4

TRANSPORTATION STRATEGIES

4. TRANSPORTATION STRATEGIES

Adding roadway capacity to the transportation system cannot address all mobility needs in the region. While funding is always the primary constraint, some needs are best met through the adoption of "no-build" strategies. Therefore, the MTP planning process included the consideration of no-build strategies such as travel demand management, transportation system management and operations, in addition to facility construction projects.

This chapter provides a description of the process used to develop a fiscally unconstrained plan for meeting the transportation needs of the community. Given the limited availability of funding to meet all the needs identified in the Needs Assessment (Chapter 3), both "build" and "no-build" strategies to address unmet needs are considered in the unconstrained plan. Applying fiscal constraints to the process and creating a financially constrained plan are described in Chapter 6.

NO BUILD STRATEGIES TO ADDRESS UNMET NEEDS

Building new roads and adding capacity to existing roadways is not only expensive, but often takes years to go through the planning, environmental, design, and construction phases. Given the limited availability of funding for transportation projects and rising congestion levels, state, regional, and local agencies are increasingly relying on travel demand management (TDM), transportation system management and operations (TSM&O), and "Complete Streets" strategies to improve the performance of existing roadways. These strategies do not require the construction of new roadways or additional lanes of capacity, and therefore are often referred to as "no-build" strategies.

The following sections provide recommendations for incorporating best practices in TDM, TSM&O, complete streets, and other no-build strategies into the transportation planning process.

While the El Paso MPO is not directly responsible for implementing transportation projects, it works closely with local member jurisdictions to explore and evaluate the appropriateness of these strategies for reducing congestion and improving the performance of the existing transportation system.

TRAVEL DEMAND MANAGEMENT

Travel demand management (TDM) strategies seek to reduce congestion on existing roadways by reducing the overall number of cars using roads or by redistributing cars away from congested areas and peak periods of travel. Encouraging the use of alternative modes of transportation (such as transit, biking, or walking) and increasing the number of travelers in each vehicle are the primary ways in which TDM strategies reduce single-occupant vehicle demand on existing roadways. Simply put, travel demand can be managed by providing travelers with a wide range of choices for reaching their destination.

With limited funding available to address congestion through new roadway capacity, TDM is a cost-effective means to improve use of the transportation system. TDM strategies are designed to accomplish the following:

- Improve mobility and accessibility by expanding and enhancing the range and quality of available travel choices;
- Reduce congestion and improve system reliability by decreasing the number of vehicles using the roadway system and by redistributing demand away from peak periods and existing bottlenecks;
- Increase safety by addressing congestion, which is generally related to higher occurrences of traffic incidents; and
- Improve air quality by reducing the number of vehicle miles traveled, thereby saving energy, and decreasing the number of short trips that are largely responsible for the proportion of emissions generated from cold starts.

EL PASO REGION TRAVEL DEMAND MANAGEMENT STRATEGIES

Through the federally mandated Congestion Management Process, the EPMPO has been helping coordinate the programing of federal funds through the Fiscal Years 2015 - 2018 Transportation Improvement Program (TIP). This coordination includes several projects that are TDM strategies or include TDM strategies. These projects are:

- West El Paso Traffic Mitigation Circulator Service
- Metropia Synergy Solution
- El Paso County Regional Transit Feasibility Study
- Darrington Rd. Widening with Bicycle Facilities
- Greg/Edgemere Ext. with Bike Lane (PE and ROW Phase 1)

BEST PRACTICES

STRATEGIES TO INCREASE VEHICLE OCCUPANCY

Carpool, vanpool, and school-pool programs encourage travelers with common destinations, particularly employment and school destinations, to share vehicles. These can be based on informal arrangements between individuals or formally arranged through ride-matching services. Available research indicates that improving awareness, trust, and willingness to ride with strangers, as well as flexibility in scheduling, may help to increase carpool use. Incentives are another effective tool for encouraging ride-sharing.

Ride-Sharing Resources

Resources that may help to increase the use of carpooling, vanpooling, and school-pooling include "Frequently Asked Questions" (FAQs) that address the benefits of carpooling, tips for finding other carpoolers, advice on how to organize pick-ups and drop-offs, carpooling etiquette, and safety concerns, among others.

Additionally, some entities have used websites to facilitate matching of individuals with other carpoolers by either hosting their own free ride-matching service using programs like AlterNet Rides, or publicizing ride-matching applications available to the public, such as the Carma carpooling smartphone app.

Encourage Employers to Incentivize Ride-Sharing

The MPO can play a valuable role in working with area employers and schools to develop employer-based incentives to encourage ride-sharing, such as tax incentives and preferential parking. A variety of employer-based incentives for carpooling are discussed in greater detail later in this section.

Transportation Management Organizations (TMOs)

Transportation Management Organizations (TMOs) are non-profit organizations voluntarily created by a group of businesses – often with local government support – to coordinate transportation services in a defined area (typically a commercial district, medical center, or industrial park). Because they tend to serve a small geographic area and constituency, these groups can be very responsive to members' needs. TMOs provide a variety of TDM services that encourage more efficient use of transportation and parking resources, particularly through commute trip reduction strategies and ridesharing.

EMPLOYER-BASED TOOLS AND INCENTIVES

The commute to and from work is a significant contributor to traffic congestion along area roadways, particularly during peak travel times. TDM strategies that focus on employer-based tools and incentives can be an effective way to reduce travel by single occupant vehicles by coordinating ride-sharing among

employees, encouraging the use of alternative modes for work trips, shifting work trips from peak hours, and reducing work travel times and the number of overall trips.

Employer-based TDM strategies fall into four separate categories:

- Encouraging employees to travel by alternative modes;
- Shifting trips from peak periods of travel and reducing the total number of trips;
- Providing route information to divert commuters from congested routes; and
- Using location-specific solutions - such as locating in developments with a mix of employment, residential, and service uses - to shorten the work commute and reduce the need for midday trips.

Regional transportation planning entities can actively work with area employers to reduce congestion by expanding the transportation options available to their employees. This type of information can be provided on a website or delivered through a "speaker series" for educating area employers regarding options available and their benefits to employers, employees, and the community as a whole.

PARKING MANAGEMENT AND INCENTIVES

Parking management strategies and incentives encourage the use of alternative modes and can be implemented by both local jurisdictions and employers. These strategies typically rely on dis-incentivizing travel by single occupant vehicle by passing along more of the cost of parking to employees and/or limiting the availability of parking. Improved management of parking facilities can result in potential savings to communities and reduce parking requirements by 20 to 40 percent compared with conventional planning requirements. Examples of parking management strategies available include the following* (Litman, 2016)[1]

- Provide shared parking that serves multiple users or destinations, which is most efficient when the destinations have varied peak periods of activity.
- Implement parking regulations that control who, when, and how long vehicles may park at a particular location.
- Develop more accurate and flexible standards that take into account factors such as residential density, employment density, land use mix, transit accessibility, and income, among other factors, to establish parking requirements for a particular development or area.
- Reduce residential street width requirements to encourage the development of neighborhoods with narrower streets and less parking to encourage the use of alternative modes.
- Provide remote parking and shuttle service to encourage the use of off-site parking facilities that are often shared facilities, served by special shuttle buses or free transit service.
- Limit on-street parking of large vehicles (e.g., vehicles over 22 feet long or trailers) to ease traffic flow and discourage use of public parking for storage of commercial vehicles.
- Prohibit on-street parking on certain routes at certain times (such as on arterials during rush hour) to increase the number of traffic lanes and peak capacity.

Litman. 2016. "Parking Management: Strategies, Evaluation and Planning". Victoria Transportation Policy Institute. Available: http://www.vtpi.org/park_man.pdf [11]

STRATEGIES TO INCREASE TRAVEL BY TRANSIT, BICYCLE, OR WALKING

In order to reduce the number of trips by private automobile, strategies to increase travel by transit, bicycle, or walking generally focus on the following objectives:

- Expand the service area of the transit system and connect infrastructure, which can reach more people and connect them to a greater number of destinations within the region;
- Improve the quality of the service, which increases the convenience, comfort, ease of access, and affordability of the mode and makes people more willing to choose it; and
- Educate the public on the availability of the various non-auto transportation options and services and provide resources to help travelers navigate the region.

