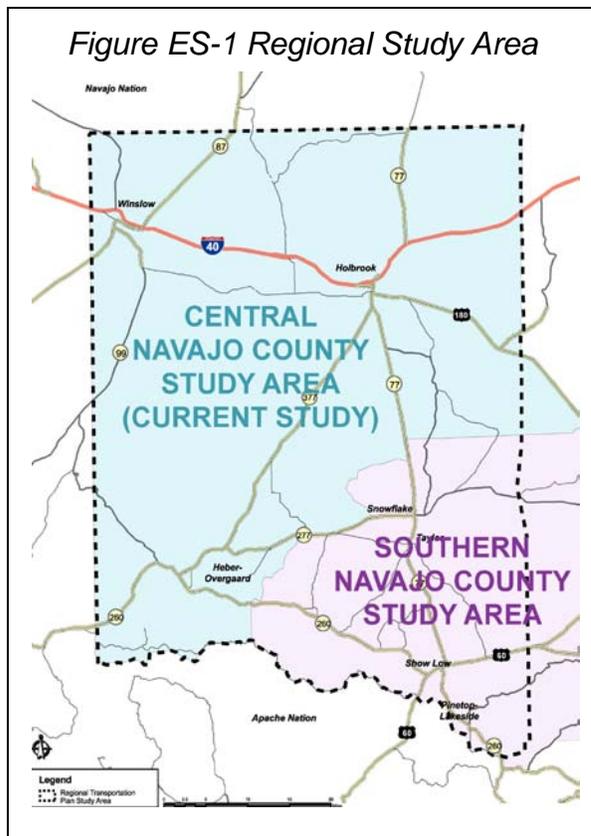


Navajo County Central Region Transportation Study

Executive Summary

The purpose of this study was to develop a multi-modal transportation plan that outlines the region's transportation priority projects and provides a plan for ultimate implementation. The transportation study was focused around identifying regional mobility needs that can accommodate the anticipated future population and employment growth. This transportation study is a joint effort of Navajo County, the City of Holbrook, the City of Winslow and the Arizona Department of Transportation (ADOT) to develop multi-modal transportation recommendations for the study area, Heber-Overgaard, Holbrook and Winslow over a 20-year planning horizon.

The Study Area is depicted in Figure ES-1. The northern boundary of the Study Area follows the southern boundary of the Navajo Nation Tribal lands. The eastern and western boundaries coincide with neighboring Coconino and Apache Counties on the west and east, respectively. The southern boundary follows the northern limits of the Apache Nation Tribal lands, which is coincident with the southern limits of the Apache-Sitgreaves National Forest and the Mogollon Rim. Additionally, the southern boundary does not include the area previously studied in the *Southern Navajo County/Apache Regional Transportation Plan*.



STUDY PROCESS

This study was guided by a Technical Advisory Committee (TAC) that included representatives from Navajo County, the City of Holbrook, the City of Winslow and ADOT (both Multi-modal Planning Division and District staff). The role of the TAC was to provide technical guidance, to serve as a communication stream to the management and elected officials for the agencies they represent, to offer insight and suggestions regarding local technical issues, to perform document reviews and to provide input throughout the study process.

PUBLIC INVOLVEMENT

As the study progressed, five public meetings were held. The first set of two public meetings were held at the City of Winslow City Hall and the City of Holbrook City Hall concurrently, on October 28, 2008 regarding current and future conditions. The second set of two public meetings were held again, at the City of Winslow City Hall and the City of Holbrook City Hall concurrently, on July 14, 2009 to discuss future conditions and the alternatives assessment. A final public meeting and Council Work Session was requested by City officials and held on December 16, 2009 in Holbrook to provide a full overview of the study, alternatives and recommendations. The study proceeded through the local adoption processes, including:

