I-11 NORTHERN NEVADA
ALTERNATIVES ANALYSIS

Draft Report:
Alternatives Analysis Results

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Prepared for

Nevada Department of Transportation

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Contents

List of Figures

List of Tables

Appendix

Acronyms and Abbreviations

AADT	annual average daily traffic
ACEC	Area of Critical Environmental Concern
ADOT	Arizona Department of Transportation
AV/CV	automated and connected vehicles
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CMF	crash modification factors
CNG	compressed natural gas
COG	council of government
CRF	crash reduction factors
DOD	Department of Defense
DOE	Department of Energy
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EV	electric vehicle
FAST Act	Fixing America's Surface Transportation Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FRA	Federal Railroad Administration
GIS	Geographic Information Systems
GOED	Governor's Office on Economic Development
I	Interstate
IWCS	I-11 & Intermountain West Corridor Study
ITS	intelligent transportation systems
LRTP	Long Range Transportation Plan
LWCF	Land and Water Conservation Fund Act
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPH	miles per hour
MPO	metropolitan planning organization
NAFTA	North American Free Trade Agreement
NAS	Naval Air Station
NDER	Nevada Department of Environmental Resources
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Department of Water Resources
NEPA	National Environmental Policy Act
NHFN	National Highway Freight Network
NVTDM	Nevada Statewide Travel Demand Model
OBU	on-board unit

PDO	property damage only
PEL	Planning and Environmental Linkages
PRPA	Paleontological Resources Preservation Act
RMP	Resource Management Plan
RTC	Regional Transportation Commission
SHPO	State Historic Preservation Office
SR	State Route
STIP	Statewide Transportation Improvement Program
TRIC	Tahoe-Reno Industrial Center
US	United States
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
USGS	US Geologic Survey
VMT	vehicle miles traveled
VRM	Visual Resource Management
WMA	Wildlife Management Area
WSA	Wilderness Study Area

1. Introduction

The Nevada Department of Transportation (NDOT) is developing the *One Nevada Transportation Plan*, an update to the State's federally required Long Range Transportation Plan (LRTP). The LRTP will be a performance-based transportation plan that identifies needs and strategically supports decision-making for future investments that will improve Nevada's multimodal transportation system. A key project to be advanced within the 20-year *One Nevada Transportation Plan* horizon is Interstate 11 (I-11), a proposed high-capacity north-south transportation corridor envisioned to first link Phoenix and Las Vegas, and then extend south and north to the Mexican and Canadian borders.

Building on the *Northern Nevada Feasibility Assessment Report* completed as a component of the *I-11 and Intermountain West Corridor Study* (IWCS), a more focused Planning and Environmental Linkage (PEL) document will be prepared. The Northern Nevada component of the *IWCS* was a high-level visioning effort to identify the best connection between the Las Vegas metropolitan area and the northern Nevada state border. The analysis recommended pursuing a western alignment, connecting to I-80, as opposed to more central or eastern options within the state.

Significant interest exists throughout Nevada to identify potential routes for the future I-11 to support local planning efforts, locate viable corridors through federally-owned lands, and advance I-11 planning activities prior to future National Environmental Policy Act (NEPA) activities.

This *Alternatives Analysis Results* memorandum summarizes the evaluation results of the Northern Nevada alternatives and recommends alternatives for further evaluation during the NEPA phase.