The following sections detail mode-specific strategies that could be considered for implementation in the Greater El Paso Region.

TRANSIT STRATEGIES

While traveling by car offers the ease and convenience of being able to "come and go as one pleases," traveling by transit – particularly by bus – generally requires longer travel time and less flexibility in reaching one's destination. Improving the quality of transit services involves strategies that shorten the overall travel times, increase traveler's comfort both while waiting for the bus and when on-board, and provide added flexibility with travel time and destinations. While certain aspects of travel by bus will always be less convenient than travel by car, there are several improvements that can be made to significantly improve the quality of the experience.

Transit can also provide a less expensive means of travel compared to personal automobiles. National statistics have shown that commuters that switch from driving to transit for their daily commute can save more than $9,000 annually. However, providing new routes or increased levels of transit service must always be balanced against funding availability.

SUN METRO TRANSIT

Sun Metro serves more than 14 million passengers a year through a combination of 166 buses running on 64 fixed-routes, including the Brio Bus Rapid Transit (BRT) service. Sun Metro also operates 65 smaller vehicles for the LIFT service, which provides origin-to-destination transportation for ADA-eligible clients within the service area. Current planning efforts aim to implement a total of four additional Brio corridors and a streetcar system which will enhance downtown transportation connectivity.

The Brio Rapid Transit System (RTS) is a service that offers similar benefits to light rail transit, such as improved speed and reliability, but at a much lower implementation cost. This system's use of traffic signal prioritization lengthens green light durations for the bus, which allows for faster movement through the corridor, decreasing rider commute times.

Other efforts to implement transit strategies involve expanding and improving the Brio network to serve the Alameda and Dyer Corridors, as well as expanding service to the Montana Corridor.

FIGURE 4-1: MONTANA-BRIO BRT

System-wide bus network redesign and integrating rapid transit service routes with existing routes by adjusting route transfers to accommodate, or feed into the BRT corridors can have a tremendous impact on the service provided by the overall transit system. A similar system-wide redesign was recently developed for the Houston Metro area. This redesign increased the number of high frequency rapid bus routes with extended service hours to complement an expanded light rail and less-frequent local bus network. This initiative stemmed from Houston Metro's 2011 Metropolitan Long-Range Plan and resulted in a complete reimagining of the entire system. The change resulted in a 4% increase in bus ridership between 2015 and 2016.

EL PASO COUNTY TRANSIT

Regional interconnectivity can also be supplemented by transit strategies. El Paso County Transit operates six rural transit routes that have listed stop locations but can also be boarded at any safe location along the route by flagging the bus. The El Paso MPO recently completed a comprehensive study for regional transit outside of the City of El Paso that recommended several improvements to enhancing transit service outside of Sun Metro's service area.

SOUTH CENTRAL REGIONAL TRANSIT

The South Central Regional Transit District (SCRTD) provides transportation between rural areas, small unincorporated communities, and municipalities throughout its service area. The SCRTD primarily operates in Doña Ana County, NM with limited service in Sierra County and connections to Otero and El Paso Counties. Service connects with Sun Metro service via the Purple Line at the Westside Transfer Center.

REGIONAL INTEGRATION

Fare system integration and consolidation of fare collection methods across platforms at the regional level could improve service and accessibility, as well as reduce some operating costs for providers through central services. Real time travel information, integrating traffic API's and developing GTFS on consolidated app platforms could also provide users with information on travel time and supplement user routing choices.

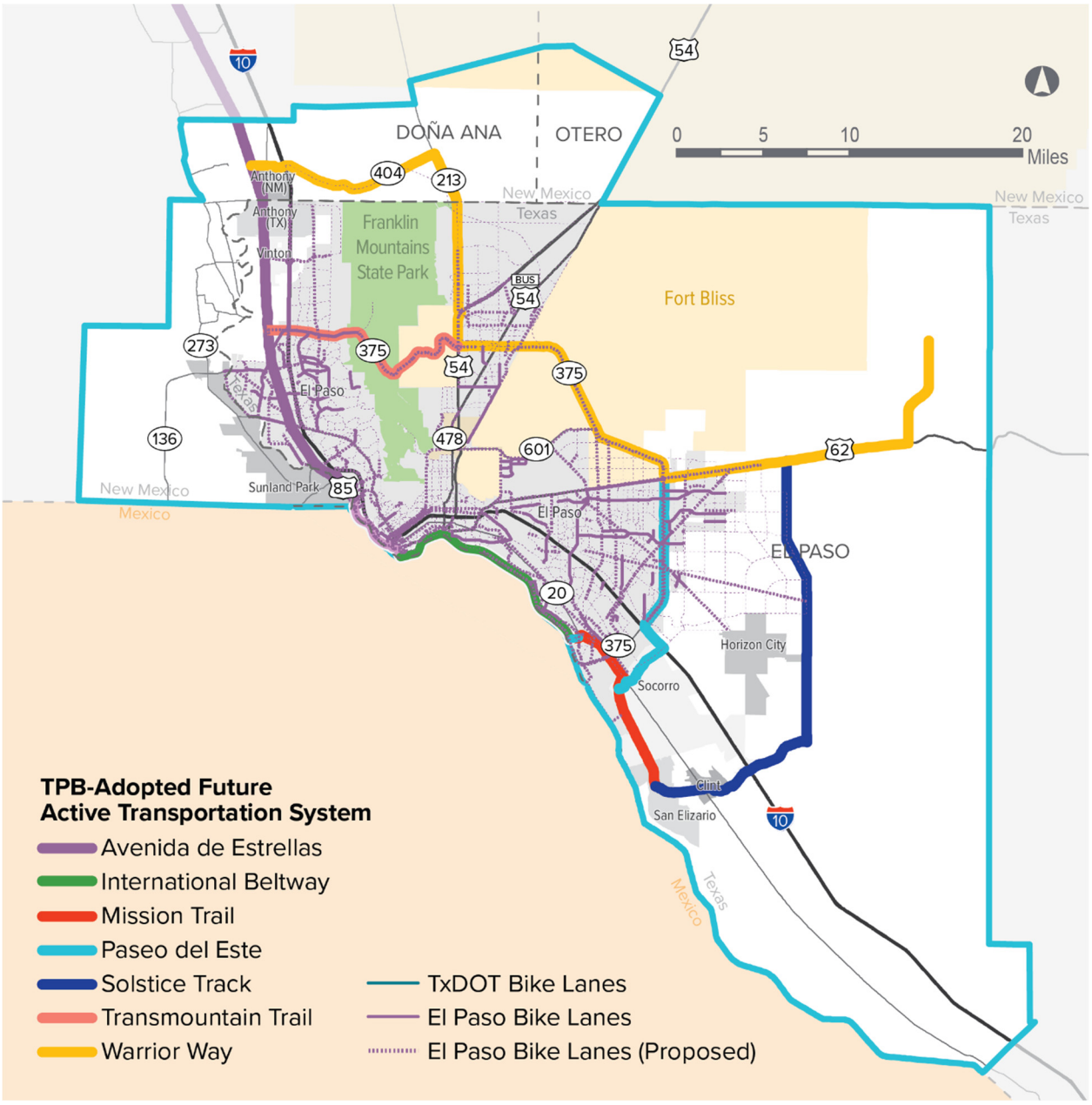
ACTIVE TRANSPORTATION STRATEGIES

A large portion of visioning workshop contributors voiced their concerns for revamping the region's active transportation infrastructure, beginning with improved bicycling and pedestrian facilities. Active transportation investments also benefit transit ridership by enhancing accessibility of existing or future transit stops.

The El Paso MPO Transportation Policy Board (TPB) passed a resolution on July 22, 2016 formally adopting the Active Transportation System. The Active Transportation System identifies regionally significant biking and walking infrastructure, both existing and planned. The identified segments are shown in **Figure 4-2**. The system also encompasses the El Paso Bike Share Program and any future expansion including a potential International Bike Share Project.