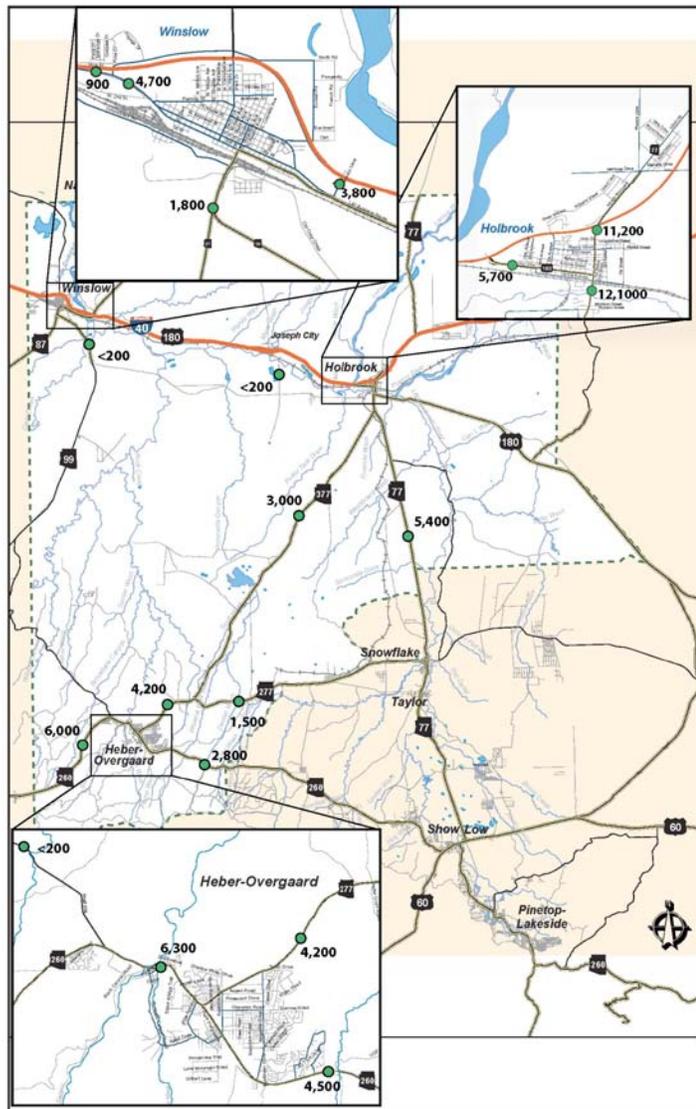
- City of Winslow Study Acceptance on September 14, 2010
- City of Holbrook Study Acceptance on September 28, 2010
- Navajo County Board of Supervisors Study Adoption on December 14, 2010

EXISTING CONDITIONS

Traffic counts were obtained from participating agencies. These counts provide the foundation for the segment traffic operations analysis, used to identify current capacity needs within the study area. These counts also form the basis for the existing conditions network calibration effort. Figure ES-2 depicts the Year 2006 traffic counts.

An existing conditions segment capacity analysis was conducted for the primary network using the traffic counts collected for this study. The analysis shows that there are not any critical roadway segments over capacity; however there are locations within Winslow and Holbrook that have mobility issues due to the railroad crossings and roadway geometric configurations.

FIGURE ES-2 REGIONAL TRAFFIC COUNTS



REGIONAL HOUSEHOLD AND EMPLOYMENT PROJECTIONS

Table ES.1 summarizes the projected growth of households and employment in the region for the years 2006, 2015, 2020, and 2030. The regional household and employment forecasts were included to provide valuable insight to the regional travel demand needs primarily due to the extensive growth in Southern Navajo County. Households in the region will increase substantially through 2030, increasing by 274.6%. Total employment is anticipated to increase, but as a lesser rate. The increase will be driven largely by an increase in industrial sector employment (293.2%) comparable to the projected increase in households. The changing economy of the Study Area is reflected in the expectation that the industrial and retail sectors will outperform the service sector. The hotel sector is not expected to change significantly between 2006 and 2030.

TABLE ES.1
CENTRAL AND SOUTHERN NAVAJO COUNTY HOUSEHOLD AND EMPLOYMENT GROWTH: 2006 - 2030

Year	Households	Employment Sector			Total Employment
		Industrial	Service	Retail	
2006	24,048	3,023	16,535	8,407	27,965
2015	36,980	4,379	20,531	10,360	35,270
Percent Growth 2006-2015	53.8%	44.9%	24.2%	23.2%	26.1%
2020	48,280	6,501	26,746	13,606	46,853
Percent Growth 2006-2020	100.8%	115.1%	61.8%	61.8%	67.5%
2030	90,088	11,885	40,450	22,055	74,390
Percent Growth 2006-2030	274.6%	293.2%	144.6%	162.3%	166.0%

Source: Wilson & Company, Inc.

Aztec Land And Cattle Company provided year 2030 development assumptions based on a longer term development buildout, so only a portion of the total planned development is included in this study. Aztec Land and Cattle Company is currently working through the entitlement processes for approximately 220,000 developable acres within the Study Area. These development assumptions are included in Table ES.1, and are included in the needs assessment and improvement recommendations.

IMPLEMENTATION PLAN

The extent of the transportation issues presented for the Central Navajo County region far exceed the revenues anticipated for the region. The anticipated revenues, through Year 2030 are summarized below. Following that summary is a short-, mid- and long-range improvement plan.

Many of the improvements are based on the socioeconomic assumptions developed for the region from stakeholder and agency input. Understanding that the economy is in turmoil, growth has essentially halted, traffic demands have generally stagnated and local sales tax receipts have diminished, it is important that this plan be implemented according to the needs as they occur. Additionally, this plan should be revisited in year 2015, and updated to reflect the state of the economy at that time.

