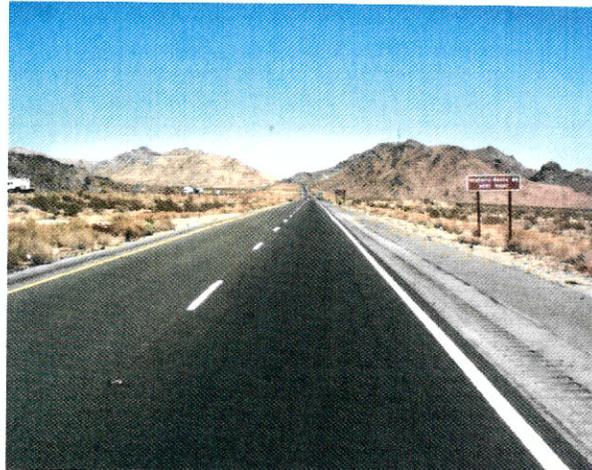
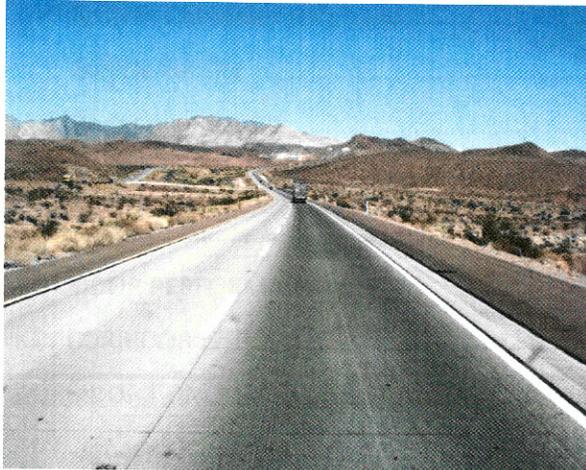
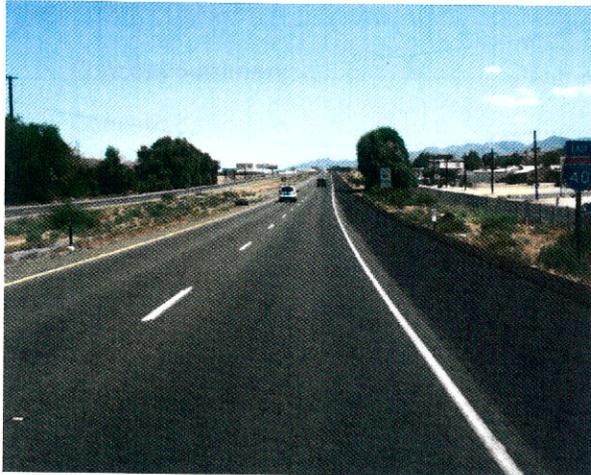




Transportation Concept Report
Interstate 40
District 8



Disclaimer: The information and data contained in this document are for planning purposes only and should not be relied upon for final design of any project. Any information in this Transportation Concept Report (TCR) is subject to modification as conditions change and new information is obtained. Although planning information is dynamic and continually changing, the District 8 System Planning Division makes every effort to ensure the accuracy and timeliness of the information contained in the TCR. The information in the TCR does not constitute a standard, specification, or regulation, nor is it intended to address design policies and procedures.

California Department of Transportation

Mission: Provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

Approvals:


 RAY I. DESSELLE
 Deputy District Director
 Planning

06/22/16
 Date


 JOHN BULINSKI
 District Director

6/23/16
 Date

TABLE OF CONTENTS

About the Transportation Concept Report.....	1
Stakeholder Participation	1
EXECUTIVE SUMMARY	2
Concept Summary	2
Concept Rationale	2
Proposed Projects and Strategies	2
CORRIDOR OVERVIEW	3
Route Segmentation	3
Route Description.....	5
Community Characteristics	7
Land Use.....	7
System Characteristics	8
Bicycle Facility	8
Pedestrian Facility	9
Transit Facility	9
Freight	10
CORRIDOR PERFORMANCE	11
KEY CORRIDOR ISSUES	11
CORRIDOR CONCEPT.....	12
Concept Rationale	12
Planned and Programmed Projects and Strategies	12
Projects and Strategies to Achieve Concept	12
Appendices.....	13
Appendix A: Glossary of Terms and Acronyms	13
Definitions.....	14
Appendix B: Factsheets	18
Appendix C: Additional Corridor Data.....	18
Appendix D: Resources	18
Appendix E: System Planning Flow Chart.....	19

ABOUT THE TRANSPORTATION CONCEPT REPORT

System Planning is the long-range transportation planning process for the California Department of Transportation (Caltrans). The System Planning process fulfills Caltrans' statutory responsibility as owner/operator of the State Highway System (SHS) (Gov. Code §65086) by evaluating conditions and proposing enhancements to the SHS. Through System Planning, Caltrans focuses on its mission to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability.

The System Planning process (See Appendix E: System Planning Flow Chart) is primarily composed of four parts: the District System Management Plan (DSMP), the Transportation Concept Report (TCR), the Corridor System Management Plan (CSMP), and the DSMP Project List. The district-wide **DSMP** is strategic policy and planning document that focuses on maintaining, operating, managing, and developing the transportation system. The **TCR** is a planning document that identifies the existing and future route conditions as well as future needs for each route on the SHS. The **CSMP** is a complex, multi-jurisdictional planning document that identifies future needs within corridors experiencing or expected to experience high levels of congestion. The CSMP serves as a TCR for segments covered by the CSMP. The **DSMP Project List** is a list of planned and partially programmed transportation projects used to recommend projects for funding. These System Planning products are also intended as resources for stakeholders, the public, and partner, regional, and local agencies.