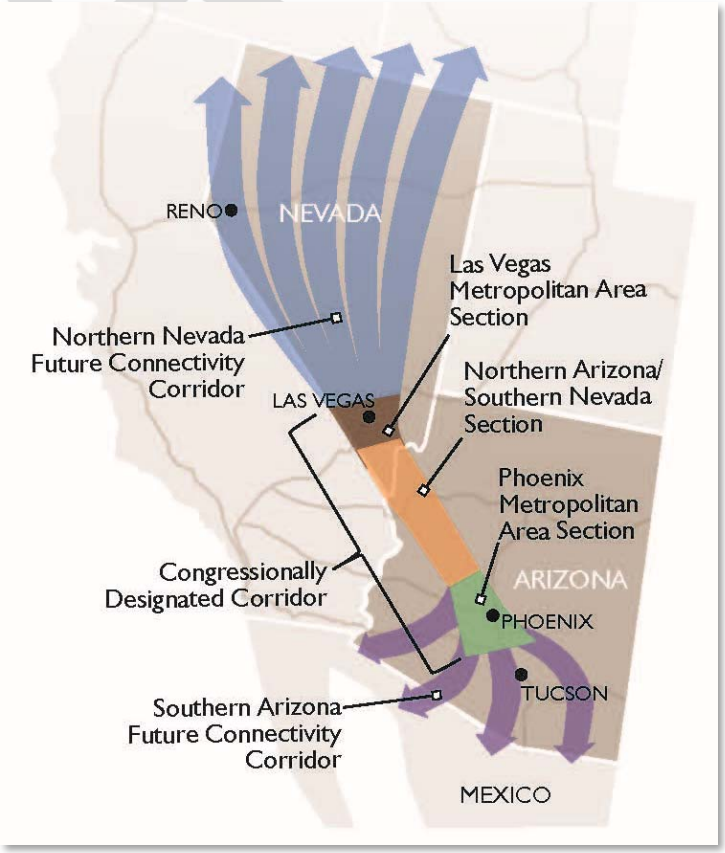
1.1. Background

In 2014, a joint study by NDOT and the Arizona Department of Transportation (ADOT) was conducted (*IWCS*) that identified the I-11 Corridor as a critical piece of multimodal infrastructure that would diversify, support, and connect the economies of Arizona and Nevada. Because of its length and varying characteristics, the *IWCS* study area was divided into five segments (**Figure 1**). The area between Phoenix and Las Vegas was formally designated as I-11 in the Moving Ahead for Progress in the 21st Century Act (MAP-21).

The *IWCS* identified two sets of recommendations:

1. Narrowed range of feasible corridor alternatives in the Congressionally designated corridor, between Phoenix and Las Vegas that can be advanced in future environmental reviews, as required by NEPA.

Figure 1. I-11 & IWCS Study Area Segments



2. Higher level review of connectivity options in Southern Arizona and Northern Nevada. Instead of focusing on specific corridor alternatives, this assessment identified the logical locations for I-11 to connect to the Arizona-Sonora border, as well as from Las Vegas to the northern Nevada border. Future studies were anticipated to follow a more detailed alternatives analysis process, similar as deployed between Phoenix and Las Vegas, within the selected connection route in Southern Arizona and Northern Nevada.

At the conclusion of the *IWCS*, the analysis for the Northern Nevada Future Connectivity Corridor (Las Vegas to northern Nevada state border) recommended pursuing a western alignment, connecting to I-80, as opposed to more central or eastern options. The analysis and rationale is documented in a technical report: *Northern Nevada Feasibility Assessment Report.* Summary level findings that support a western connection as the most favorable option for meeting the overall I-11 Corridor Purpose and Need include:

- Connects major freight and economic activity centers within Nevada; improves connectivity and creates more efficient and higher capacity transportation connection between the two largest economic centers in Nevada.
- Potential to accommodate multiple modes in a shared corridor
- Generally follows Congressional high priority corridor
- Supports many industry cluster targets (defense, mining, gaming, transportation logistics, renewable energy, agriculture, etc.).

Since the *IWCS* was completed, there has been no major effort to further refine the alignment for I-11 in northern Nevada***. In 2015, the US Congress passed Fixing America's Surface Transportation Act (FAST Act), which officially extended the designation of I-11 north of Las Vegas to I-80, naming the US 95 corridor as the general routing.*** This Congressional designation validated a western connection within the state, and reinforced the concept of the I-11 Corridor that emerged in the *IWCS*.

In addition, the need for such a corridor was further corroborated in the *Nevada State Freight Plan*. Given the project's magnitude, importance to the state, and impact it will have on Nevada's transportation program in the future, additional detail is needed to make reasonable assumptions of future planning and construction phases for the northern Nevada portion of I-11.

Thus, this Alternatives Analysis/PEL effort relies upon the Congressionally-designated corridor to define a starting point for alternatives definition (**Figure 2**).

1.2. Purpose and Need

As identified in the *IWCS*, the goal of I-11 is to establish a high-capacity, limited-access, transportation corridor connecting Mexican ports and manufacturing areas with Canada, traversing Arizona's and Nevada's largest regional, national and international manufacturing and economic activity centers, in support of regional, national, and international trade. Western states compete individually and collectively in national and global markets with Canada, Mexico, the I-5 Corridor, and the Gulf of Mexico states. For Arizona and Nevada, the purpose of I-11 is to assist in diversifying the states' economies to target industry clusters that rely heavily on interconnected and efficient transportation systems to transport goods and facilitate business attraction/retention. This was reinforced in the 2015 FAST Act.