Navajo County Central Region Transportation Study

A financial overview was conducted to examine ADOT, Navajo County and the cities of Holbrook and Winslow. This section identifies existing and projected Year 2030 forecasted revenues, and describes additional funding options that could be implemented either locally or regionally.

TRANSPORTATION REVENUES

For the study area, the four jurisdictions had approximately \$11.2 million in transportation revenue for FY 2008-09. Most all of the transportation revenue provides funds for maintenance efforts, not expansion or major capital projects.

Table ES.2 presents a projection of state shared transportation revenue available to the study area jurisdictions for FY 2009 to 2030. Total revenue is projected to be \$284.6 million, with ADOT at \$102.9 million, Navajo County at \$105.5 million, Holbrook at \$27.1 million, and Winslow at \$49.1 million. This revenue should be viewed as primarily available for annual operations and maintenance expenditures, and not for any major capacity expansions of the existing roadway systems in the study area.

TABLE ES.2 PROJECTION OF STATE SHARED TRANSPORTATION REVENUE IN STUDY AREA, FY 2009 – 2030
(CURRENT \$ MILLIONS)

Fiscal Years	ADOT (Holbrook and Winslow Sections)	Navajo County (Holbrook Yard)	Holbrook	Winslow	Total
FY 2009 - 2010	\$5.42	\$5.41	\$1.43	\$2.59	\$14.84
FY 2011 - 2020	\$37.32	\$38.11	\$9.84	\$17.82	\$103.09
FY 2021 - 2030	\$60.16	\$61.97	\$15.86	\$28.72	\$166.71
Total	\$102.90	\$105.49	\$27.13	\$49.13	\$284.64

Source: CLA Associates, 2009

SUMMARY OF FINDINGS

- The current roadway system functions at a level of service C and above, with the exception of Navajo Boulevard in Holbrook.
- The Burlington Northern Santa Fe Railway (BNSF) “Transcon” line traverses alongside I-40, passing through the communities of Holbrook and Winslow.
- SR-77 is the primary direct route for southern Navajo County residents to access I-40.
- SR-77 is the only BNSF railroad crossing location that is suitable for travel between I-40 and southern Navajo County.
- SR-377 is the route for Heber-Overgaard residents and SR-260 travelers from Payson to access I-40.
- Freight traffic on SR-377 and SR-77 is a large percentage of traffic on these two routes.
- A master plan for 226,000 acres is being proposed south of I-40 and north of SR-277 within the study area.

- The Central Navajo County study area is projected to grow by more than 13,400 households and 5,200 jobs by Year 2030. Much of this growth is attributed to the 226,000 acre development plan previously identified. This does not include growth for Southern Navajo County or growth anticipated after Year 2030.
- The growth forecasted for Southern Navajo County coupled with the growth in Central Navajo County will degrade mobility and safety within Holbrook along Navajo Boulevard, particularly between the Little Colorado River and I-40.
- Within Holbrook, there is a need for an alternate route/emergency route/freight route from the existing SR-77 (Navajo Boulevard) BNSF railroad crossing.
- Within Winslow, proposed commercial/residential development north of I-40 and industrial development south of the BNSF railroad, each consisting of over 1,200 acres will contribute substantially to the future traffic demands in the study area.
- The City of Winslow Williamson Avenue undercrossing is the primary connection for mobility between Payson and I-40 along SR-87. The undercrossing is narrow and has vertical clearance issues.
- Within Winslow, there is a need for an alternate route/emergency route/freight route from the existing SR-87 to I-40.
- The east and west interchanges that service the City of Winslow have circulation and geometric configuration issues.
- There are opportunities to expand upon the successful regional White Mountain Connection transit service between Holbrook and Show Low.
- Heber-Overgaard is anticipated to experience a significant amount of traffic increases due to regional mobility needs. Long range mobility alternatives are needed to preserve the character of Heber-Overgaard while maintaining acceptable mobility through this portion of Navajo County.
- There is an opportunity to convert the restored Amtrak station in Holbrook to a multi-modal hub servicing Amtrak, Greyhound and the White Mountain Connection.
- The newly restored Downtown, La Posada Hotel and Amtrak Station along with the Winslow Airport in Winslow will continue to serve as a multi-modal transportation hub and they will all serve together as connectors to Reservation lands to the north, Flagstaff to the west, Holbrook to the east and Payson to the south.
- Access management techniques should immediately be implemented in Holbrook and Winslow to preserve system capacity.
- Access management techniques should be implemented study-area wide to preserve investment dollars spent on mobility improvements, enhance safety and improve capacity.
- Transit service between Winslow and Holbrook, and between Winslow and Flagstaff should be explored.

RECOMMENDATIONS

The study findings provided the framework for short-, mid- and long-range mobility improvements. The recommendations are depicted in Figures ES-3 through ES-6 for the greater Study Area, Heber-Overgaard, the City of Holbrook and the City of Winslow respectively.

