and services. These goals not only direct planning efforts to consider urban form and transportation's impact upon the economy and the environment, but also provide transportation services and infrastructure to those traditionally underserved.

Planning the development of an efficient, effective transportation system must be a top priority in order to maintain the region's quality of life and economic vitality. Many of the policies,

programs, and projects included in the region's Metropolitan Transportation Plan and this TMMP report address very specific quality-of-life issues concerning the promotion of economic development, increasing transportation accessibility, while at the same time reducing environmental and community impacts.

Enhance Economic Development

Enhancing economic development is a goal of the Texas Metropolitan Mobility Plan because transportation and land use play an important role in the development of any community. The way transportation is planned and constructed in this area must be responsive to regional trends in economic expansion, population growth, development, quality of life, public health, and the environment. Every region strives to attract and retain business and industry that bolsters its economy. This region understands that this goal can only be accomplished with an efficient and effective transportation system.

Enhance Infrastructure Maintenance

With every additional lane mile added to the region's transportation system comes an additional cost to maintain the existing and added infrastructure. A key component considered during the development of the Texas Metropolitan Mobility Plan was not only the future needs of the area, but also the magnitude of infrastructure that must be maintained over time to ensure proper functionality and usability of the system without any degradation of service. As mentioned above, this must include not only the existing transportation system, but also future facilities, because once they are constructed, a dedicated source to support their maintenance must also exist.

Streamline Project Delivery

Another key concept considered in the Texas Metropolitan Mobility Plan is a way to provide for a more streamlined process for project delivery. Public-private partnerships and efficient cash-flow management methods are two of the traditional techniques used to provide more timely delivery of improvements. The San Antonio-Bexar County region is committed to maximizing all resources and exploring all streamlining options in order to ensure that projects are built in a timely manner.

TxDOT Strategic Goals

The Texas Department of Transportation has adopted five strategic planning goals as part of its 2003-2007 Strategic Plan. These goals address many of the previously mentioned goals adopted for the purposes of this report and planning exercise:

Goal	Definition
Reliable Mobility	Enhance Texas urban and metropolitan area mobility and ensure that congestion is less than in comparable U.S. cities.
Improved Safety	Reduce the fatality rate on Texas roadways by five percent within ten years.
Responsible Systems Preservation	Ensure that 90 percent of Texas' roads and 80 percent of bridges will be in good or better condition within ten years.
Streamlined Project Delivery	Improve project delivery from project conception to ribbon cutting, on average, by 15 percent within five years.
Economic Vitality	Attract and retain businesses and industry with adequate transportation systems and services.



Mechanisms for Funding

With the passage of Proposition 15, the Texas Legislature and the citizens of Texas created very important routes to improved mobility – the use of Toll Equity, Regional Mobility Authorities, and the Texas Mobility Fund. Through the Texas Department of Transportation’s Strategic Plan 2003-2007, the Texas Transportation Commission identified the following appropriation strategies: Plan It, Build It, Maintain It, Maximize It, and Manage It. The Texas Metropolitan Mobility Plan has taken the step to identify and plan for needed future mobility needs, and now we need to identify the means to fund it.

The process used to identify the out-year need of 2,330 additional lane mile equivalents of needed improvements and the maintenance of existing facilities also identified an estimated dollar amount that must be generated in order to realize the goals of this process: \$16.4 billion dollars. Between now and the year 2025, this region must develop partnerships and research every funding opportunity to generate this level of additional funding needed above and beyond what is anticipated from current funding streams. There will be substantial benefit derived from the implementation of this Plan, and the benefits clearly outweigh the costs.

Traditional Funding Sources For the San Antonio-Bexar County Region	
Surface Transportation Program Metropolitan Mobility Funds	Funds from this FHWA program are administered in Bexar County by the MPO. The original source of these monies is primarily the federal gas tax and various truck taxes. Funds from this source are flexible and can be spent on various transportation projects.
Statewide Mobility Program Funds	Funds are administered by TxDOT. The original source of these monies is primarily federal and state gas taxes and vehicle registration fees. SMP funds are primarily used for capital improvement to the transportation system. (Some funds have a limited use).
Public Transportation Account Fund	The Public Transportation Account Fund is administered by TxDOT and is available to support the development of public transportation around the state.

Statewide Preservation Program Funds	Funds are administered by TxDOT. The original source of these monies is primarily the federal and state gas taxes and vehicle registration fees. Statewide Preservation Program funds are primarily used for maintenance and operation of state roadways and transportation facilities.
Transit Formula Funds	For transit-related projects, Congress provides these revenues to Bexar County through the FTA, TxDOT, and area transit providers. These monies come from federal gas taxes and the federal general fund. Primarily for transit capital purchases such as buses and transit maintenance facilities.
Transit Discretionary Capital Funds (FTA 5309)	These funds are available for major new capital projects. These monies come from federal gas taxes and the federal general fund. Transit service providers would apply directly to the FTA for these funds to build a particular project.
Fare Box Revenues	Passenger fare revenues from VIA Transit Authority support operation and maintenance of the metropolitan transit system.
VIA Metropolitan Transit Authority Sales Tax	A transit sales tax of .5 percent is collected within VIA Metropolitan Transit's service area. The revenues from the sales tax are administered by VIA and support operation, maintenance, and capital expenditures for transit.
City and County Transportation Funds and Private Sector Contributions	Cities and Counties may use local general funds, as well as dedicated road-building funds to complete regional transportation improvements. These funds rely on revenues from various sources including local sales and property taxes, fees, fines, bond levies, and private sector contributions including right-of-way dedication.