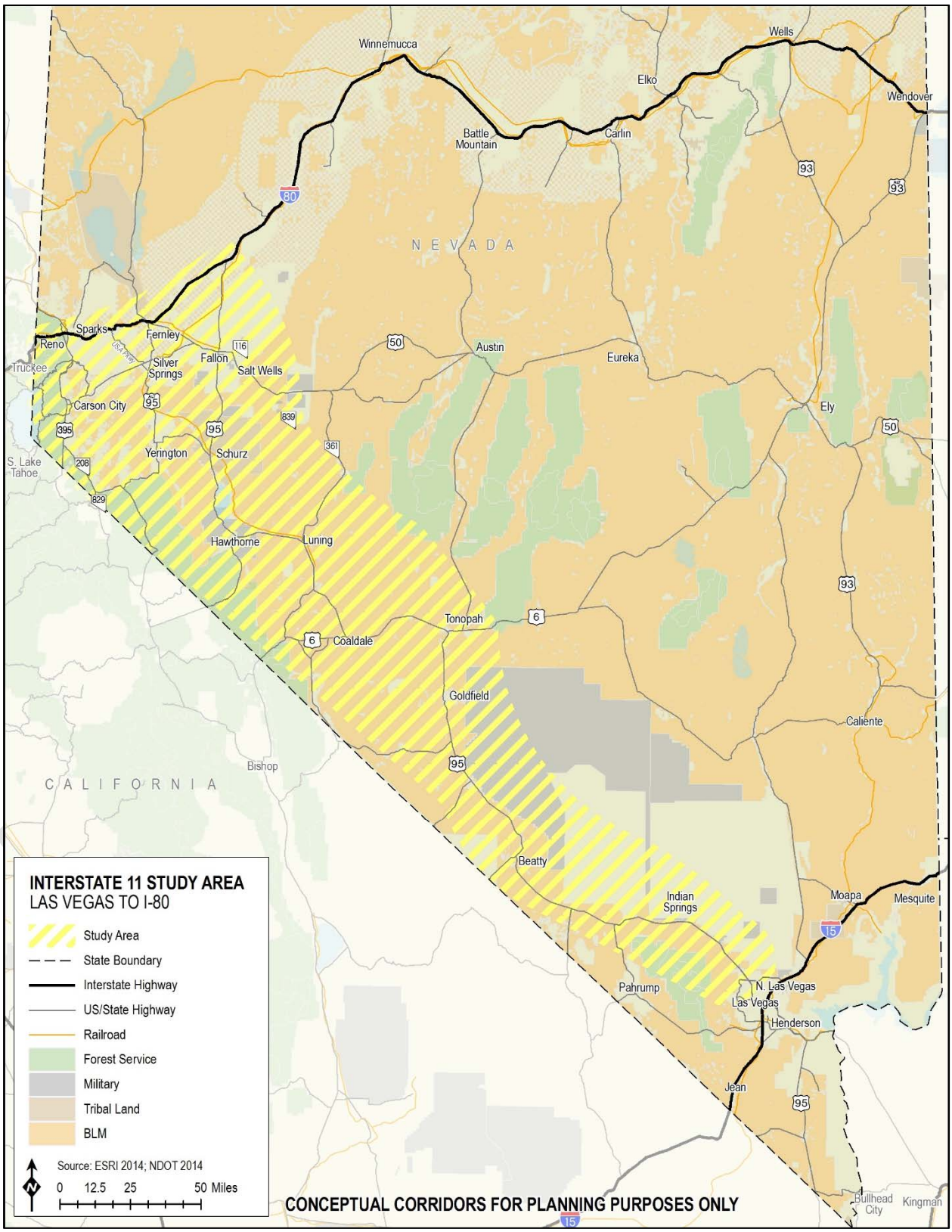
The I-11 Corridor has the potential to become one of the first north-south, high-capacity routes through the Intermountain West that could greatly improve commerce, tourism, and international trade opportunities across the West. This northern Nevada segment of I-11 would connect Las Vegas and I-80 on the western side of the state (the broader Reno-Sparks vicinity), providing an efficient north-south interstate connection near Nevada's two largest economic centers.

The need for I-11 is based on a combination of factors that include legislation, system linkage, domestic and international trade, modal interrelationships, capacity, economics, and public policy. The transportation network in the Intermountain West was developed decades ago to serve the economic, population, and mobility needs at that time—east-west movement of people and goods between Southern California and the rest of the country. As manufacturing and other value-added services shifts back to North America, the need is shifting to north-south demand, and the only existing north-south interstates in this region are I-5 and I-15. Both corridors, especially in California, are heavily congested today. Investment in regional transportation infrastructure has not kept pace with population growth and changing economic trends.

Future projections indicate that the proposed I-11 Corridor will continue to see significant growth, prompting the need for better surface transportation connections to accommodate not only the travel demand between metropolitan areas, but also improved mobility for freight shipments throughout the Intermountain West. This Corridor could provide needed connectivity, offer alternative routes for freight and passenger traffic, and improve reliability for better trade and commerce opportunities. The Corridor would allow the US West to realize economic benefits from more efficient freight movements, redundancy in north-south movements, and less congestion overall. Developing a north-south multimodal corridor through Nevada provides the foundation for a renewed, stronger, diversified economy in the Intermountain West.

A project-specific Purpose and Need Statement for this northern Nevada will be prepared as part of future NEPA studies, but additional purpose points could include: enhancing economic growth through more rural areas of the state; improving safety and travel time reliability along the US 95 corridor; creating revitalization and tourism opportunities for rural communities; and better connecting major military installations.