FIGURE ES-3 STUDY AREA RECOMMENDATIONS

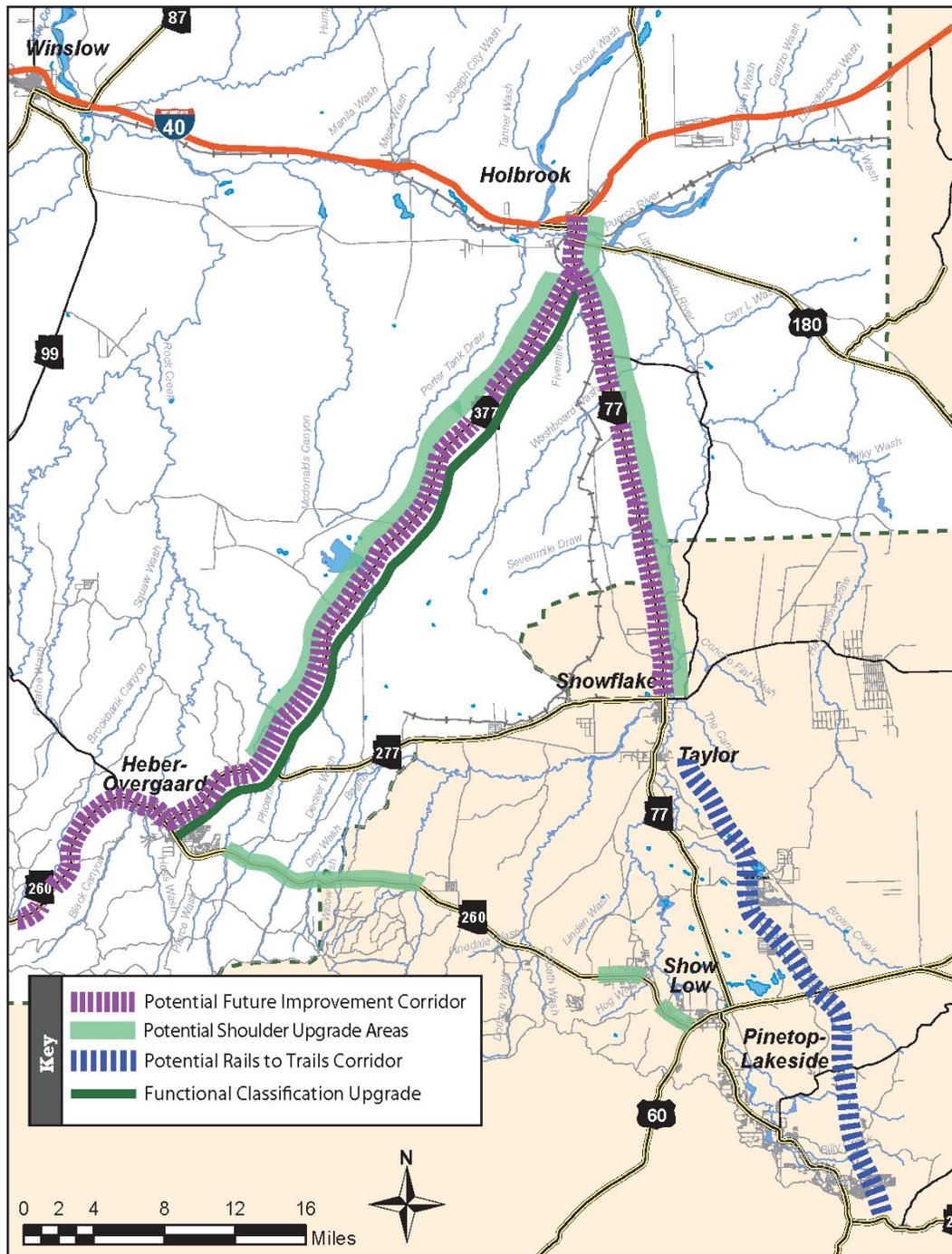


FIGURE ES-5 HOLBROOK