TCR Purpose

California's State Highway System needs long-range planning documents to guide the logical development of transportation systems as required by CA Gov. Code §65086 and as necessitated by the public, stakeholders, and system users. The purpose of the TCR is to document the evaluation of current and projected conditions along the route and to communicate the vision for the development of the route in each Caltrans District during a 20-25 year planning horizon. The TCR is developed with the goals of increasing safety and health; providing good stewardship and system efficiency; making Smart Mobility decisions that sustainably improve the environment and a vibrant economy; and providing reliable and accessible mobility options through an integrated management of the transportation network, including the highway, transit, pedestrian, bicycle, freight, operational improvements, and travel demand management components of the corridor.

STAKEHOLDER PARTICIPATION

The Interstate Route 40 TCR involved a collaboration between agency staff as well as outside stakeholders from local, county and regional public agencies, advocacy organizations, nonprofits and community members at large. Feedback from the stakeholders helped solidify the findings of the performance assessment, bottleneck identification, and causality analysis given their intimate knowledge of local conditions. Moreover, stakeholders have provided support and insight, and shared valuable field and project data without which this study would not have been possible. The stakeholders included representatives from the following organizations: Southern California Association of Governments, San Bernardino Associated Governments, County of San Bernardino, and Native American tribes.

EXECUTIVE SUMMARY

Interstate Route 40 (I-40) is an east-west, transcontinental freeway that begins at its junction with Interstate 15 (I-15) in the city of Barstow, California and terminates near the east coast in Wilmington, North Carolina. In District 8, I-40 begins at its junction with I-15 traverses desert terrain with few services, residents, and businesses, connects with U. S. Highway 95 (US-95), and crosses the Colorado River at the California-Arizona state line. Heavy-duty truck comprise a high level of the daily traffic, 37 to 54 percent.

CONCEPT SUMMARY

Seg.	Segment Description	Existing Facility	2035						
			Capital Facility Concept	System Operations and Management Concept	No-Build		Planned SCAG-RTP		Minimum to attain LOS "D"
1	I-15 to Main Street	4L, F	4L, F	Maintain only	4MF		4MF		
					V/C	LOS	V/C	LOS	
					0.43	B	0.43	B	
2	Main Street to A Street	4L, F	4L, F	Maintain only	4MF		4MF		4MF
					V/C	LOS	V/C	LOS	
					0.42	B	0.42	B	
3	A Street to Goff's Road	4L, F	4L, F	Maintain only	4MF		4MF		4MF
					V/C	LOS	V/C	LOS	
					0.34	B	0.34	A	
4	Goff's Road to US-95 North	4L, F	4L, F	Maintain only	4MF		4MF		4MF
					V/C	LOS	V/C	LOS	
					0.32	A	0.32	A	
5	US-95 North to US-95 South	4L, F	4L, F	Maintain only	4MF		4MF		4MF
					V/C	LOS	V/C	LOS	
					0.38	B	0.38	B	
6	US-95 South to Arizona State Line	4L, F	4L, F	Maintain only	4MF		4MF		4MF
					V/C	LOS	V/C	LOS	
					0.27	A	0.27	A	

Source: Caltrans District 8 District System Management Plan Update, 2016

F = Freeway
L = Number of mainline lanes

MF = Mixed-Flow Lane
MFE = Mixed-Flow Equivalent Lane
LOS = Level of Service
V/C = Volume to Capacity Ratio

CONCEPT RATIONALE

The corridor concept serves as a guide for long-range planning of route improvements. No capacity improvements are needed to maintain the concept LOS "D" through 2035.