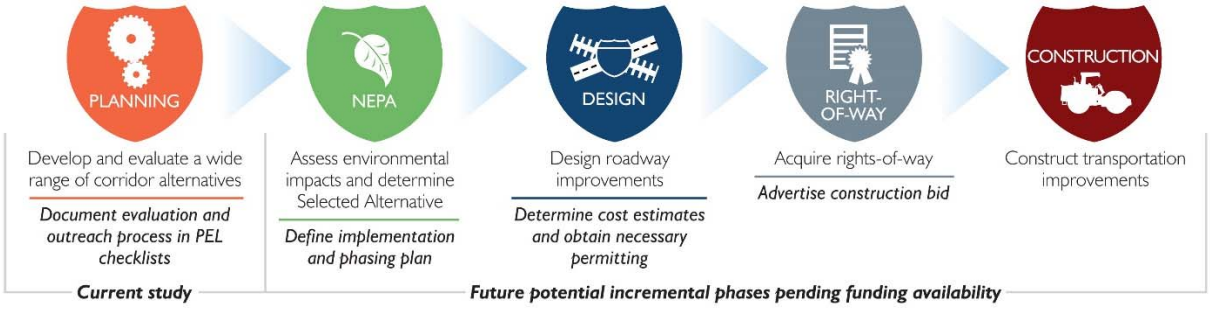
Figure 2. Study Area



2. Evaluation Process

The evaluation method was presented in the I-*11 Northern Nevada Alternative Analysis Methodology Memo*. The process follows the overarching PEL process, which is an integrated approach to transportation decision-making that considers environmental, community, and economic goals. **Figure 3** illustrates a typical project development process, from planning through construction. This alternatives analysis effort and PEL documentation are at the beginning of a project's lifecycle – setting the foundation for future evaluation, design, and implementation.

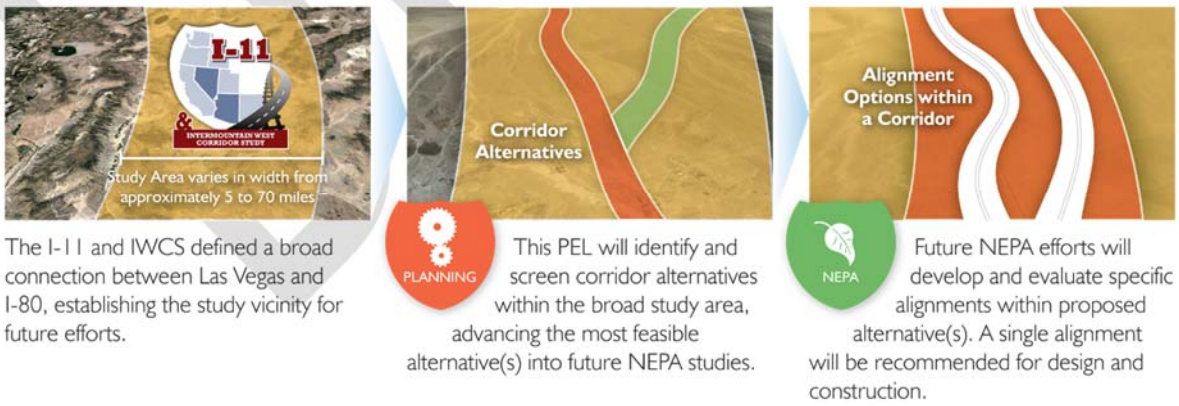
Figure 3. Project Development Process



2.1 Baseline Assumptions

For purposes of this study, an alternative is defined as a planning-level corridor. A corridor represents wide swaths, not specific alignments, or potential routes. Part or all of a corridor may contain an existing transportation facility, as well as other infrastructure, such as utilities. A reference to a "corridor alternative" corresponds to the various broad transportation routes under consideration. Within each corridor alternative, future NEPA studies will examine the specific location of the transportation footprint (**Figure 4**).

Figure 4. PEL Corridor Alternatives Level of Detail

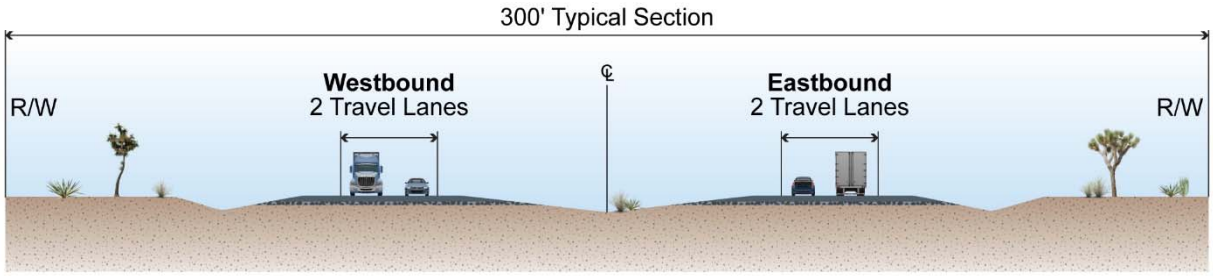


For the screening analysis, a standard 300-foot typical section was used to compare each corridor alternative to each other (**Figure 5**). The typical cross section defined for the I-11 Corridor was developed to provide a high-level comparison of transportation and environmental factors. This is a

generalized footprint that assumes two access-controlled travel lanes in each direction, with a wide open median. The actual footprint and/or configuration may be individualized for corridor segments to respond to the reuse of existing highways, narrow right-of-way availability, or other factors. Those design elements will be considered in future studies.