AREA RECOMMENDATIONS

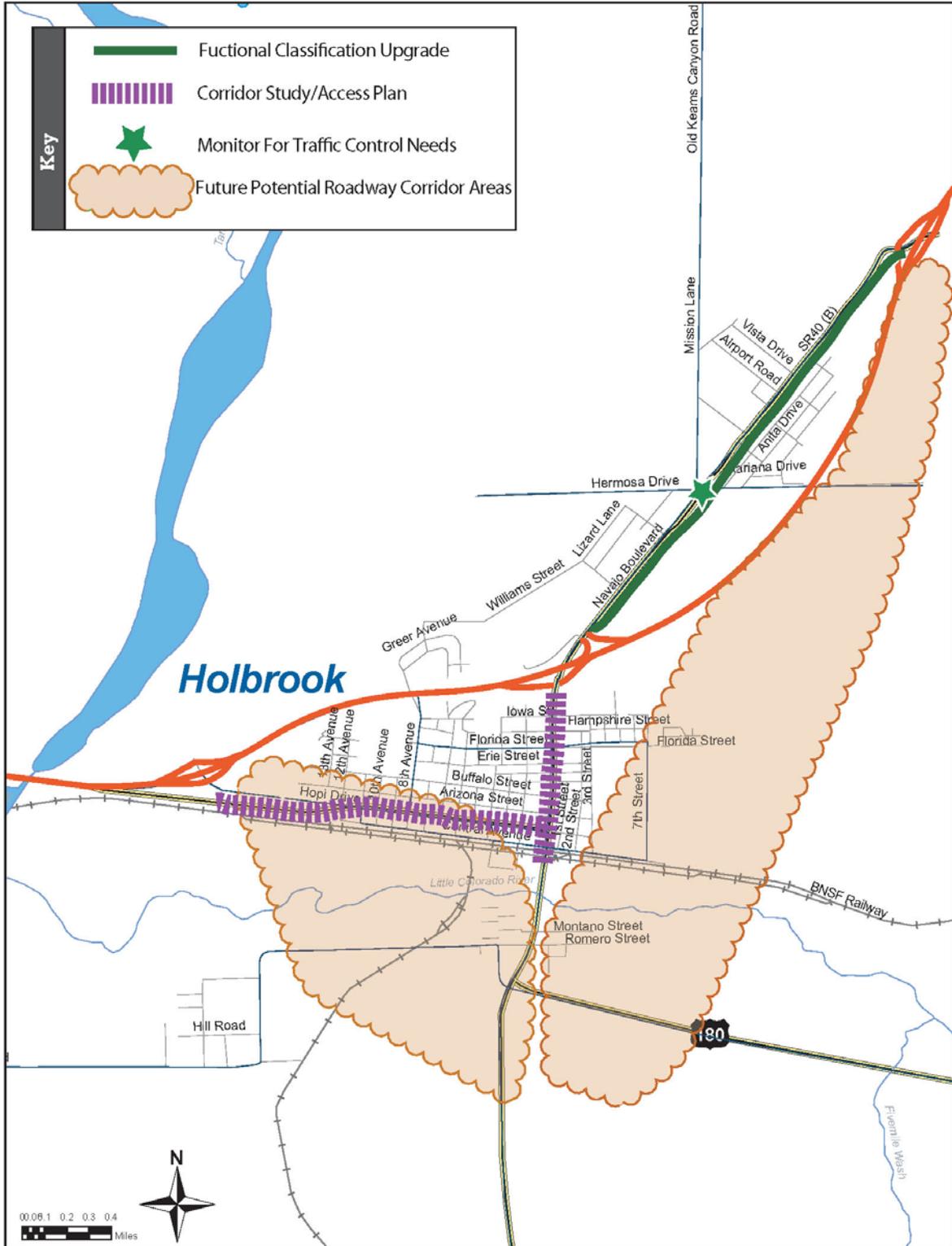
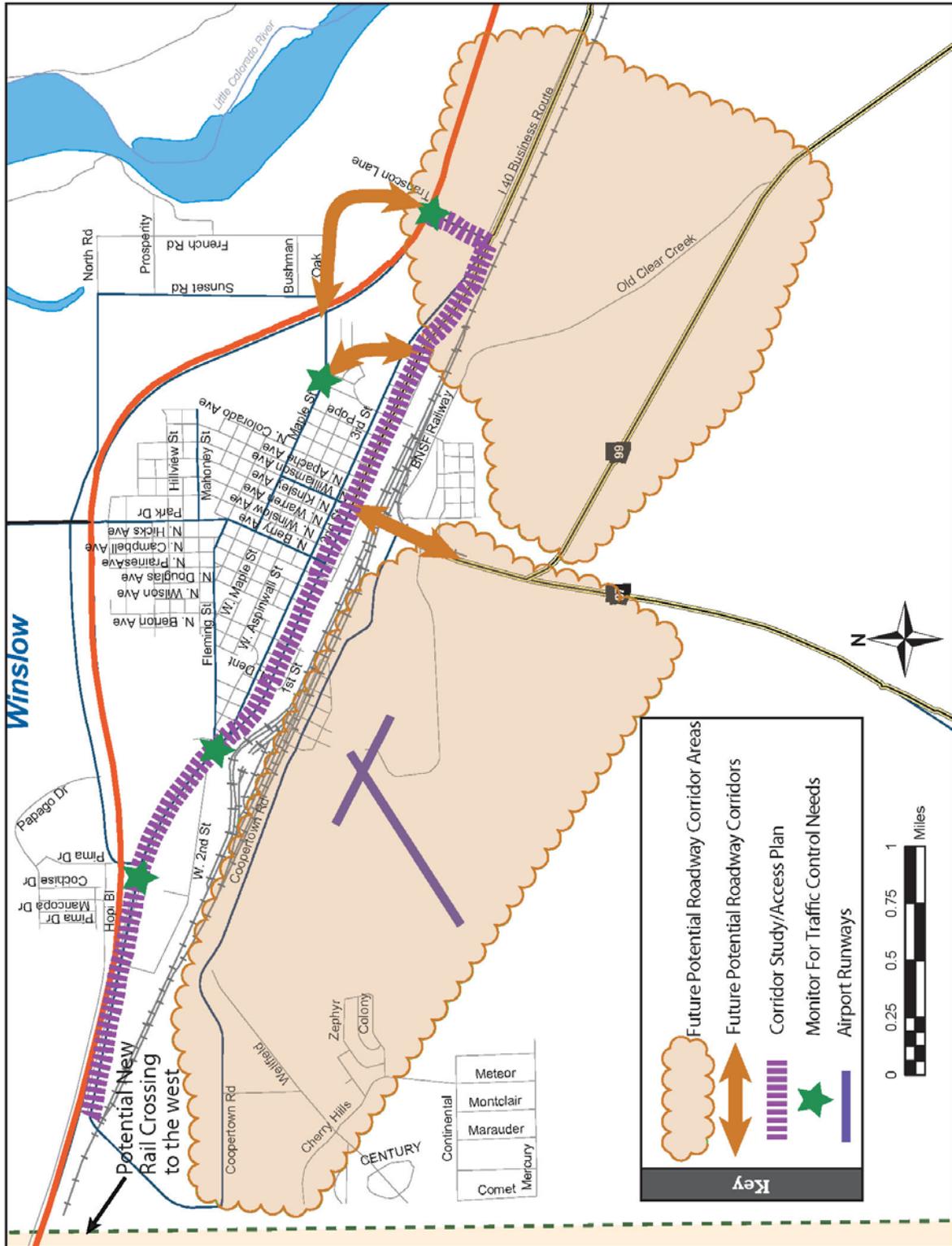