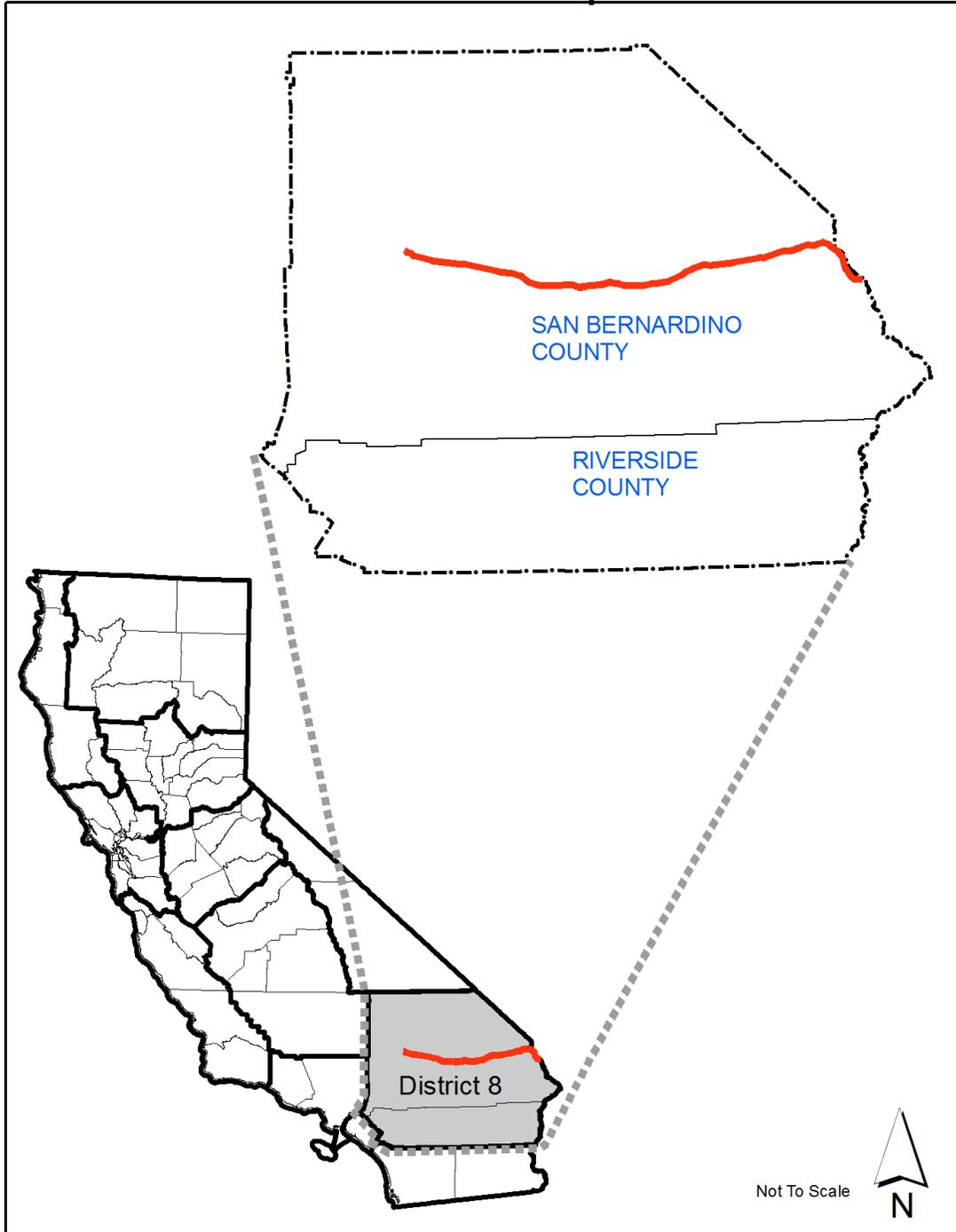
PROPOSED PROJECTS AND STRATEGIES

Several projects are programmed to preserve and maintain I-40.

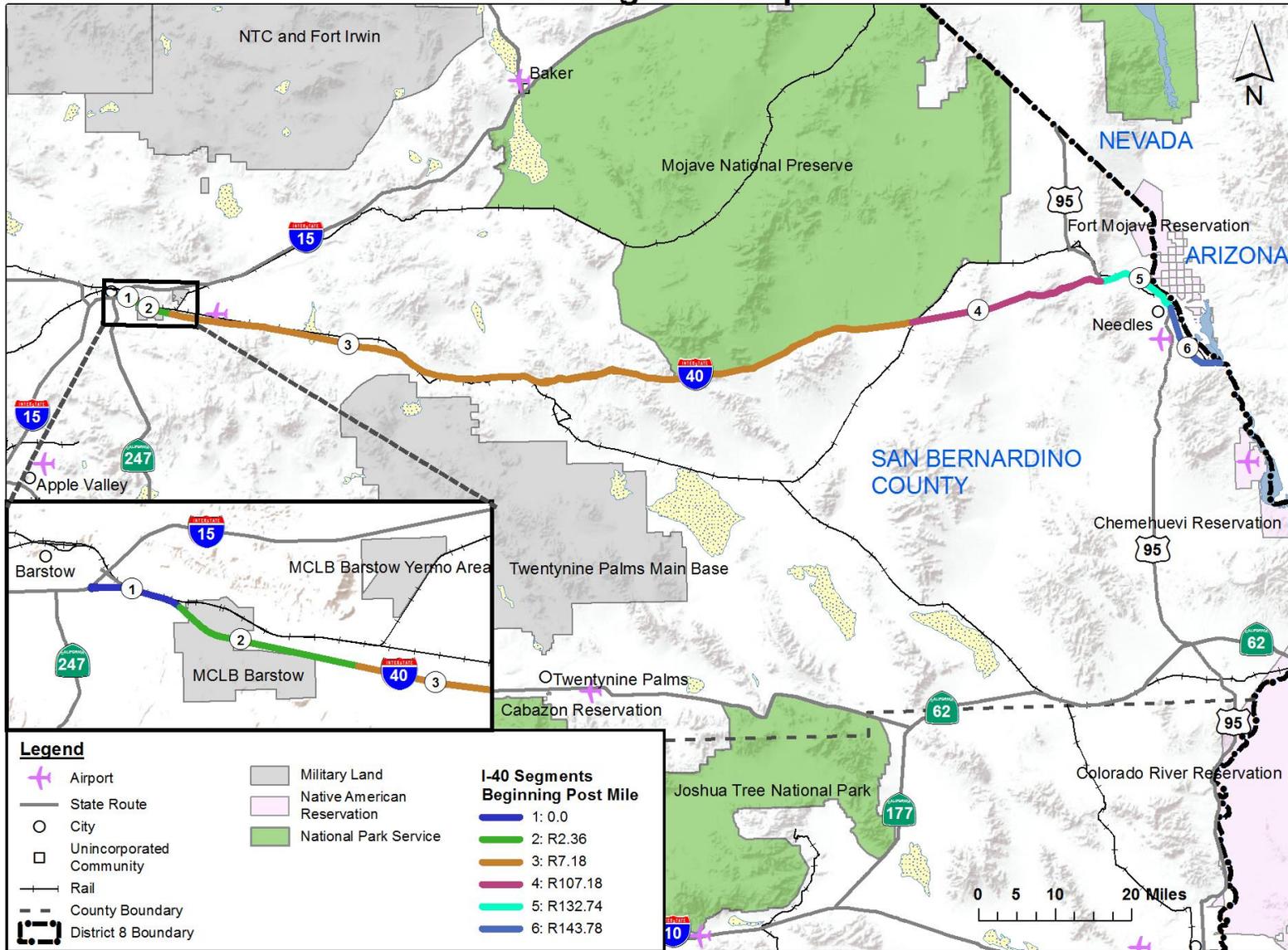
CORRIDOR OVERVIEW

ROUTE SEGMENTATION

I-40 Location Map



I-40 Segment Map



Segment	Location Description	County_Route_ Begin PM	County_Route_ End PM
1	I-15 to Main Street	SBD_40_0.0	SBD_40_R2.36
2	Main Street to A Street	SBD_40_R2.36	SBD_40_R7.18
3	A Street to Goff's Road	SBD_40_R7.18	SBD_40_R107.18
4	Goff's Road to US-95 North	SBD_40_R107.18	SBD_40_R132.74
5	US-95 North to US-95 South	SBD_40_R132.74	SBD_40_R143.78
6	US-95 South to Arizona State Line	SBD_40_R143.78	SBD_40_R154.64

ROUTE DESCRIPTION

Route Location

I-40 is located in the south eastern part of California. Within California, it is 154.64 miles long and traverses the cities of Barstow and Needles.