For comparison against a No Build – or do-nothing assumption (primarily to compare transportation performance and capacity measures), potential impacts were assessed or compared to the existing US 95 corridor, which varies from a two-lane highway with no passing lanes to a four-lane divided highway.

Figure 5. Typical Section for Proposed Interstate Freeway Facility



2.2 Rating and Scoring

Table 1 lists the evaluation categories, screening criteria, and scoring scale that was used to compare the corridor alternatives. These categories support the overall I-11 Corridor's purpose and need and are consistent with I-11 Corridor planning throughout Arizona and Nevada. The purpose of the evaluation is to narrow down the reasonable and feasible range of corridor alternatives for further planning and environmental review (to be completed in future work efforts) as part of the continued I-11 project development process.

The selection of the criterion and the data used was described in the *I-11 Northern Nevada Alternatives Analysis Methodology Memo*. The rating system consists of a qualitative five-tiered rating (from least to most favorable), with "most favorable" relative rating representing the best performance, and "least favorable" relative rating representing the worst performance, for each evaluation category. The evaluation rating scale is strictly relative – alternatives will be considered in relation to each other. However, Segment A alternatives are not compared against Segment B alternatives. Segment A (Route A1) is a standalone alternative, with the criteria reported to inform future studies. Segment B alternatives (B1-B5) are comparatively rated with the intent of potentially narrowing the range of reasonable alternatives to carry into NEPA.

An alternative receiving a "least favorable" rating does not inherently mean that the alternative is flawed, but rather it least meets the established criterion as compared to the other alternatives. Likewise, if an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.

Table 1. Screening Criteria, Rating, and Scoring Scale

Evaluation Category		Scoring and Rating Scale				
		Least Favorable (1 point)	Less Favorable (2 points)	Moderately Favorable (3 points)	Somewhat Favorable (4 points)	Most Favorable (5 points)
Modal Interrelationships						
1A	How well does this corridor provide sufficient opportunity for a multi-use corridor?	Cannot accommodate multiple modes/uses due to constraints along the corridor, and alternate corridors cannot be developed to accommodate other modes	Cannot accommodate multiple modes/uses due to constraints along the corridor, and less reasonable alternate corridors can be developed to accommodate other modes	Cannot accommodate multiple modes/uses due to significant constraints along the corridor, however reasonable alternate corridors can be developed to accommodate other modes/uses. Such alternate corridors would be relatively direct, with reasonable implementation	Can accommodate multiple modes/uses through most of the corridor, with minor exceptions and where a reasonable deviation could be found	Can fully accommodate multiple modes/uses throughout the entire length and within the same footprint. Rated most favorable for the following reasons: it is likely to be the most direct route, right-of-way could be preserved over the long-term, implementation would be maximized and flexibility preserved for future uses or technologies
Capacity/Travel Times and Speeds						
2A	What are the estimated travel time savings over No Build (2040)?	≤ 0 minutes savings over No Build	< 0 to 5 minutes savings over No Build	> 5 to 15 minutes savings over No Build	> 15 to 20 minutes savings over No Build	> 20 minutes savings over No Build
2B	What are the total long-distance vehicles miles traveled (VMT)?	≤ 0% to 5% increase over No Build	> 5% to 10% increase over No Build	> 10% to 15% increase over No Build	> 15% to 20% increase over No Build	> 20% increase over No Build
2C	What is the average travel speed on the corridor?	< 40 mph	40 to 45 mph	> 45 to 50 mph	> 50 to 65 mph	> 65 mph
2D	How well does this corridor provide for a safe trip for travelers and meet motorist's expectations?	Does not provide safe trip and/or large segments that do not meet traveler expectations	Some safety and/or expectation issues, with limited options for mitigation.	Some safety and/or expectation issues, with reasonable options for mitigation.	Limited safety and/or expectation issues, with reasonable options for mitigation.	No safety and/or expectation issues
Economic Vitality						
3A	How well does this corridor improve access and connectivity to major economic activity centers in the Study Area?	No economic activity centers within 5 miles either side of the corridor	Low number of economic activity centers within 5 miles either side of the corridor	Moderate number of economic activity centers within 5 miles either side of the corridor	Moderately high number of economic activity centers within 5 miles either side of the corridor	High number of economic activity centers within 5 miles either side of the corridor