FIGURE ES-6 WINSLOW AREA RECOMMENDATIONS



REGION-WIDE RECOMMENDATIONS

Navajo County, along with the cities of Holbrook and Winslow have opportunities to promote quality design and multi-modal influences as new projects are constructed and development/redevelopment occurs. The following sections provide recommendations regarding programs that can help preserve capital transportation investment functionality by instituting design elements when development occurs.

ACCESS MANAGEMENT

The desired outcomes of access management are highways that:

- Are safer for vehicular and pedestrian traffic;
- Allow motorists to operate vehicles with fewer delays, less fuel consumption, and fewer emissions;
- Provide reasonable access to properties;
- Maintain their functional integrity and efficiency, helping to protect the investment of taxpayer dollars;
- Reflect coordination between land use and transportation decisions; and
- Are used for the purposes (functions) for which they are designed.

ARIZONA ACCESS MANAGEMENT

Access permitting is currently carried out pursuant to Arizona Revised Statutes (ARS) §28-7053, which prohibits unauthorized encroachments in state highways. For an encroachment to be lawful, it must be authorized by the State DOT Director. The Director has adopted administrative rules (regulations) governing encroachments. These rules are published as Arizona Administrative Code, R17-3-501 Highway Encroachments and Permits - which includes access connections to state highways. The rule states that each encroachment requires a permit. Permits for driveways (encroachments) onto a state highway may be granted by ADOT's Engineering Districts, a delegation from the Director. Further, in accordance with a policy of the Arizona State Transportation Board, ADOT has been working towards establishing a Statewide Access Management Program which has the intent of preserving the functional integrity of the State Highway System. The Program includes the development of an access management classification system for state highways, and a comprehensive manual to guide the uniform application of access management throughout the State. Upon initiation of the formal rulemaking process, ADOT will then solicit public comment on the Program. The ADOT Intermodal Transportation Division, Traffic Engineering Group oversees the Arizona Access Management Program.

ACCESS MANAGEMENT STRATEGIES

There are three main access management implementation mechanisms. Planning-based approaches typically develop functional classification, roadway system, or corridor based practices that specify access management characteristics. Regulatory methods apply permitting procedures to manage access development. Design-based

approaches define engineering standards and methods. Each separate implementation mechanism is a piece of an overall strategy that makes a successful access management program. Various strategies have differing benefits. A successful Access Management strategy for Navajo County, the City of Holbrook and the City of Winslow should include Planning-, Regulatory- and Design-based strategies to fully protect the transportation infrastructure investments made on the system. It is highly recommended that a study be conducted to identify and develop the best components of an Access Management Program for Navajo County.