Route Purpose

I-40 serves as a corridor for goods movement and long-distant travelers heading east to the Midwest or East Coast. I-40 is inter-regional route connecting cities and towns in Southern California with California's Central Valley via SR-58, and the Riverside-San Bernardino Urbanized Area via I-10, SR-60, and SR-91. I-40 serves local desert residents who need to access services in Barstow or Needles and travelers going to Laughlin or Lake Havasu City. Many public land recreation opportunities are available along the route.

Major Route Features

In District 8, the entire length of I-40 is a four-lane, divided Freeway. I-40 is mostly straight with significant grades over several mountain passes. There are long distances between interchanges on the route due to its rural nature.

Route Designations and Characteristics

Segment #	1	2	3
Freeway & Expressway System	Yes	Yes	Yes
National Highway System	Yes	Yes	Yes
Strategic Highway Network	No	No	No
Scenic Highway	No	No	No
Interregional Road System	Yes	Yes	Yes
High Emphasis	Yes	Yes	Yes
Focus Route	No	No	No
Federal Functional Classification	Interstate	Interstate	Interstate
Goods Movement Route	Yes	Yes	Yes
Truck Designation	National Network Route (STAA)	National Network Route (STAA)	National Network Route (STAA)
Rural / Urban / Urbanized	Urban/Rural	Rural	Rural
Metropolitan Planning Organization	SCAG	SCAG	SCAG
Regional Transportation Planning Agency	SCAG	SCAG	SCAG
Congestion Management Agency	SANBAG	SANBAG	SANBAG
County Transportation Commission	SANBAG	SANBAG	SANBAG
Local Agency	City of Barstow	San Bernardino County	San Bernardino County
Tribes	Los Coyotes Band of Cahuilla & Cupeña Indians	Los Coyotes Band of Cahuilla & Cupeña Indians	None
Air District	MDAQMD	MDAQMD	MDAQMD
Terrain	Level	Level	Level

Segment #	4	5	6
Freeway & Expressway System	Yes	Yes	Yes
National Highway System	Yes	Yes	Yes
Strategic Highway Network	No	No	No
Scenic Highway	No	No	No
Interregional Road System	Yes	Yes	Yes
High Emphasis	Yes	Yes	Yes
Focus Route	No	No	No
Federal Functional Classification	Interstate	Interstate	Interstate
Goods Movement Route	Yes	Yes	Yes
Truck Designation	National Network Route (STAA)	National Network Route (STAA)	National Network Route (STAA)
Rural / Urban / Urbanized	Rural	Urban/Rural	Rural
Metropolitan Planning Organization	SCAG	SCAG	SCAG
Regional Transportation Planning Agency	SCAG	SCAG	SCAG
Congestion Management Agency	SANBAG	SANBAG	SANBAG
County Transportation Commission	SANBAG	SANBAG	SANBAG
Local Agency	San Bernardino County	City of Needles	San Bernardino County
Tribes	Fort Mojave Indian Reservation		
Air District	MDAQMD	MDAQMD	MDAQMD
Terrain	Level	Level	Level

COMMUNITY CHARACTERISTICS

Jurisdiction	Barstow	Needles
Total Population	22,639	4,844
Median Income	\$45,166	\$31,226
Drive Alone to Work	66.7%	83.5%

Source: 2010 U.S. Census

In District 8, Barstow and Needles are the only incorporated cities along the rural I-40 and are classified as urban areas by the US Census Bureau. The unincorporated communities of Daggett and Newberry Springs are located along the western portion of I-40 and with no residential communities located between Newberry Springs, near the City of Barstow and the City of Needles, approximated 140 miles east at the California-Arizona state line.

Barstow in San Bernardino County is the largest city along I-40 in District 8 and was incorporated in 1947. The city restaurants, hotels, and single family homes. The population density from the 2010 census is 565.9 people per square mile. It is home to the U.S. Army National Training Center at Fort Irwin, the Marine Corps Logistics Base, NASA's Goldstone Deep Space Network, and a Burlington Northern Santa Fe (BNSF) railroad classification yard. The city has many outlet shopping stores for tourists. The historic Harvey House Railroad Depot is the Amtrak Station for Barstow and is the home to the Western America Rail Road Museum as well as other business services.

I-40 bisects the Marine Corps Logistics Base in Barstow and is close to the Barstow Yermo Area Marine Corps Logistic Base. These logistics bases houses military personnel for the coordination and movement of military supplies.

Needles is the second largest city along I-40 in District 8 and celebrated 100 years of incorporation in 2013. The city has restaurants, hotels, and single family homes. The population density from the 2010 census is 154.9 people per square mile. The city boasts being a gateway to California. Historical Route 66 runs though the city. The Fort Mojave Indian Tribe is a federally designated tribe in the area. The Santa Fe Railroad runs though the city carrying goods from California to the east. The BNSF Railroad has a hub in the city. The historic El Garces Hotel/Santa Fe Depot in Needles was recently renovated and is the intermodal transportation center for Amtrak, regional, and local bus lines.