Gap Funding

Reducing future congestion in the Bexar County region will require innovative financing techniques that increase the funding amount that the area currently receives from traditional funding sources. In order to implement this Plan, leaders in this region must explore various funding strategies, including:

- A. Reduced Project Costs – Project implementing agencies must evaluate projects in order to eliminate, postpone, or reduce the scope of certain planned transportation projects.
- B. Borrow Money – This option allows the region the opportunity to build a project sooner, with the understanding that the borrowed money will need to be repaid out of future revenue streams. This could be accomplished through the issuance of bonds, through programs such as State Infrastructure Bank (SIB) Loans, or through the new Texas Mobility Fund, which is envisioned to

act as a revolving account that can be used to leverage bonds.

C. Pay-As-You Go Systems – Today, the traveling public understands that the need for roadway improvements comes at a heavy costs. Motorists know that alternatives must be implemented in order to relieve congestion and improve the reliability of the transportation system. Several options exist to charge users fees through non-traditional methods, including:

1. Tolling added roadway capacity
2. Applying congestion pricing to new toll facilities
3. Assessing traffic impact fees/systems development charges for new development (based on expected trips that will be generated by the development)

D. Raise or Redistribute Existing Taxes and Fees

1. Develop Local Improvement Districts, Business Improvement Districts, Tax Increment Financing Districts and other special taxing districts.
2. Raise the state gas tax or impose a region wide gas tax
3. Develop new local revenue sources, such as a local gas tax or local sales tax such as the Advanced Transportation District.
4. Increase vehicle registration fees
5. Implement parking fees/fines that pay for transportation improvements.

E. Capture a Larger Portion of State and Federal Transportation Spending

1. Pursue additional federal discretionary funding including FTA 5309 monies and Congressional earmarks.
2. Work with the Texas Transportation Commission to get a larger portion of state and district-wide transportation funding allocated within Bexar County and a larger share of the Commission's Strategic Priority funding.



Conclusions

In summary, the goals adopted as part of the Texas Metropolitan Mobility Plan represent this region's commitment to a comprehensive, cooperative, and continuous transportation planning process that provides for a balanced transportation system by recognizing the evolving transportation and air quality issues of the region. In addition, the goals reflect this region's consideration of the TEA-21 planning emphasis areas, consistent with the ongoing metropolitan transportation planning process. The ability to implement regional projects and achieve these ambitious goals is inherently closely tied to this region's ability to identify innovative financing methods and to work closely with the Texas Transportation Commission to pursue every available funding opportunity.

The San Antonio-Bexar County Metropolitan Planning Organization, along with all of the area's transportation planning partners, understands the importance of relieving congestion and improving the reliability of the region's transportation system. Achieving the levels of congestion reduction goals of this plan will require an enormous financial investment. However, it is an investment that will ensure a safe, efficient, and effective transportation system that will improve the area's economic vitality and quality of life.

APPENDIX

For the purposes of this analysis, the Texas Transportation Institute divided lane-mile costs of roadways into four main categories:

- New capacity on new right of way,
- New capacity on existing right of way,
- New capacity and reconstruction, and
- Reconstruction only

To assemble the data, over 1,500 TxDOT projects from September 2000 to March 2004 on which bids were accepted were examined. Of those projects, 263 fit into one of the four categories above and were selected for inclusion in the database. The projects were categorized by area, project category, roadway type and area type. Several other estimates were used to calculate right of way acquisition.

It should be remembered that these cost per lane-mile estimates are averages. Obviously, any given project may cost more or less than the figure reported here – and perhaps by a significant amount depending on specific local circumstances. These calculations produced the following estimates. The figures below are expressed in millions of dollars per lane-mile.

Costs Per Lane-Mile for Construction (millions \$)

(includes new capacity on existing right of way,
new capacity and reconstruction, and reconstruction only)

	Dallas Ft. Worth Houston	Austin San Antonio El Paso	Lubbock Corpus Christi Hidalgo
CBD Freeway	8.4	6.3	2.9
CBD Arterial	3.0	2.9	1.5
Urban Freeway	5.3	3.1	1.8
Urban Arterial	2.7	2.5	0.9
Suburban Freeway	3.1	3.0	1.5
Suburban Arterial	1.4	1.2	1.0
Rural Freeway	1.6	1.6	1.0
Rural Arterial	1.4	1.1	0.6

Estimated Costs of Freeway-to-Freeway Interchanges (millions \$)

	Dallas Ft. Worth Houston	Austin San Antonio El Paso	Lubbock Corpus Christi Hidalgo
CBD Freeway	300	220	185
Urban Freeway	250	185	90
Suburban Freeway	200	150	75
Rural Freeway	100	75	40

APPENDIX

The following lists of projects represents the Statewide Mobility Program that will be part of the Texas Department of Transportation's 2005-2015 Unified Transportation Program (UTP) and those projects that are in the planning stages of the 2016-2030 UTP.