SAFETY IMPROVEMENT PROGRAM

An annual Safety Improvement Program should be established to develop a systematic approach for crash mitigation based on reported crash data. A program that allows ADOT, Navajo County and the member cities within Navajo County to access crash records would allow agencies fully understand safety issues.

The Safety Improvement Program should be based on two categories of safety analysis, including the calculated crash rate and the raw number of crashes based on three years of historic crash data. Projects that would be evaluated in the Safety Improvement Program would include those segments and spot locations/intersections that exhibit a higher than average number of crashes compared to similar types of facilities or throughout Navajo County. This Long-Range Transportation Study identified several issues relating to cyclists on SR-260 in Pinetop-Lakeside, extensive wild animal crashes on SR-260 between Heber-Overgaard and Show Low, and left-turn/access crash issues in Holbrook and Winslow.

Each crash location or segment within the Safety Improvement Program would be evaluated based on three years of historic crash data and a field review would be required. The crash data should be summarized in a crash diagram to identify travel direction, crash type, time of day, and severity. The crash diagram will help to identify trends. The field review would examine geometric issues such as pavement width, shoulder width, roadway curvature, lighting condition, roadway stripes (paint), speeds, traffic counts, signs and markers. Additionally, other factors such as pedestrian and/or bicycle use, and driveways should be noted.

The Safety Improvement Program would provide ADOT, Navajo County and member cities a tool to help prioritize capital investments from as small as roadway regulatory signs to geometric improvements.

However; any Access Management or Safety Improvement strategies should include provisions and analysis related to transportation improvements in historic downtown areas. Specifically, how to achieve access management and safety improvement goals on existing roads without destroying the historic character of the roadways, intersections and access drives in high-density historic urban core areas.

IMPLEMENTATION STRATEGY

The transportation needs in this study far outpace the available funds required for proper planning/study, engineering design and implementation. The implementation strategy outlined below provides a systematic method towards project completion.

Navajo County Central Region Transportation Study

Many of the needs identified herein are stemmed from regional and/or localized growth. The City of Holbrook, for example, will see the impacts of growth in Southern Navajo County and the Aztec Land and Cattle Company holdings once they develop. These impacts, due to the limited transportation network, will require coordination between the agencies so to provide a proactive approach of how to manage the anticipated growth. Tables ES.3 through ES.6 summarizes the short-, mid- and long-range transportation plan implementation strategies for the Study Area, the community of Heber-Overgaard, the City of Holbrook and the City of Winslow, respectively.

TABLE ES.3 STUDY AREA IMPLEMENTATION STRATEGY

Study Area Recommendations			
Recommendation	CIP Years 2010 - 2014	Years 2015-2020	Years 2020-2030
SR-77 Corridor between Snowflake and Holbrook - Passing Lanes - Shoulder Improvements	Conduct Corridor Evaluation	Conduct DCR Implementation	Implementation
SR-87 Corridor between Payson and Winslow - Passing Lanes - Additional BNSF Crossing - Shoulder Improvements	Conduct Corridor Evaluation	Conduct DCR Implementation	Implementation
SR-377 Corridor between Heber Overgaard and Holbrook - Geometric Improvements - Horizontal/Vertical Curves - Shoulder Improvements	Conduct Corridor Evaluation	Conduct DCR Implementation	Implementation
SR-277 Corridor Between Heber-Overgaard and SR-377	Conduct Corridor Evaluation in conjunction with Heber-Overgaard North Side Alternative Route Study		
SR-277 Corridor Between Heber-Overgaard and SR-377		Evaluate Turn Lanes at major intersections	
SR-260 Corridor between Heber-Overgaard and Show Low	Conduct Corridor Evaluations	Implementation	Implementation
SR-77/SR-377 Intersection Evaluation	Monitor for Signal Warrant	Conduct Intersection Upgrade Evaluation	
SR-277/SR-377 Intersection Evaluation		Monitor for Signal Warrant	Conduct Intersection Upgrade Evaluation
Heber-Overgaard to Show Low Transit Service	Conduct Transit Needs/Connectivity Assessment	Conduct Transit Needs/Connectivity Assessment	Conduct Transit Needs/Connectivity Assessment
Southern Navajo County Rails to Trails Corridor	Conduct Preliminary Study and Identify funding partners	Implementation	
Transportation Plan		Conduct Update (PARA)	Conduct Update (PARA)
Require Traffic Impact Assessments for all major developments with traffic generation greater than 100 trips during the day	Implementation		

Source: Wilson & Company, Inc.