Evaluation Category		Scoring and Rating Scale				
		Least Favorable (1 point)	Less Favorable (2 points)	Moderately Favorable (3 points)	Somewhat Favorable (4 points)	Most Favorable (5 points)
Transportation Plans and Policies						
4A	How well is this corridor consistent with funded transportation projects?	No part of the alternative is consistent with funded transportation projects	The corridor is consistent with minor funded transportation projects	The corridor is consistent with some funded transportation projects	The corridor is consistent with multiple funded transportation projects	The corridor is consistent with large funded transportation projects
4B	How well is this corridor consistent or compatible with long-term transportation visions and plans?	No part of the corridor is consistent or compatible with long-term transportation visions and plans	Approximately 25% of the corridor is consistent or compatible with long-term transportation visions and plans	Approximately 50% of the corridor is consistent or compatible with long-term transportation visions and plans	Approximately 75% of the corridor is consistent or compatible with long-term transportation visions and plans	All of the corridor is consistent or compatible with long-term transportation visions and plans
Environmental Sustainability						
5A	What is the impact to wildlife and habitat (year-round, seasonal, and connective habitat)?	High degree of impact to wildlife or habitat along large portions of the corridor	High degree of impact to wildlife or habitat along small portions of the corridor	Moderate degree of impact to wildlife or habitat along large portions of the corridor	Moderate degree of impact to wildlife or habitat along small portions of the corridor	Limited impact to wildlife or habitat along the majority of the corridor
5B	What is the impact to land managed for conservation or wildlife purposes?	High degree of impact to land managed for conservation purposes along large portions of the corridor	High degree of impact to land managed for conservation purposes along small portions of the corridor	Moderate degree of impact to land managed for conservation purposes along large portions of the corridor	Moderate degree of impact to land managed for conservation purposes along small portions of the corridor	Limited impacts to land managed for conservation purposes along the majority of the corridor
5C	What is the impact to undisturbed water resources (floodplains, waterways, and wetlands)?	High degree of impact to large portions of the corridor or water resource	High degree of impact to small portions of the corridor or water resource	Moderate degree of impact to large portions of the corridor or water resource	Moderate degree of impact to small portions of the corridor or water resource	Limited impacts to the majority of the corridor or water resource
5D	What is the impact to important paleontological and cultural resources?	High degree of impact to significant resources along large portions of the corridor	High degree of impact to significant resources along a small portion of the corridor	Moderate degree of impact to significant resources along large portions of the corridor	Moderate degree of impact to significant resources along a small portion of the corridor	Minimal degree of impact to significant resources along the majority of the corridor
Land Use and Ownership/Management						
6A	How consistent is this corridor with regional and local land use plans?	Less than 25% of the corridor is consistent with land use plans	Approximately 25% of the corridor is consistent with land use plans	Approximately 50% of the corridor is consistent with land use plans	Approximately 75% of the corridor is consistent with land use plans	Over 90% of the corridor is consistent with land use plans

Evaluation Category		Scoring and Rating Scale				
		Least Favorable (1 point)	**Less Favorable (2 points)**	**Moderately Favorable (3 points)**	**Somewhat Favorable (4 points)**	**Most Favorable (5 points)**
6B	How compatible is this corridor with major land management patterns?	Less than 25% of the corridor is compatible with land ownership/ management patterns	Approximately 25% of the corridor is compatible with land ownership/ management patterns	Approximately 50% of the corridor is compatible with land ownership/ management patterns	Approximately 75% of the corridor is compatible with land ownership/ management patterns	Over 90% of the corridor is compatible with land ownership/ management patterns
Cost						
7A	What is the order of magnitude cost for this corridor, including construction and right-of-way?	Those corridors with the lowest cost will be considered the most favorable and those with the highest cost considered least favorable. Corridors that fall in between the highest and lowest costs will be rated based on a proration of cost compared to the rating scale.				
Technology						
8A	How well does the alternative accommodate alternative fuel vehicles (power availability)?	Corridor is not part of Nevada's Electric Highway system	25% of corridor is part of Nevada's Electric Highway system	50% of corridor is part of Nevada's Electric Highway system	75% of corridor is part of Nevada's Electric Highway system	100% of corridor is part of Nevada's Electric Highway system, and already has existing or planned charging stations
8B	What is the level of wireless communication availability/accessibility?	Corridor does not have any power accessibility and/or wireless communication coverage	25% of corridor has power accessibility and/or wireless communication coverage	50% of corridor has power accessibility and/or wireless communication coverage	75% of corridor has power accessibility and/or wireless communication coverage	100% of corridor has power accessibility and/or wireless communication coverage
Community Acceptance						
9A	How well is this corridor accepted by the Stakeholder Partners Group?	N/A	Most Stakeholder Partners are opposed to corridor	Mixed feedback from Stakeholder Partners	Most Stakeholder Partners support corridor	N/A
9B	How well is this corridor accepted by the public?	N/A	Most public feedback is opposed to corridor	Mixed feedback from the public	Most public feedback supports corridor	N/A

3. Outreach Summary

Public outreach and input is a cornerstone of the PEL process. Ensuring the public dialogue is well understood and how it effects planning choices is critical to the process of informing future decisions and NEPA efforts. This study effort undertook a significant agency and public outreach process to obtain feedback on the range of corridor alternatives, as summarized as follows.