The Active Transportation System was formally adopted by the TPB with the recognition that the system will promote greater accessibility, mobility, tourism, access to historical and cultural assets, bicycle and pedestrian friendly retail development, greater economic opportunities, land use development and redevelopment, human health and greater quality of life within the region, including the Mesilla Valley MPO as well as the Instituto Municipal de Investigacion y Planeacion ("IMIP").

FIGURE 4-2: TPB- ADOPTED FUTURE ACTIVE TRANSPORTATION SYSTEM



BICYCLE STRATEGIES

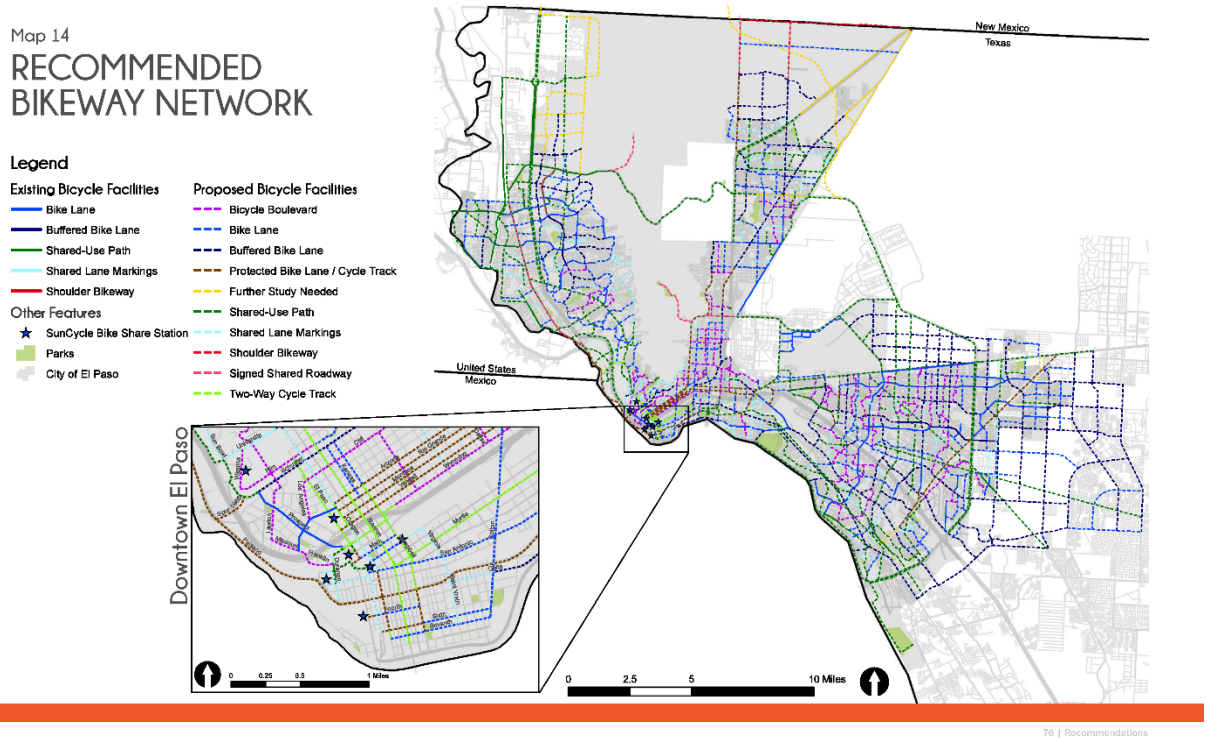
One of the primary concerns for cyclists (and those who may be considering biking as a form of basic, every-day transportation) is safety. Additional considerations include integration with other modes, continuity of the bicycle facility network, availability of bicycle parking or storage, and availability of other amenities such as on-site showers.

The 2016 El Paso Bike Plan seeks to implement many of these strategies within the City of El Paso. The plan's recommended bikeway network is shown in **Figure 4-3.**

Many of these trails are incorporated into the region-wide Active Transportation Network and are augmented by facilities extending beyond El Paso County throughout the greater El Paso region.

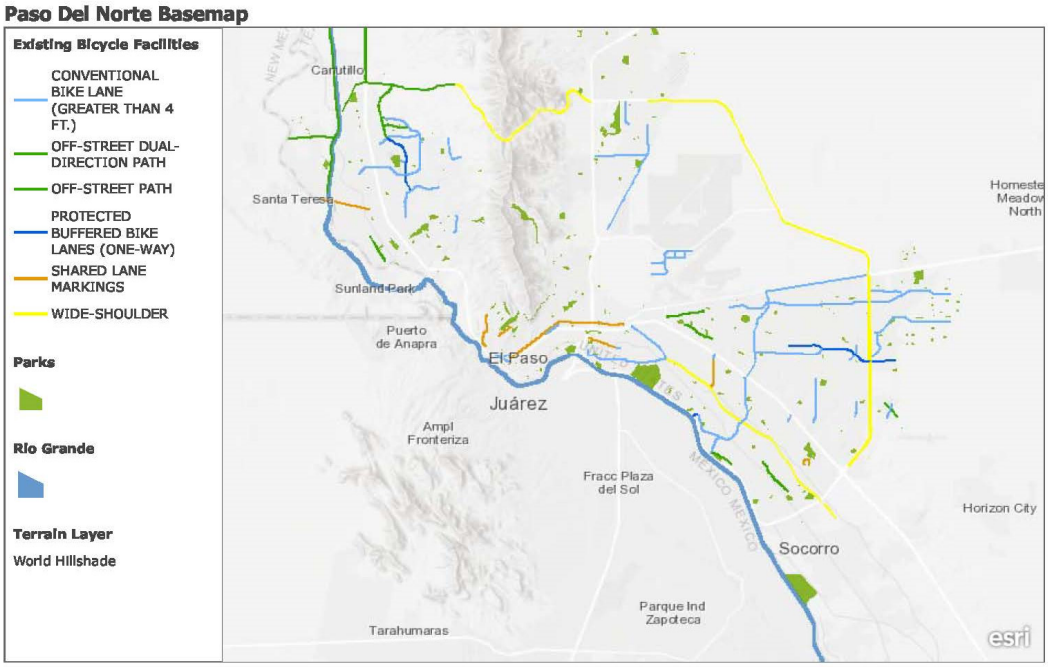
The Paseo del Norte Health Foundation is currently promoting an initiative to connect more trails across the region. The heart of the Paseo del Norte Cross-County trail initiative relies on mapping potential trail routes, as well as addressing health indicators using data from the Healthy Paso del Norte website and the CDC's 500 Cities Project. Some of the work PDN Foundation's work can be seen in **Figures 4-4 and 4-5**.