LAND USE

Most of the land along I-40 is either undeveloped desert lands with a few rural communities. Barstow and Needles have residential communities near the Freeway. The Mojave National Preserve is located next to I-40. Much of the land along I-40 is owned by the U.S. Bureau of Land Management. No major growth is anticipated along the corridor.

SYSTEM CHARACTERISTICS

Segment #	1	2	3	4	5	6
Existing Facility						
Facility Type	Freeway	Freeway	Freeway	Freeway	Freeway	Freeway
General Purpose Lanes	4	4	4	4	4	4
Lane Miles	9.44	19.28	400	102.24	44.16	43.44
Centerline Miles	2.36	4.82	100	25.56	11.04	10.86
HOV Lanes	0	0	0	0	0	0
HOT/ Express Lanes	0	0	0	0	0	0
Concept Facility 2035						
Facility Type	F	F	F	F	F	F
General Purpose Lanes	4	4	4	4	4	4
Lane Miles	9.44	19.28	400	102.24	44.16	43.44
Centerline Miles	2.36	4.82	100	25.56	11.04	10.86
HOV Lanes	0	0	0	0	0	0
HOT/ Express Lanes	0	0	0	0	0	0
TMS Elements						
TMS Elements 2008	N/A	N/A	N/A	N/A	N/A	N/A
TMS Elements 2035	N/A	N/A	N/A	N/A	N/A	N/A

I-40 within District 8 is a four-lane divided Freeway with standard shoulders and rumble strips.

BICYCLE FACILITY

Segment	Bicycle Access Prohibited	Facility Type
1	No	No designated facility
2	Yes/No	No designated facility
3	Yes (temporary)/No	No designated facility
4	Yes (temporary)/Yes	No designated facility
5	Yes/No	No designated facility
6	Yes/No	No designated facility

Bicycles are allowed along several segments of I-40. Bicycles are allowed in both directions along Segment 2 from Main Street to Nebo Street, Segments 4-5 from Mountain Springs Road to Park Road, and Segment 6 from 5 Mile Road to the Arizona State Line.

Due to poor bridge conditions on Historical Route 66, the parallel alternative route for I-40, bicyclists are allowed to ride on the shoulder of some sections of I-40 Segments 3 and 4 until Route 66 is repaired. The temporary sections on I-40 include both directions from Fort Cady Road to Crucero Road and Kelbaker Road to Mountain Springs Road.

PEDESTRIAN FACILITY

Segment	Pedestrian Access Prohibited	Sidewalk Present
1	Yes	No
2	Yes	No
3	Yes	No
4	Yes	No
5	Yes	No
6	Yes	No

I-40 is a Freeway, pedestrian access is prohibited.

TRANSIT FACILITY

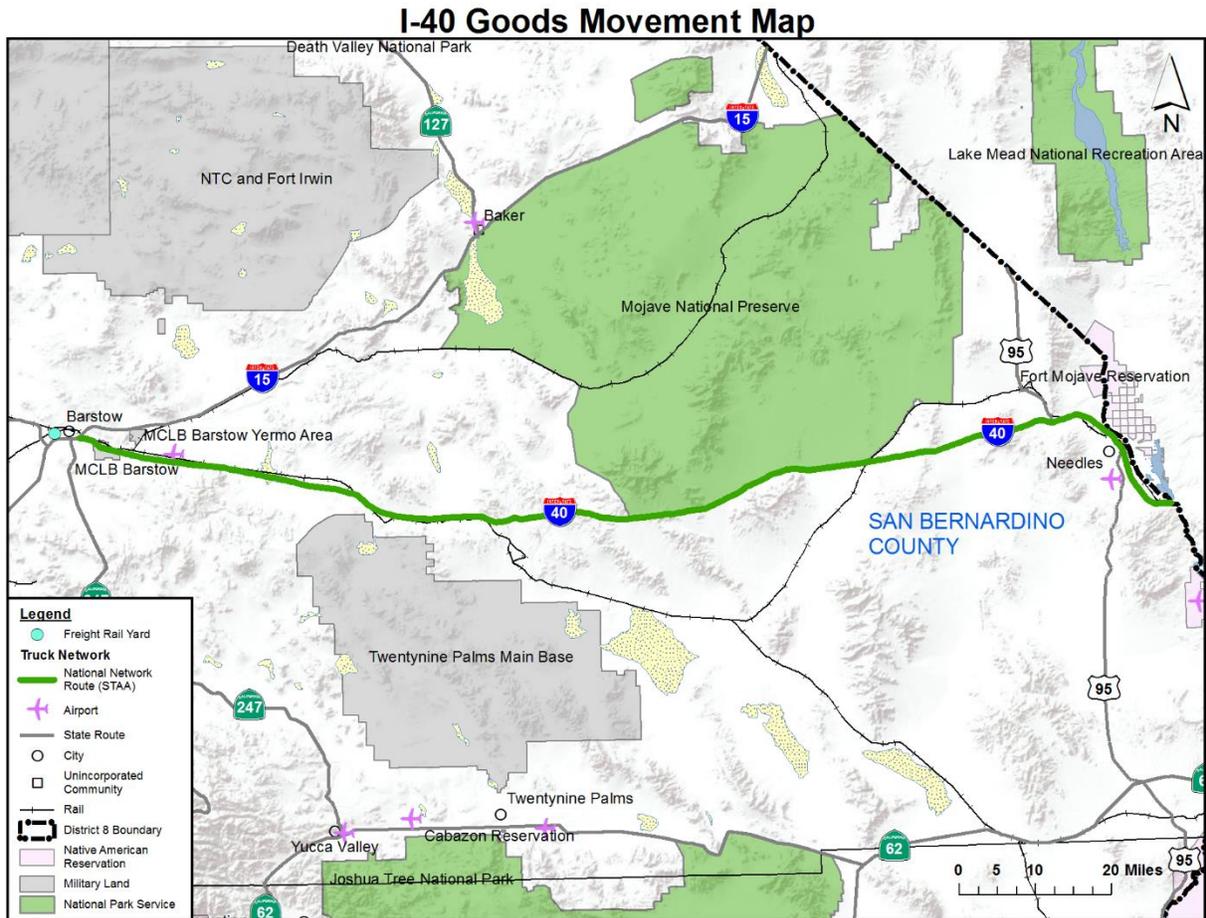
Segment	Mode & Collateral Facility	Name	Route End Points	Operating Period	Station Cities	Bikes Allowed On Transit	Location Description	# Parking Spaces*
1	Train	Amtrak	Los Angeles and Chicago	Daily	Barstow	No	N/A	N/A
5	Traditional Bus	Needles Area Transit	G Street at Broadway	7am – 7pm weekdays; 10am-2pm Saturday	Needles	2	N/A	N/A
5	Train	Amtrak	Los Angeles and Chicago	Daily	Needles	No	N/A	N/A