3.1 Stakeholder Meetings

A Stakeholder Partners Group was convened for this study, consisting of relevant state, federal, and local agencies, as well as Native American tribes. The purpose of this group is to provide feedback on the alternatives development and analysis process, provide data and resources as applicable for analysis, and inform the study team of agency input and concerns throughout the process.

Invited participants include:

- Bureau of Indian Affairs (BIA)
- Bureau of Land Management (BLM)
- Councils of Governments (COGs)/MPOs
- County staff and/or rural planning commissions (as applicable)
- Department of Defense
- FHWA
- Governor's Office on Economic Development (GOED)
- Inter-Tribal Council
- Nevada Department of Environmental Protection (NDEP)
- Nevada Department of Wildlife (NDOW)
- Nevada State Office of Energy
- U.S. Department of Energy, Western Area Power Administration
- U.S. Environmental Protection Agency, Region 9 (EPA)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Forest Service (USFS)

A meeting of the Stakeholder Partners Group was held on March 1, 2018 via webinar/ videoconferencing, introducing the group to the study and discussing the proposed range of alternatives and evaluation criteria. Feedback was solicited on the evaluation approach, in which several agencies responded by sending applicable data for analysis. A second meeting was held on July 18, 2018 to review the results of the evaluation process and corridor recommendations.

3.2 Public Meetings

Traditional public meetings were held in along the entire 450-mile corridor to directly engage residents and effected constituents. The meetings occurred between March 20 and March 29 (round 1) and July 24 and July 26 and August 7 and August 9 (round 2). The meetings followed NDOT's typical public meeting format consisting of an open house, followed by a formal presentation and question and answer period, ending with additional time dedicated to the open house format, allowing attendees to discuss meeting materials with the study team and ask questions.

NDOT advertised the meetings through a formal press release, local newspaper advertisements, online postings, and use of social media outlets.

The round 1 public meetings public comment period was open from March 20, 2018 until April 13, 2018. A total of 60 written comments were received along with additional comments articulated during the public meeting question and answer sessions. These comments were captured in transcripts, with the exception of Tonopah, in which no stenographer was available. For the round 2 public meetings, the comment period was open from July 24, 2018 until August 31, 2018. A total of 25 written comments were received in addition to the comments articulated during the meeting question and answer session.

In addition the in-person meetings, a webinar/videoconference meeting was available that also featured a Facebook Live broadcast, which experienced 1,133 views, and reached a total of 2,835 users after reposting and sharing (round 1). The July 24, 2018 Facebook Live event garnered 645 views, reaching 1,595 users. It is unknown how many of these views were engaged for the entire presentation.

Table 2 outlines the public meetings dates and locations, including attendance.

Table 2. I-11 Public Meeting Dates, Locations, and Attendees

Meeting Date		Location	Attendees
Round 1			
3/20/18 **4:00-7:00 pm**	Las Vegas	Santa Fe Casino (Centennial B Ballroom) 4949 North Rancho; Las Vegas, NV 89130	54
3/21/18 **4:00-7:00 pm**	Tonopah	Tonopah Convention Center 301 Brougher Avenue; Tonopah, Nevada 89049	40
3/22/18 **4:00-7:00 pm**	Hawthorne	Hawthorne Convention Center 952 E. Street; Hawthorne, NV 89415	67
3/27/18 **4:00-7:00 pm**	Fallon	Fallon Convention Center 100 Campus Way; Fallon, NV 89406	91
3/28/18 **4:00-7:00 pm**	Reno	Grand Sierra Resort (Crystal Room) 2500 East 2nd Street; Reno, NV 89595	74
3/29/18 **2:00-5:00 pm**	Carson City Winnemucca Elko Las Vegas	NDOT Headquarters (3rd Floor Conference Rm) 1263 S. Stewart Street; Carson City, NV 89712	61
		Winnemucca District III (Office Conf. Rm) 725 W. 4th Street; Winnemucca, NV 89445	13
		Elko District III (Office Conf. Rm) 1951 Idaho Street; Elko, NV 89801	1
		Las Vegas District I (Office Conf. Rm) Bldg. A 123 E. Washington Avenue; Las Vegas, NV. 89101	N/A
		NDOT Facebook Page via Facebook Live	N/A
Round 2			
7/24/18 **2:00-5:00 pm**	Carson City Winnemucca Elko Las Vegas	NDOT Headquarters (3rd Floor Conference Rm) 1263 S. Stewart Street; Carson City, NV 89712	29
		Winnemucca District III (Office Conf. Rm) 725 W. 4th Street; Winnemucca, NV 89445	6
		Elko District III (Office Conf. Rm) 1951 Idaho Street; Elko, NV 89801	1
		Las Vegas District I (Office Conf. Rm) Bldg. A 123 E. Washington Avenue; Las Vegas, NV. 89101	N/A
		NDOT Facebook Page via Facebook Live	N/A
7/25/18 **4:00-7:00 pm**	Reno	Idlewild Park (California Building) 75 Cowan Drive; Reno, NV 89509	26
7/26/18 **11:00-1:30 pm**	Fernley	Fernley High School (Common Room) 1300 US 95A; Fernley, NV 89408	38