FIGURE 4-3: EL PASO BIKE PLAN RECOMMENDED BIKEWAY NETWORK



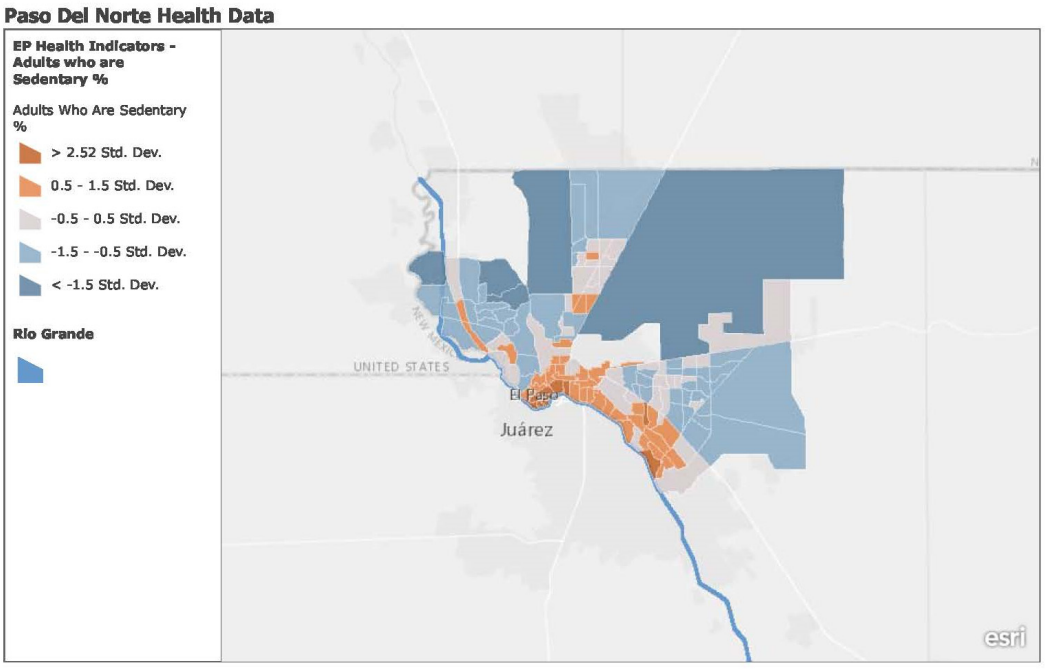
Source: elpasotexas.gov

FIGURE 4-4: PASEO DEL NORTE ONLINE GIS MAPPING INITIATIVE



Source: pdnhf.org

FIGURE 4-5: PASEO DEL NORTE HEALTH DATA



Source: pdnhf.org

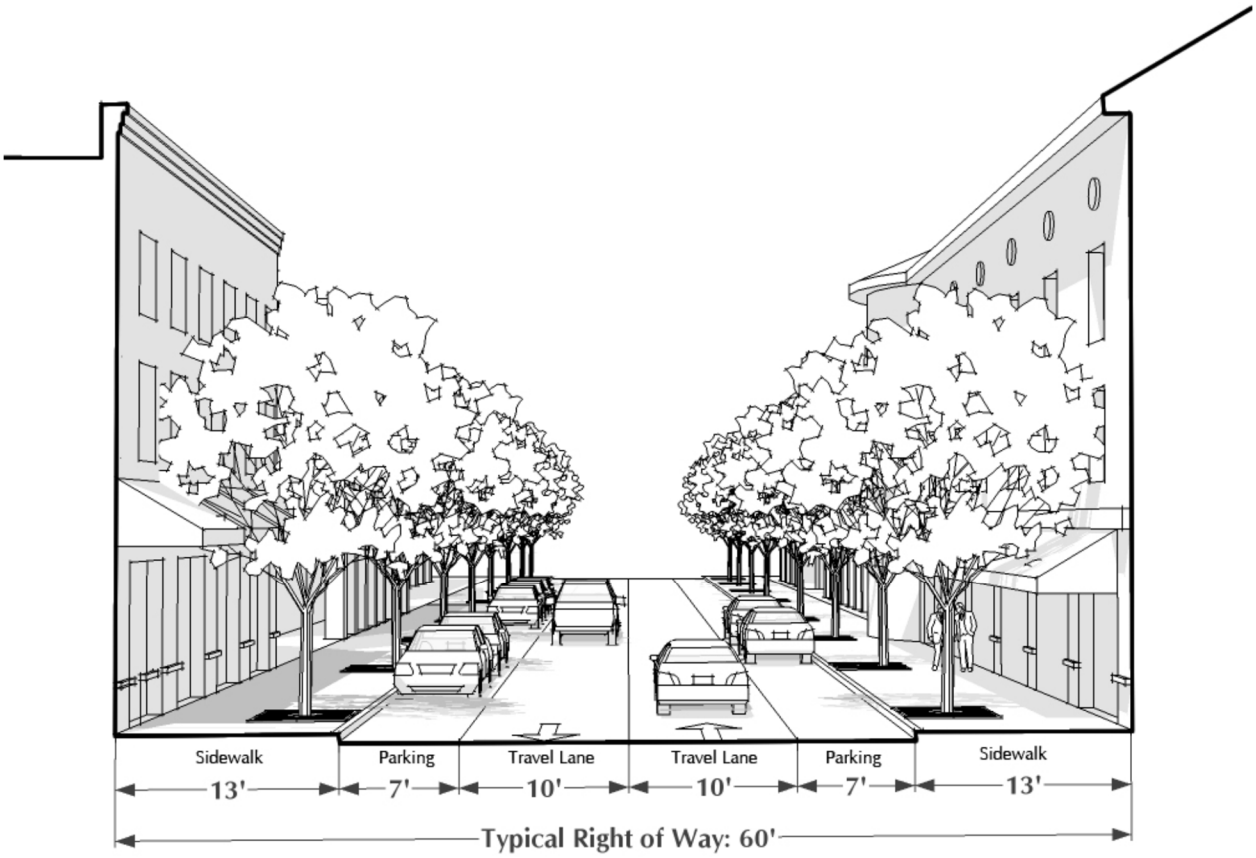
PEDESTRIAN STRATEGIES

Improving the quality of the pedestrian experience involves addressing both real and perceived safety concerns and upgrading pedestrian facilities to make sure they are contiguous and comfortable. Additionally, promoting development at a more "human scale" encourages pedestrian activity by improving perceptions of safety and creating a visually interesting environment at street level. Examples of enhanced pedestrian strategies include:

- Provide buffers between sidewalks and automobile traffic;
- Enhance the visibility of crosswalks;
- Provide midblock pedestrian crossings; and
- Improve comfort of the walking public through street level amenities.

Plan El Paso, the City of El Paso Texas' Comprehensive plan which was adopted March 6, 2012, provides design guidelines on a wide number of topics, including context appropriate pedestrian strategies for street and neighborhood development. **Figure 4-6** below shows a typical suggested cross section for a primary street in an urban setting with 60 ft. right of way.

FIGURE 4-6: PLAN EL PASO TYPICAL ROAD CROSS SECTION FOR PRIMARY ROAD, 60FT ROW



Source: City of El Paso via elpasotexas.gov

LAND USE CONSIDERATIONS

Typical development patterns have generally encouraged a separation of land uses. Additionally, there has been an overall trend toward less dense development, particularly in the planning and design of suburban neighborhoods. These land use factors significantly impact travel, requiring more trips to be made by automobile due to the increased distances between origins and destinations. The EPMPO can work with local planning partners to encourage land use policies that facilitate the use of alternative modes of transportation and reduce the number of automobile trips.

SMART GROWTH

Smart growth generally refers to the protection and preservation of valuable natural and cultural resources through encouragement of more compact development patterns that optimize use of existing transportation infrastructure. Smart growth development is characterized by higher population and employment densities and a mix of land uses, which increases the viability of public transportation, walking, and biking as transportation modes. Since smart growth principles encourage redevelopment and infill development of existing areas, investment in the transportation system is focused on the maintenance and operation of existing roadway infrastructure and providing safe opportunities to travel by bike or foot, rather than on building costly new roadways in previously undeveloped areas.

Source: Wikimedia Commons

It is important to note that smart growth does not mean building dense high-rise structures or pitting transit or any other modes against highways. Instead, smart growth is about tailoring choices for individual settings. For example, in a suburban or rural community, smart growth may mean building smaller detached homes on smaller lots within walking distance of schools and other amenities. Smart growth encourages the development of a balanced intermodal transportation system that allows for the efficient and economical movement of people and goods. In some areas that may mean more transit, in other areas it may entail roadway improvements.

Source: Piazza Escondida, via FaceBook

TRANSPORTATION SYSTEM MANAGEMENT AND OPERATIONS

Transportation System Management and Operations (TSM&O) strategies seek to improve the performance of existing roadways through increased efficiency and throughput of people on current infrastructure. TSM&O strategies not only rely on traffic engineering solutions (such as signal synchronization and access management) to optimize the existing system but also rely on resource utilization, infrastructure, personnel, and data management strategies to extend the useful life of the existing transportation system and improve its reliability.