Table ES.4 Heber Overgaard Implementation Strategy

Heber-Overgaard Area Recommendations			
Recommendation	CIP Years 2010 - 2014	Years 2015-2020	Years 2020-2030
Conduct North Side Alternative Route Study	Conduct Corridor Routes Evaluation (PARA)	Conduct DCR	Implementation
Heber-Overgaard to Show Low Transit Service	Conduct Transit Needs/Connectivity Assessment	Conduct Transit Needs/Connectivity Assessment	Conduct Transit Needs/Connectivity Assessment
Conduct Walkability Assessments	As Needed	As Needed	As Needed
SR-260/SR-277 Intersection	Monitor for Signal Warrants	Monitor for Signal Warrants	Monitor for Signal Warrants
Require Traffic Impact Assessments for all major developments with traffic generation greater than 100 trips during the day	Implementation*		

Source: Wilson & Company, Inc.

If a northern alternative route is not pursued, then the following improvements are recommended

Recommendation	CIP Years 2010 - 2014	Years 2015-2020	Years 2020-2030
SR-277 Corridor Between Heber-Overgaard and SR-377	Evaluate Turn Lanes at major intersections		
SR-277 Corridor Between Heber-Overgaard and SR-377	Conduct Corridor Evaluation - potential 5-lane corridor	Conduct DCR	Implementation
SR-260/SR-277 Intersection Evaluation	Monitor for Signal Warrant	Conduct Intersection Upgrade Evaluation	
SR-277/SR-377 Intersection Evaluation		Monitor for Signal Warrant	Conduct Intersection Upgrade Evaluation

Source: Wilson & Company, Inc.

TABLE ES.5 CITY OF HOLBROOK AREA IMPLEMENTATION STRATEGY

City of Holbrook Area Recommendations			
Recommendation	CIP Years 2010 - 2014	Years 2015-2020	Years 2020-2030
Navajo Boulevard Corridor Assessment	Conduct Corridor Evaluation (PARA) Implementation	Implementation	
Navajo Boulevard Corridor Traffic Counts	Monitor for improvement triggers	Monitor for improvement triggers	Monitor for improvement triggers
Hopi Drive Corridor Assessment	Conduct Corridor Evaluation (PARA) Implementation	Implementation	
ADA Walkability Assessment	Conduct Corridor Evaluation (PARA) Implementation	Implementation	
Bicycle Guide Signing Program	Conduct Assessment Implementation		
Holbrook Amtrak Station/Multi-Modal Hub	Conduct Assessment (PARA)	Develop Holbrook Station	
SR-77/SR-377 Intersection	Monitor for Signal Warrant	Monitor for Signal Warrant Conduct Intersection Upgrade Evaluation	
SR-77/US-180 Intersection	Monitor for Signal Warrant		
Alternative Route/Rail/River Crossing	Conduct Assessment (PARA)	Conduct DCR	Implementation Shift trucks to new route
Require Traffic Impact Assessments for all major developments with traffic generation greater than 100 trips during the day	Implementation*		

Source: Wilson & Company, Inc.

If traffic volumes increase beyond 14,000 vehicles per day on Navajo Boulevard, and no alternative routes are in place and will not be in place within 5 years, the following recommendations should be considered:

- 1) Complete an Access Control Plan for Navajo Boulevard to include:
 - a. Access closure/consolidation
 - b. Install median treatments
 - c. Prohibit left-turns from Navajo Boulevard except at existing signalized intersections
 - d. Extend northbound SR-77 left-turn lane to Hopi Drive
 - e. Conduct corridor traffic signal synchronization
 - f. Do not install additional traffic signals on Navajo Boulevard Corridor as traffic operations will degrade.

TABLE ES.6 CITY OF WINSLOW IMPLEMENTATION STRATEGY

Winslow Area Recommendations			
Recommendation	CIP Years 2010 - 2014	Years 2015-2020	Years 2020-2030
North/South Movement Study (rail crossing)	Conduct Study (2010 PARA)	Conduct DCR	Implementation Shift trucks to new route
Conduct 2nd/3rd Streets Corridor Assessment	Conduct Corridor Evaluation	Implementation	Implementation
Transcon Lane and Truck Stop access Improvements	Conduct Evaluation Implementation		
Bicycle Guide-Signing	Determination and Implementation		
Williamson Avenue Undercrossing	Conduct Preliminary Engineering Study	Conduct DCR	Implementation
Hipkoe Drive Interchange	Conduct focused circulation assessment	Conduct Preliminary Engineering Study	Implementation
Coopertown Road Improvements	Conduct Preliminary Engineering Study Implementation	Implementation	
Require Traffic Impact Assessments for all major developments with traffic generation greater than 100 trips during the day	Implementation*		
Examine feasibility for Winslow to Holbrook and Winslow to Flagstaff transit service through White Mountain Connection and Mountain Lion transit service providers, respectively.	Conduct Evaluations Implementation		

Source: Wilson & Company, Inc.