Needles Area Transit is the transit agency for I-40 in Needles. All buses are equipped with bike racks that can hold two bicycles and wheelchair lifts. Buses run once an hour. Deviations from the fixed-route service are available by request.

Amtrak's Southwest Chief is a train line that runs from Los Angeles to Chicago. Trains run once a day in each direction with many stops along the route.

FREIGHT

Freight generators, terminals, and/or inter-modal facilities are not present along I-40 within District 8. However, I-40 has high truck volumes due to interstate goods movement from Los Angeles and California's Central Valley to the rest of the country.



CORRIDOR PERFORMANCE

Traffic volumes on I-40 are expected to increase substantially over the next 20 years. Even with the forecasted increase in traffic volumes, the LOS is expected to stay the same on all segments.

Segment #	1	2	3	4	5	6
Basic System Operations						
AADT 2008	19,500	17,800	14,100	13,200	15,800	13,800
AADT 2035	36,300	34,200	39,300	28,900	35,900	29,300
LOS Method	HCM	HCM	HCM	HCM	HCM	HCM
LOS 2008	B	B	B	A	B	A
LOS 2035	B	B	B	A	B	A
LOS Concept	D	D	D	D	D	D
VMT 2008	46,000	85,800	1,410,000	337,400	174,400	149,900
VMT 2035	85,700	164,800	3,930,000	738,700	396,300	318,200
Truck Traffic						
Total Average Annual Daily Truck Traffic (AADTT) 2008	7,800	6,590	6,060	5,680	7,110	7,470
Total Average Annual Daily Truck Traffic (AADTT) 2035	19,000	17,470	17,040	16,890	18,300	17,660
Total Trucks (% of AADT) 2008	40%	37%	43%	43%	45%	54%
Total Trucks (% of AADT) 2035	52%	51%	58.2%	58%	51%	60%
5+ Axle Average Annual Daily Truck Traffic (AADTT) 2008	6,380	5,110	4,920	5,020	4,330	5,230
5+ Axle Trucks (% of AADTT) 2008	32.7%	28.7%	34.8%	38%	27.4%	37.9%
Peak Hour Traffic Data						
Peak Hour Directional Split 2008	68%	68%	67%	67%	67%	67%
Peak Hour Directional Split 2035	50%	51%	50%	50%	51%	50%
Peak Hour % 2008	11%	12%	12%	13%	12%	9%
Peak Hour % 2035	8.6%	8.4%	7.9%	7.7%	7.5%	6.5%
Peak Hour V/C 2008	0.35	0.38	0.31	0.29	0.34	0.22
Peak Hour V/C 2035	0.43	0.42	0.34	0.32	0.38	0.27

Source: Caltrans District 8 Forecast Unit forecast based on SCAG 2012 RTP traffic model

KEY CORRIDOR ISSUES

There are no key issues.

CORRIDOR CONCEPT

CONCEPT RATIONALE

The corridor concept serves as a guide for long range planning of route improvements. No capacity improvements are needed to maintain the concept LOS “D” through 2035.

PLANNED AND PROGRAMMED PROJECTS AND STRATEGIES

Seg.	Description	Planned or Programmed	Location	Source
1-6	Roadway Rehabilitation	Programmed	All Segments	SCAG 2012 RTP
1-6	Emergency Relief Storm Damage	Programmed	All Segments	SCAG 2012 RTP
5	Bridge Preservation	Programmed	Near Needles	SCAG 2012 RTP

Several projects are programmed to preserve and maintain I-40.

PROJECTS AND STRATEGIES TO ACHIEVE CONCEPT

No projects or strategies are proposed for I-40.

APPENDICES

APPENDIX A: GLOSSARY OF TERMS AND ACRONYMS

Acronyms

- AADT** – Annual Average Daily Traffic
- AADTT** – Annual Average Daily Truck Traffic
- ADT** – Average Daily Traffic
- AQMD** – Air Quality Management District
- Caltrans** – California Department of Transportation
- CMA** – Congestion Management Plan
- CSS** – Context Sensitive Solutions
- FHWA** – Federal Highway Administration
- GHG** – Green House Gas
- HCM** – Highway Capacity Manual
- HCP** – Habitat Conservation Plan
- HCS** – Highway Capacity Software
- HOV** – High Occupancy Vehicle Lane (2 or more occupants per vehicle)
- HOT** – High Occupancy Toll Lane
- IC** – Interchange
- ITS** – Intelligent Transportation System
- LOS** – Level of Service
- MF** – Mixed-Flow Lane
- MFE** – Mixed-Flow Lane Equivalent
- ML** – Managed Lane
- MPO** – Metropolitan Planning Organizations
- NOA** – Naturally Occurring Asbestos
- NCCP** – Natural Community Conservation Plan
- OC** – Overcrossing
- PID** – Project Initiation Document
- PM** – Post Mile
- PSR** – Project Study Report
- RCTC** – Riverside County Transportation Commission
- Riv** – Riverside County
- RTP** – Regional Transportation Plan
- RTIP** – Regional Transportation Improvement Program
- RTPA** – Regional Transportation Planning Agency
- SANBAG** – San Bernardino Associated Governments
- SBd** – San Bernardino County
- SCAG** – Southern California Association of Governments
- SCS** – Sustainable Community Strategies
- SHOPP** – State Highway Operation Protection Program
- STIP** – State Transportation Improvement Program
- T** – Truck Lane
- TDM** – Transportation Demand Management
- TMS** – Transportation Management System
- TSN** – Transportation System Network
- UC** – Undercrossing
- V/C** – Volume to Capacity Ratio
- VMT** – Vehicle Miles Traveled