The following section provides a brief outline of the TSM&O strategies implemented in the El Paso region and lists additional strategies for consideration that can improve the performance of the existing transportation system.

EL PASO REGION TSM&O

TxDOT manages and operates the El Paso Intelligent Transportation System (ITS) website, which is a part of the ITS implemented by TxDOT in the El Paso area. The website provides up to date information on lane closures, incidents, congestion, and travel times. This portion of the El Paso ITS also allows access to area wide traffic cameras and information from the US Customs and Border Protection on border wait times for freight, passenger, and pedestrian traffic. The City of El Paso operates a Streets and Maintenance department which in turn operates a Transportation Management Division. The Transportation Management Division provides traffic engineering, traffic control and signal management services and includes the oversight of the Traffic Management Center for the city. The City's Transportation Management Center Computerized Signal System includes the signal timing and coordination for approximately 650 traffic signals, and includes remote operations from the Management Center for 600 of these signals with the ability to expand the system for all signals within the city

The El Paso Intelligent Transportation System also helps augment TSM&O coordination efforts between:

- Texas Department of Transportation
- Texas Department of Public Safety
- City of El Paso
- El Paso Police Department
- El Paso Fire Department
- El Paso Electric
- Sun Metro
- Border Crossing Information System

TSM&O activities in the El Paso area also include programmed maintenance and maintained traffic operations through local, state, and federal funds, as well as Traffic Incident Management and Traffic Data Collection. Many of the best practices highlighted below can be seen implemented through EPMPO-programmed projects as well as ongoing efforts from TxDOT, and the local municipalities and authorities.

BEST PRACTICES

In addition to the TSM&O strategies implemented in the region, other strategies employed successfully in other cities serve as best practices for optimizing the performance of the existing transportation systems to reduce congestion and improve safety.

MAINTENANCE

Infrastructure maintenance is a critical aspect of transportation system management and operations. Most infrastructure management agencies prefer to schedule routine repairs and inspections instead of embarking on ad-hoc patching and repairing. Schedule management for inspection and street repairs will enable city and county personnel to efficiently use limited resources. A calendar for repairs and reviews will also provide valuable information to concerned citizens. Regularly scheduled roadway resurfacing is necessary to provide uniform improvements to the existing roadways and to extend their useful life. Older roads, especially those built according to discontinued standards, should be reviewed with an eye towards upgrading deficient sections to modern criteria.

ELECTRONIC INFRASTRUCTURE

Transportation infrastructure is no longer limited to concrete pavement and asphalt. Recent improvements in operations and data collection methods have led to digital controls and integrated computer networks that require maintenance and management. Older technologies are being systematically replaced with newer options.

For example, in-pavement magnetic loops are being phased out, while video detection and automatic detection devices for pedestrians and bicycles are gaining popularity. Advances in camera technology such as Gridsmart allow traffic engineers to monitor intersection conditions more efficiently than ever before. Traditional incandescent bulbs for signal heads have been replaced with more efficient light emitting diodes (LEDs). These new technologies offer increased durability and lower overall maintenance costs.

TRAFFIC SIGNAL AND INTERSECTION IMPROVEMENTS

Roadway users encounter traffic control signage and intersection signals on nearly every route they travel. While the primary function of intersection traffic control is to improve safety at intersections, it is also often a significant source of delay. Improper signage and poor signal timing results in unnecessarily long queues and impacts the reliability of the transportation system. Improving signage, signal timing, and equipment is a cost-effective way to facilitate traffic flow along a corridor. The MPO can work with its planning partners to identify corridors which would benefit from traffic signal improvements and to prioritize projects.

TRAFFIC SIGNAL OPTIMIZATION

The timing and phasing of signalized intersections should be reviewed periodically, especially in areas of rapid development or increased commercial activity. Most intersections should be reviewed for appropriate timing and phasing every six months, while more heavily traveled intersections could be reviewed more frequently. Whenever possible, the signal heads and controls should be uniform to facilitate ease of coordination and servicing of hardware. In locations of due east or due west travel, back plates and directional signal heads may be advantageous. In locations with significant wind and severe weather concerns, mast arm and pole dimensions should be designed appropriately. Traffic signals can also be coordinated along a corridor or throughout an entire system. As traffic volumes increase, signal coordination can be used to optimize high priority traffic corridors and increase the throughput of critical thoroughfares.

Adaptive signal control, which adjusts the timing of traffic lights based on real-time travel conditions, can also provide significant relief to congested corridors and cut costs associated with traffic signal timing data collection and computation.

SIGNAL PRE-EMPTION

On busy roads with highly used transit routes, transit signal priority or pre-emption can improve the operations of the transit system. Transit signal priority refers to technology that reduces dwell time for transit vehicles at signalized intersections, typically by holding green lights longer or shortening the duration of the red-light cycle. The same kinds of technology can also be employed for emergency vehicles. Equipping all intersections to accommodate signal prioritization can facilitate the deployment of such systems commensurate with demand.

ACCESS MANAGEMENT

Access management refers to the regulation of the number of access points between a development and the adjacent roadway network. Most discussions of access management involve the placement and number of driveway curb cuts, although the application can also include the location, size, and function of interior service roads. Many access management solutions involve installation of roadway medians where feasible to limit turning movements and improve traffic flow and safety.

TARGETED TRAFFIC ENFORCEMENT

Consistent and reliable enforcement of traffic laws helps address public concerns about traffic issues. In areas with complaints about speeding and reckless or inconsiderate driving, responsive law enforcement staff can do much towards gaining the public's trust and compliance. Focused speed studies (using radar trailers and traffic counters) can be employed to discourage speeding on residential streets.

TRAFFIC CALMING

Because there are many instances where the number of aggressive drivers is greater than human resources can address, many cities and counties have implemented various "self-enforcing" speed and volume control devices. Most of these measures are referred to as "traffic calming." These physical devices can assist law enforcement in influencing driver behavior. Traffic calming is often controversial and can be challenging to discuss.

Most traffic calming measures are applied to residential streets, though certain measures can be applied to higher volume roadways as well. Broadly defined, the goals of traffic calming measures are:

- To slow down the average vehicle speeds for a particular roadway;
- To address excessive volumes for a particular roadway; and
- To remind drivers of or reinforce the residential nature of specific roadways.

Traffic calming measures are designed to slow down or impact all vehicles. In practice, this can lead to reduced access and response times for emergency and law enforcement personnel. Careful consideration must be given to any proposed traffic calming device, especially if the roadway under review provides critical access for emergency personnel. Representatives of fire, police, and emergency services departments should be involved in the review of proposed traffic calming devices. The EPMPO can work with its planning partners and emergency response agencies to identify locations suitable for traffic calming implementation.

HIGH OCCUPANCY VEHICLE LANES

High Occupancy Vehicle (HOV) lanes are dedicated for use by vehicles with more than one occupant and thereby serve to increase the total number of people that move through a congested corridor. HOV lanes offer substantial travel time savings and reliable, predictable travel times. HOV lanes move significantly more people during congested periods, even if the number of vehicles that use the lane is lower than on adjoining general-purpose lanes. In general, carpoolers, vanpoolers, and bus patrons are the primary beneficiaries of HOV lanes. In coordination with its planning partners, EPMPO can identify corridors that would benefit from the implementation of HOV lanes.

TRAFFIC INCIDENT MANAGEMENT

Traffic Incident Management (TIM) consists of a planned and coordinated process to detect, respond to, and quickly clear traffic incidents so that traffic flow may be restored as safely and quickly as possible. Effective TIM strategies reduce the duration and impacts of traffic incidents and improve the safety of motorists, crash victims, and emergency responders. Traffic incident management involves coordination among a number of public and private sector partners, including:

- Law enforcement
- Emergency Management and preparedness
- Fire and rescue
- EMS
- Towing and recovery
- Transportation departments
- Hazardous materials contractors
- Public safety communications
- Traffic information media

TRAFFIC DATA COLLECTION

As transportation technology grows increasingly sophisticated, obtaining the amount of data required by new traffic optimization interfaces presents significant challenges to cash-strapped public agencies. Automated traffic data collection creates an opportunity for transportation management agencies to receive a continuous supply of traffic data at a low cost. Because automated traffic data collection gathers data in real-time, it facilitates many of the demand-responsive TSM&O strategies discussed earlier in this chapter (such as traffic signal optimization). New types of traffic data collection, such as Bluetooth and Wi-Fi detectors, are particularly appealing due to their lower operational and maintenance costs compared to in-road loop detectors. These types of detectors have the added benefit of being able to gather traveler information beyond the traditional scope of the private vehicle to include bicycle and pedestrian roadway users.

LEVERAGING EMERGING TECHNOLOGIES

In addition to the implementation of some the Intelligent Transportation Systems (ITS) mentioned above, the emergence of new technologies and the adoption of policies and legislation will provide future decision makers with a whole new tool kit of strategies to implement.

Connected & Autonomous Vehicles

Connected and autonomous vehicles (AV) can be integrated into existing ITS architecture, and while autonomous technology holds many promises for mobility, improved traffic operations, and safety, it should be noted that there are potential unknown and known drawbacks to this technology as well. While higher capacity automated public transportation could drastically reduce both emissions and congestion on the roads, as well as reduce the required right of way to accommodate current trends in single occupant vehicles, advances in this field can also require drastic shifts in land use and policy development. And through making these major shifts in land use and policy development might require greater upfront costs, the benefits for environmental justice and social equity could far outweigh the implementation costs. Other tremendous benefits to the implementation of AV could be drastic reductions in fatalities and severe injury due to less flawed drivers on the road. Questions of liability and vehicle ownership in this new paradigm are yet to be resolved, though vehicle manufacturers, software developers, insurance companies, and entrepreneurial companies are all vying for dominance in this emerging field.

Source: Gnangarra via Wikimedia commons

This technology also holds benefits to freight and economic growth. Where freight drivers are currently limited by exhaustion as well as congestion in urban areas, improved travel distances and improved traffic operations could have very real and positive impacts on the economic vitality of rural and urbanized area, as well as the integration of these regions into commercial megaregions.

Source: Steve Jurvetson via Wikimedia commons

Real time data collection could have immediate and long-term benefits for growth and operations planning, while third party data collection companies might face new challenges in securing and utilizing the influx of data.

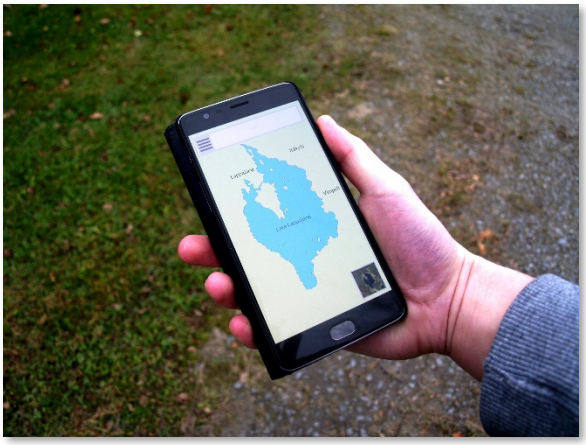
The National Association of City Transportation Officials (NACTO) provides some advice and guidance in their "Blueprint for Autonomous Urbanism," found at nacto.org/blueprint, and the Society of Automotive Engineers (SAE) and the National Highway Traffic Safety Administration (NHTSA) are working to provide guidance for safety and programming levels of automation.

The EPMPO staff can help the development and deployment of these technologies throughout the region by beginning discussions on policy and land use, as well as staying abreast of developments in autonomous vehicle technology.

Smart Phone Applications

Rideshare applications for smart phones are already influencing how people are choosing to commute. Uber recently unveiled (Feb 2018) their new "Express Pool" service in the Washington D.C. Metro Area. This new service utilizes traffic analytics and routing software to reduce backtracking and rerouting to pick up multiple passengers, as is the case with their "UberPool" service. In exchange for significant discounts and more direct routing, riders are picked up within two blocks of their origins, and dropped off within two blocks of their destinations, which means more walking.

Smart phones are also already being used to improve transit service and user experience with route information apps, as well as instant payment and rider subscription services. The EPMPO can continue to work with its planning partners to enhance the functionality of smartphone transit applications to further encourage travelers to use transit.



Source: Santeri Viinamäki via Wikimedia commons

COMPLETE STREETS

The concept of "Complete Streets" is rooted in the idea that roads should be built with all users in mind, not just the private automobile. While Complete Streets principles include many TDM and TSM&O strategies, the concept focuses less on improving traffic conditions and more on the livability of places. Complete Streets strategies address the needs of all users of the transportation system, including the young and the old, the disabled, and users of transit or non-motorized forms of transportation. They yield a wide range of benefits such as improved safety, equity and access, economic development, air quality, health, and livability. While policies adopted by local governments represent most Complete Streets policies adopted nationwide, MPOs can be integral partners in promoting and implementing Complete Streets strategies.

SAFETY AND SECURITY

The FAST Act requires that the transportation planning process address both the safety and security of the transportation system for motorized and non-motorized users. Federal guidelines define safety as "freedom from unintentional harm," and define security as "freedom from intentional harm." Strategies to address safety and security will at times differ significantly from one another and require coordination between different agencies but will more often overlap and involve members of the same agencies. Therefore, Destino 2045 considers safety and security both simultaneously and individually.

The EPMPO is responsible for addressing safety and security through the programming of transportation improvements. The MPO's role in implementing specific safety and security measures may be limited, but its role in coordinating regional transportation needs between the various local, state, and federal transportation agencies is vital to creating successful safety and security policies. By integrating the safety and security goals and objectives of regional stakeholders into the transportation planning process, the MPO can ensure that its plans and studies are consistent with and help support safety and security planning in the El Paso Region.

The following sections discuss the various agencies involved in safety and security planning in the El Paso Region and present local, regional, and state plans and programs that are currently in place.

SAFETY

"Safety" in the transportation planning context typically refers to the mitigation of traffic crashes, transit accidents, and other unintentional events resulting in fatalities, injuries, or loss of property on the transportation network. The FAST Act identifies a national goal for safety to significantly reduce fatalities and injuries on all public roadways. The U.S. Department of Transportation (USDOT) published a related Notice of Proposed Rulemaking (NPRM) in March 2014 proposing that safety targets and progress towards their achievement be measured as 5-year rolling averages for fatalities and serious injuries, as well as their respective rates for every 100 million vehicle miles traveled (VMT). The final rule was published March 15, 2016, with an effective date of April 14, 2016.

Safety planning, reducing the number of crashes, and decreasing the amount of fatalities and injuries on the transportation network involves several different projects and programs, ranging from improving the operational efficiency of the transportation network to influence driver behavior. TXDOT, NMDOT, and EPMPO play the lead roles in transportation safety planning, but several non-traditional stakeholders should be included in the transportation safety planning process, including:

- State agencies responsible for safety data collection and management (TXDOT and NMDOT, Texas State Police – Highway Safety Office);
- Regional and local transportation agencies;
- First responders, fire and rescue, and EMS;
- State and local law enforcement;
- Transit agencies;
- Motor vehicle departments;
- Federal agencies; and
- The non-governmental highway safety community (e.g. AAA).

REVIEW OF AGENCIES AND PROGRAMS

Texas Strategic Highway Safety Plan (SHSP)

Adopted in 2016, the Texas SHSP's mission is "Texans will work together on the road to zero traffic fatalities and serious injuries." The SHSP also adopts a "Towards Zero Deaths" (TZD) vision consistent with the TZD National Strategy sponsored by the Federal Highway Administration (FHWA), National Highway Traffic Safety Administration (NHTSA), American Association of State Highway and Transportation Officials (AASHTO), and the Governors Highway Safety Association (GHSA).