Definitions

Annual Average Daily Traffic (AADT) – Annual Average Daily Traffic is the total volume for the year divided by 365 days. The traffic count year is from October 1st through September 30th. Traffic counting is generally performed by electronic counting instruments moved from location throughout the State in a program of continuous traffic count sampling. The resulting counts are adjusted to an estimate of annual average daily traffic by compensating for seasonal influence, weekly variation and other variables which may be present. Annual ADT is necessary for presenting a statewide picture of traffic flow, evaluating traffic trends, computing accident rates, planning and designing highways, and other purposes.

Bikeway Class I (Bike Path) – Provides a completely separated right of way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized.

Bikeway Class II (Bike Lane) – Provides a striped lane for one-way bike travel on a street or highway.

Bikeway Class III (Bike Route) – Provides for shared use with pedestrian or motor vehicle traffic.

Capacity – The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic, and control conditions.

Capital Facility Concept – The 20-25 year vision of future development on the route to the capital facility. The capital facility can include capacity increasing, state highway, bicycle facility, pedestrian facility, transit facility (Intercity Passenger rail, Mass Transit Guide way etc.), grade separation, and new managed lanes.

Concept LOS – The minimum acceptable level of service over the next 20-25 years.

Conceptual Project – A conceptual improvement or action is a project that is needed to maintain mobility or serve multimodal users, but is not currently included in a financially constrained plan and is not currently programmed. It could be included in a General Plan or in the unconstrained section of a long-term plan.

Corridor – A broad geographical band that follows a general directional flow connecting major sources of trips that may contain a number of streets, highways, bicycle, pedestrian, and transit route alignments. Off system facilities are included for informational purposes and not analyzed in the TCR.

Facility Concept – Describes the facility and strategies that may be needed within 20-25 years. This can include capacity increasing, state highway, bicycle facility, pedestrian facility, transit facility, non-capacity increasing operational improvements, new managed lanes, conversion of existing managed lanes to another managed lane type or characteristic, TMS field elements, transportation demand management, and incident management.

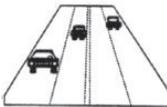
Facility Type – The facility type describes the state highway facility type. The facility could be freeway, expressway, conventional, or one-way city street.

Freight Generator – Any facility, business, manufacturing plant, distribution center, industrial development, or other location (convergence of commodity and transportation system) that produces significant commodity flow, measured in tonnage, weight, carload, or truck volume.

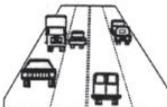
Headway – The time between two successive vehicles as they pass a point on the roadway, measured from the same common feature of both vehicles.

Intelligent Transportation System (ITS) – Improves transportation safety and mobility and enhances productivity through the integration of advanced communications technologies into the transportation infrastructure and in vehicles. Intelligent transportation systems encompass a broad range of wireless and wire line communications-based information and electronics technologies to collect information, process it, and take appropriate actions.

Level of Service (LOS) – It is a qualitative measure describing operational conditions within a traffic stream and their perception by motorists. A LOS definition generally describes these conditions in terms of speed, travel time, freedom to maneuver, traffic interruption, comfort, and convenience. LOS can generally be categorized as follows:



LOS A describes free flowing conditions. The operation of vehicles is virtually unaffected by the presence of other vehicles, and operations are constrained only by the geometric features of the highway.



LOS B is also indicative of free-flow conditions. Average travel speeds are the same as in LOS A, but drivers have slightly less freedom to maneuver.



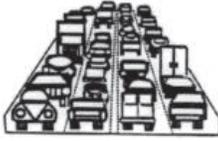
LOS C represents a range in which the influence of traffic density on operations becomes marked. The ability to maneuver with the traffic stream is now clearly affected by the presence of other vehicles.



LOS D demonstrates a range in which the ability to maneuver is severely restricted because of the traffic congestion. Travel speed begins to be reduced as traffic volume increases.



LOS E reflects operations at or near capacity and is quite unstable. Because the limits of the level of service are approached, service disruptions cannot be damped or readily dissipated.



LOS F is a stop and go, low speed conditions with little or poor maneuverability. Speed and traffic flow may drop to zero and considerable delays occur. For intersections, LOS F describes operations with delay in excess of 60 seconds per vehicle. This level, considered by most drivers unacceptable often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection.

Mainline – Includes travelway for through traffic but not freeway to freeway interchanges, local road interchanges, ramps, or auxiliary lanes.

Multimodal – The availability of transportation options using different modes within a system or corridor, such as automobile, subway, bus, rail, or air.

Peak Hour – The hour of the day in which the maximum volume occurs across a point on the highway.

Peak Hour Volume – The hourly volume during the highest hour traffic volume of the day traversing a point on a highway segment. It is generally between six percent and 10 percent of the Annual Daily Traffic (ADT). The lower values are generally found on roadways with low volumes.