The plan identifies safety concerns and classifies them into seven key emphasis areas. The plan describes the trends in fatalities within each emphasis area, defines a specific target for 2022, and suggests strategies that should be undertaken to achieve the performance targets that are tailored to the unique circumstances of crashes within each emphasis area.

The strategies recommended in the SHSP should provide the basis for countermeasures that the MPO considers addressing crash types and locations, as well as driving behaviors, that are responsible for the greatest number of crashes in the El Paso region – particularly those resulting in serious injuries or fatalities. A discussion of crash types, contributing factors, and hotspot locations is in Chapter 3.

New Mexico Strategic Highway Safety Plan (SHSP)

The 2016 New Mexico SHSP identifies actions and strategies to be undertaken over a five-year period to reduce traffic deaths and incapacitating injuries on the states surface transportation system, with the vision statement "Safe Mobility for Everyone." Using the "4E" approach of engaging stakeholders and participants from Engineering, Enforcement, Emergency response, and Education, the NM SHSP is intended to "coordinate traffic safety programs across the state, identify priorities and strategies, and provide a common measure and approach in traffic safety efforts for all roadway users."

The plan identifies ten high priority emphasis areas and ten priority emphasis areas based on the number and severity of crashes in New Mexico and stakeholder input for data from 2007 to 2012.

The strategies recommended in both the Texas and New Mexico SHSPs should provide the basis for countermeasures that the MPO considers addressing crash types and locations, as well as driving behaviors, that are responsible for the greatest number of crashes in the El Paso region – particularly those resulting in serious injuries or fatalities. A discussion of crash types and hotspot locations is in Chapter 3.

Highway Safety Improvement Program (HSIP)

The HSIP is a Federal-aid funding program administered by state DOTs. Its goal is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The program must be consistent with the Texas and New Mexico SHSPs, and report annually on the following:

- HSIP program structure;
- Progress towards implanting HSIP-funded projects;
- Progress made in achieving safety performance targets; and
- Assessment of the effectiveness of implemented improvements.

TXDOT and NMDOT select projects for implementation through HSIP following a data-driven approach that identifies safety problems in a systemic manner, identifies countermeasures to address them, and prioritizes projects based on the goals and objectives outlined in the SHSP.

Horizon 2040 MTP

The Horizon 2040 Metropolitan Transportation Plan, El Paso's previous MTP, identified Safety as a top priority. The plan included a goal to "Increase efforts to reduce crash rates and improve safety on the system." It also established a performance measure that quantifies the number of accidents (e.g., fatalities or injuries) on state highways on the CMP Network.

RECOMMENDATIONS

Under the FAST Act, states and MPOs are required to adopt a performance- and outcome-based approach to transportation planning that relies heavily on existing and projected data to evaluate the effectiveness of strategies in addressing goals and objectives, including those related to safety. The crash analysis provided in Chapter 3 provides a basis for the safety planning element and the following recommendations will help the MPO comply with final safety performance management requirements

- Identify measurable safety goals and objectives;
- Transition to a more data-driven, strategic approach to safety planning;
- Collaborate with key safety stakeholders;
- Coordinate closely with the State in the development, evaluation, and reporting of performance targets that support the statewide safety goals and objectives, as well as regional and local safety goals; and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation safety planning.

SECURITY

Planning for transportation security seeks to mitigate or avoid harm to the transportation network inflicted either intentionally by people (such as terrorist acts or criminal activities), or circumstantially through natural disasters such as hurricanes, earthquakes, or other weather events. Security planning is carried out by multiple levels of government and involves all four phases of emergency management: preparedness, response, recovery, and mitigation.

In support of state, regional, and local security goals and objectives, the primary role of the MPO is to facilitate coordination between agencies responsible for transportation security, including law enforcement, emergency response, transit agencies, and homeland security departments.

REVIEW OF AGENCIES AND PROGRAMS

Texas Department of Emergency Management

The state emergency management program is coordinated by the Texas Division of Emergency Management (TDEM). This program is intended to ensure the state and its local governments respond to and recover from emergencies and disasters. The program also implements plans and programs to help prevent or lessen the impact of emergencies and disasters, as well as programs to increase public awareness about threats and hazards.

The TDEM also coordinates emergency planning and administers disaster recovery, hazard mitigation, and homeland security grant programs in the State of Texas.

Source: U.S. Customs and Border Protection [Public domain], via Wikimedia Commons

Updated in 2015, the Texas Emergency Management Plan describes how the State will mitigate the effects of, prepare for, respond to, and recover from hazards to public health and safety, including natural disasters, technological accidents, homeland security threats, and other emergency situations. The plan designates the Texas Department of Public Safety (DPS) as the primary State agency responsible for coordinating all transportation related emergency management activities, and designates TxDOT as a support agency for transportation related emergency management activities which include:

- Clearing routes and temporarily restoring public facilities;
- Assisting with damage assessment of transportation infrastructure;
- Assisting state and local government entities in determining the most viable transportation networks to, from, and within disaster areas; and
- Providing assistance to other state and local government agencies in the transport of urgent supplies to impacted areas.

The plan also identifies key agencies and organizations that will support DPS's emergency management responsibilities and outlines each entity's role in or resource contribution to transportation-related emergency management activities.

New Mexico Department of Homeland Security and Emergency Management (DHSEM New Mexico)

The State of New Mexico All-Hazard Emergency Operations Plan (EOP) establishes the New Mexico Emergency Operations System. This system organizes the state's response to emergencies and disasters while providing for the safety and welfare of its citizens. The plan assigns functional emergency management responsibilities to state departments, agencies, boards, and commissions.

The EOP identifies the State Department of Transportation as the primary State agency responsible for coordinating all transportation related emergency management activities (ESF#1), with support from the General Services Department, the Environment Department, Department of Military Affairs, Department of Public Safety; State Police Division, Motor Transportation Division.

Responsibilities for transportation related emergency management activities include:

- Monitor and report status of and damage to the transportation system and infrastructure as a result of an incident.
- Identify temporary alternative transportation solutions that can be implemented by other agencies when systems or infrastructure are damaged, unavailable, or overwhelmed.
- Coordinate the restoration and recovery of the transportation systems and infrastructure.
- Coordinate the support, prevention, preparedness, response, recovery, and mitigation activities among transportation stakeholders within the authorities and resource limitations of ESF #1 agencies.

The plan also identifies key agencies and organizations that will support DHSEM's emergency management responsibilities and outlines each entity's role in or resource contribution to transportation-related emergency management activities.

FEMA Hazard Mitigation Plans

The purpose of FEMA's Hazard Mitigation Grant Program (HMGP) is to "help communities implement hazard mitigation measures following a Presidential major disaster declaration." All counties in the greater El Paso Metropolitan Planning Area have completed a FEMA-approved Hazard Mitigation Plan, and although Otero County's plan is currently expired, they are in the process of working on a new plan, as noted on the DHSEM New Mexico website.

Texas & New Mexico Continuity of Operations Plans (COOP)

Continuity of Operations Plans focus state energy and resources on plans that minimize the impact of natural and man-made disasters on state operations. Texas DPS and the New Mexico DHSEM provide technical assistance to local agencies or organizations wishing to establish a COOP.

RECOMMENDATIONS

The following recommendations, shown in no particular order, are designed to strengthen transportation security planning in the greater El Paso region and should be coupled with elements of the final rules as published by the FHWA and disseminated by TXDOT and NMDOT:

- Create a local definition of security;
- Continue to assess the most significant threats, high-potential targets, and least hardened infrastructure elements within the El Paso region;
- Work with federal, state, regional, and local jurisdictions and transportation providers to develop evacuation plans for the "transportation disadvantaged;"
- When eligible, establish a FEMA-approved Hazard Mitigation Plan for Otero County;
- Collaborate with security and emergency response professionals and organizations on an ongoing basis; and
- Provide training opportunities for MPO staff to increase their knowledge related to transportation security planning

NO-BUILD RECOMMENDATIONS

The following no-build recommendations are listed in no particular order:

- Encourage continued coordination of the metropolitan transportation planning process with the development of local transportation and comprehensive plans to promote the inclusion of facilities and systems related to transit, biking, and walking.
- Encourage transportation planning partners to consider cost-effective, no-build strategies, such as TDM, TSM&O, and Complete Streets design prior to investing in roadway capacity improvements.
- Work with large area employers to explore and implement employer-based TDM tools and incentives.
- Consider giving funding preference to projects that incorporate TDM and TSM&O strategies, reflect Complete Streets design principles, or set regional multi-modal transportation goals and objectives through a robust public involvement process.