PeMS – Caltrans Performance Measurement System is an archived data user service that provides over ten years of data for historical analysis. PEMS provides access to real-time and historical performance data which conducts assessment of freeway performance, base operational decisions on knowledge of the current state of the freeway network, and identifies congestion bottlenecks.

Planned Project – A planned improvement or action is a project in a financially constrained section of a long-term plan, such as an approved Regional or Metropolitan Transportation Plan (RTP or MTP), Capital Improvement Plan, or measure.

Post-25 Year Concept – This dataset may be defined and re-titled at the District's discretion. In general, the Post-25 Year concept could provide the maximum reasonable and foreseeable roadway needed beyond a 20-25 year horizon. The post-25 year concept can be used to identify potential widening, realignments, future facilities, and rights-of-way required to complete the development of each corridor.

Post Mile (PM) – A post mile is an identified point on the State Highway System. The milepost values increase from the beginning of a route within a county to the next county line. The milepost values start over again at each county line. Mile post values usually increase from south to north or west to east depending upon the general direction the route follows within the state. The mile post at a given location will remain the same year after year. When a section of road is relocated, new milepost (usually noted by an alphabetical prefix such as "R" or "M") are established for it. If relocation results in a change in length, "mile post equations" are introduced at the end of each relocated portion so that mile posts on the remainder of the route within the county will remain unchanged.

Programmed Project – A programmed improvement or action is a project in a near-term programming document identifying funding amounts by year, such as the State Transportation Improvement Program or the State Highway Operations and Protection Program.

Route Designation –A route’s designation is adopted through legislation and identifies what system the route is associated with on the State Highway System. A designation denotes what design standards should apply during project development and design. Typical designations include but not limited to National Highway System (NHS), Interregional Route System (IRRS), and Scenic Highway System.

Rural – Fewer than 5,000 in population designates a rural area. Limits are based upon population density as determined by the U.S. Census Bureau.

RTP Model – Forecasting model developed by Southern California Association of Governments (SCAG) prepares travel demand model approximately every 4 years in conjunction with the Regional Transportation Plan Project List. SCAG’s trip based model is structured on a four-step gravity model, which includes trip generation, trip distribution, mode choice, and trip assignment.

Segment – A portion of a facility between two points.

System Operations and Management Concept – Describes the system operations and management elements that may be needed within 20-25 years. This can include Non-capacity increasing operational improvements (Auxiliary lanes, channelization’s, turnouts, etc.), conversion of existing managed lanes to another managed lane type or characteristic (e.g. HOV lane to HOT lane), TMS Field Elements, Transportation Demand Management, and Incident Management.

Transportation Demand Management (TDM) – Programs designed to reduce or shift demand for transportation through various means, such as the use of public transportation, carpooling, telework, and alternative work hours. Transportation Demand Management strategies can be used to manage congestion during peak periods and mitigate environmental impacts.

Transportation Management System (TMS) – Is the business processes and associated tools, field elements, and communications systems that help maximize the productivity of the transportation system. TMS includes, but is not limited to, advanced operational hardware, software, communications systems, and infrastructure, for integrated Advanced Transportation Management Systems and Information Systems, and for Electronic Toll Collection System.

Urban – 5,000 to 49,999 in population designates an urban area. Limits are based upon population density as determined by the U.S. Census Bureau.

Urbanized – Over 50,000 in population designates an urbanized area. Limits are based upon population density as determined by the U.S. Census Bureau.

Vehicle Miles Traveled (VMT) – Is the total number of miles traveled by motor vehicles on a road or highway segments.

APPENDIX B: FACTSHEETS

There are no factsheets available for this route.

APPENDIX C: ADDITIONAL CORRIDOR DATA

There is no additional corridor data for this route.

APPENDIX D: RESOURCES

- California State Transportation Improvement Program Project List 2014
- Caltrans Earth: <http://earth.dot.ca.gov/>
- Caltrans TASAS Highway Sequence Listing for Caltrans District 8
- Census 2010: <http://www.census.gov/2010census/>
- District 8 System Management Plan 2011
- Focus Routes: http://www.dot.ca.gov/hq/tpp/corridor-mobility/documents/library/List_of_Focus_Routes.doc
- GIS Data Library: <http://www.dot.ca.gov/hq/tsip/gis/datalibrary/gisdatalibrary.html>
- High Emphasis Routes: http://www.dot.ca.gov/hq/tpp/corridor-mobility/documents/library/Caltrans_High_Emphasis_Routes_HER.doc
- Interregional Transportation Strategic Plan 2015
- Metropolitan Planning Organizations and RTPAs Map: http://www.dot.ca.gov/hq/tpp/offices/orip/index_files/Updated%20Files/MPO_RTPA_Map_June_2012.pdf
- Regional Transportation Planning Contacts: http://www.dot.ca.gov/hq/tpp/offices/orip/list/agencies_files/regional_6-12.xls
- SCAG FY 2011-2012 Annual Listing of Obligated Projects for State and Local Highways
- SCAG 2012 Regional Transportation Plan: <http://rtpscscag.ca.gov/Pages/2012-2035-RTP-SCS.aspx>
- SCAG 2012 Regional Transportation Plan Level of Service Model
- Scenic Highway Routes: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm
- Streets and Highways Code §250-257: <http://www.leginfo.ca.gov/cgi-bin/displaycode?section=shc&group=00001-01000&file=250-257>
- Truck Route List and Truck Network Maps: <http://www.dot.ca.gov/hq/traffops/trucks/truckmap/>
- Harvey House Information: <http://www.barstowca.org/visitors/harvey-house-information>
- Needles Area Transit: <http://www.cityofneedles.com/pages/about-needles/Transportation.html>
- City of Needles: <http://www.cityofneedles.com/>
- City of Barstow: <http://www.barstowca.org/visitors/about-barstow>

APPENDIX E: SYSTEM PLANNING FLOW CHART