BUILD STRATEGIES TO ADDRESS UNMET NEEDS

This section builds upon the work completed as part of the needs analyses discussed in Chapter 3, to identify deficiencies in the El Paso region's transportation network. This section outlines the steps taken to address or mitigate the deficiencies identified by developing an unconstrained list of possible improvements to the transportation network, and then developing a project prioritization process and ranking those improvements according to community values.

PROJECT IDENTIFICATION

Once the no-build strategies were considered, potential projects to expand or build new facilities were examined. The results of technical reviews, available planning studies, highway and corridor studies, consultation with local traffic engineers, planners, and other stakeholders, and a call for transportation projects were all combined to develop a list of candidate projects for further consideration.

PROJECT SELECTION

The Transportation Project Advisory Committee (TPAC) incorporated the federal planning factors and feedback received during the visioning process to help determine regional priorities and develop the final project list.

PLANNING FACTORS AND PROJECT EVALUATION CRITERIA

As discussed in Chapter 2, the FAST Act requires the transportation planning process for metropolitan areas to consider strategies and projects that address ten planning factors:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness;
2. Increase the safety of the transportation system for motorized and nonmotorized users;
3. Increase the security of the transportation system for motorized and nonmotorized users;
4. Increase accessibility and mobility of people and freight;
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns;
6. Enhance the integration and connectivity of the transportation

system, across and between modes, for people and freight;
7. Promote efficient system management and operation; and
8. Emphasize the preservation of the existing transportation system.
9. Improve resiliency and reliability of the transportation system and reduce or mitigate storm water impacts of surface transportation.
10. Enhance travel and tourism.

Based on these planning factors, a set of project evaluation criteria was developed to ensure each aspect of the factors was taken into consideration in assessing the merits of the proposed projects. The criteria are:

IMPROVE SAFETY

Safety means protecting against unintentional harm and relates to both motorized and non-motorized modes of travel.

IMPROVE SECURITY

Security means protecting against intentional harm and relates to both motorized and non-motorized modes of travel.

PROTECT THE ENVIRONMENT

Protecting the environment means safeguarding the natural and built characteristics of a community. Important environmental protection issues are maintenance of clean air and flood protection.

PROMOTE EFFICIENCY

Efficiency means improving system management, preserving the existing transportation system, and reducing the cost to provide services or infrastructure.

SUPPORT ECONOMIC DEVELOPMENT GOALS

Economic development is the sustained effort to improve the wealth and standard of living of a community. Economic development goals are framed by the economic development plans of the local jurisdictions and can be impacted by many factors, one of which is the transportation system. Some of these goals include enabling global competitiveness, productivity and efficiency.

REDUCE CONGESTION

Congestion means a roadway system is operating at speeds slower than that for which it was designed. Congestion levels can be measured quantitatively, but the tolerance for congestion is defined locally. For example, individuals living in El Paso may find levels of congestion that are far below what is experienced regularly by the citizens of Los Angeles as unacceptable. Therefore, congestion is evaluated both quantitatively and qualitatively based on input from the public.

IMPROVE ACCESS

Improving access involves controlling and managing the ingress and egress points to a transportation facility by balancing the number of access points and traffic efficiency on a transportation facility, rather than merely increasing the number of access points.

CONNECT MODES OF TRAVEL

Connecting modes of travel means ensuring that people and goods can transition easily from one travel mode to another.

CONSERVE ENERGY

Conserving energy means using fewer natural resources while using the transportation system.

SUPPORT LAND USE GOALS

Land use encompasses the human activities undertaken to modify the natural environment. Land

use goals of the community are defined by the planning ordinances and land use plans of the local jurisdictions, as well as through the public visioning process.

INCREASE STREET CONNECTIONS

Street connectivity is the ease by which people and goods can move to their desired destinations. Connectivity relates not only to travel within the community, but also to external destinations - regional, national, and international.

IMPROVE QUALITY OF LIFE

Quality of life is the personal satisfaction or general sense of well-being an individual or society experiences. The transportation system can have both positive and negative impacts on a region's quality of life. Examples of ways that the transportation system can have a negative impact on the quality of life in a community are: addition of access points to a neighborhood that encourages through traffic and endangers children at play, widening of roadways to improve port access that also encourages truck traffic carrying hazardous materials through residential neighborhoods, an increase in noise or pollution from added lanes, lack of aesthetic amenities along roadways, or lack of restrictions on the movement of heavy trucks through historic neighborhoods causing destructive vibrations in historic structures.

INCREASE MULTI-MODAL OPTIONS

Increasing multi-modal options means constructing or developing alternative travel modes for people and goods that do not currently exist in the community, thereby allowing individuals to select the most convenient mode of travel given their destination and/or purpose of their trip. Strategies for increasing multi-modal options can include: expanding public transportation into previously unserved areas, expanding the hours of operation for a transit system, increasing the number of streets with sidewalks, increasing intermodal freight transfer facilities, increasing park and ride facilities, or increasing in the number of sidewalks that meet ADA accessibility requirements.

PRESERVE RIGHTS-OF-WAY

Preserving rights-of-way means acquiring land prior to development in anticipation of future transportation infrastructure expansion. When streets and highways are expanded, either through the addition of miles or the widening of existing roadways, land must be purchased. The more developed the area, the more expensive it is to acquire the land.

VISIONING WORKSHOP FEEDBACK

During the visioning process the public was asked to rank the criteria based on their personal preferences. The results were combined to assign a final ranking of the evaluation criteria based on community values. The following table presents the final criteria ranking developed from the visioning process.

TABLE 4-1: RANKINGS OF EVALUATION CRITERIA

INDIVIDUAL SCORING CRITERIA	RANK
Improve Safety	1
Improve Quality of Life	2
Reduce Congestion	3
Protect Environment	4
Improve Security	5
Increase Connections	6
Improve Access	7
Connect Modes of Travel	8
Increase Multi-modal Options	9
Promote Efficiency	10
Support Economic Goals	11
Conserve Energy	12
Support Land Use Goals	13
Preserve ROW	14

TRANSPORTATION PROJECT ADVISORY COMMITTEE PROJECT SELECTION

The TPAC used the MPO's approved Project Selection Process as needed to assess the community benefits of proposed transportation projects while considering the federal metropolitan planning factors and the community-driven goals and objectives established during the visioning phase. The process combines technical judgement about the project's ability to meet national performance and local congestion management goals with sponsor-provided information about the purpose and need for the project, project readiness, and funding availability. The process resulted in a prioritized list of short-, mid-, and long-term transportation improvements. The TPAC voted to recommend the draft list for Policy Board approval on December 6, 2017.

TRANSPORTATION POLICY BOARD PROJECT LIST ADOPTION

Once the TPAC completed their project selection process, the draft list of prioritized projects was sent to the Policy Board, which approved the draft list for public review and feedback at their December 15, 2017 meeting. The final list of projects was presented to the TPAC following the final round of public involvement on May 7, 2018 and recommended for approval by the TPB. The TPB approved the final project list upon adoption of the Destino 2045 MTP, Destino 2019-2022 TIP, and Transportation Conformity Report on May 18, 2018.

The final list of prioritized projects is presented in Chapter 8 of this document. Chapter 8 displays the project list by staging period:

- Implementation Stage (2019-2022)
- Short-Term Stage (2023-2028)
- Medium-Term Stage (2029-2040)
- Long-Term Stage (2041-2045)

Chapter 8 also provides corresponding maps to identify projects in each stage of the plan. For detailed project information see the official EPMPO project list in Appendix C.

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