Meeting Date	Location		Attendees
7/26/18 4:00-7:00 pm	Fallon	Fallon Convention Center 100 Campus Way; Fallon, NV 89406	40
8/7/18 4:00-7:00 pm	Hawthorne	Hawthorne Convention Center 952 E. Street; Hawthorne, NV 89415	79
8/8/18 4:00-7:00 pm	Tonopah	Tonopah Convention Center 301 Brougher Avenue; Tonopah, Nevada 89049	35
8/9/18 4:00-7:00 pm	Las Vegas	Santa Fe Casino (Centennial B Ballroom) 4949 North Rancho; Las Vegas, NV 89130	24

3.2.1 Input Summary

Comments received at the public meetings and throughout the duration of the comment period were reviewed to identify those that directly address the corridor alternatives, either positively (in favor of) or negatively (not in favor of). Specific feedback that influenced the range of corridor alternatives is discussed in Chapter 3. Public sentiment provided input into the "community acceptance" evaluation criteria, discussed further in Chapter 4. A comprehensive summary of the public outreach process and responses are documented in the *Public Outreach Summary* (**Appendix A)**

The following discussion summarizes major input themes above and beyond specific alternative considerations:

- **Community Bypasses:** Several respondents expressed a keen interest and concern in how I-11 would potentially traverse their community. The most interested communities include Beatty, Goldfield, Tonopah, and Hawthorne. These rural towns expressed concern that, while expanding an interstate through the middle of town would certainly be catastrophic, so too would be a bypass around town that was located too far away to spur economic activity. By and large, residents want a future I-11 to be far enough away to keep "Main Street" intact while being close enough for towns to provide services and benefit from economic opportunity.
- **Economic Development:** For many, I-11 is seen as a potential economic generator and a real opportunity, particularly for more rural parts of the state. Much of the feedback centered on concern for the potential to miss out on the economic benefits if the selected corridor does not make a connection through their community. Several comments inquired about how economic impact was considered as part of the process.
- **I-11 Corridor North of I-80:** The I-11 Corridor connection north of I-80 was a topic of much inquiry, as many members of the public felt that understanding the direction northward could impact the best and most logical connection point to I-80.
- **Funding and Timing:** Typical to many public infrastructure projects, respondents were interested to learn how the construction would be funded and when I-11 would be built. It was noted that the Congressional designation does not come with implementation funding.
- **Alternate Modes:** Consideration of other modes, particularly rail and Hyperloop, was asked, as few new interstates are being constructed, and with new technologies on the horizon, it was noted that I-11 has the potential to be more than just a roadway.

4. Corridor Alternatives

4.1 Definition of Alternatives

Based on the tenants of the Purpose and Need, a series of corridor alternatives were developed connecting Las Vegas with I-80. They are divided into two segments (Segment A and Segment B). Segment A spans from Las Vegas to Tonopah, in which only one corridor is under consideration (US 95 corridor with various improvements). Five corridor alternatives are located within Segment B, all beginning at US 95 in Tonopah to make connections with I-80 at three locations. These alternatives include a combination of upgraded existing facilities and new corridor development. In addition, a series of options are identified which provide various connectivity within and between each of the four Segment B corridor alternatives (discussed further in Section 4.2). The options underwent a qualitative-evaluation only at this stage and will be studied further if major flaws preclude the viability of a given alternative.

A map of the alternatives is presented in **Figure 6**, with accompanying descriptions in **Table 3.**

Table 3. I-11 Corridor Alternatives

Alternative	Description
Route A1 Las Vegas to Tonopah	The corridor alternative would follow existing US 95 between Las Vegas and Tonopah. New corridors are proposed for review at the towns along the alternative (Indian Springs, Beatty, Goldfield, and Tonopah) as options for providing a limited-access transportation facility that directly serves, but does not displace, local communities.
Route B1 Tonopah to I-80 Fallon Interchange	This is a new corridor from US 95 west of Tonopah to US 50 east of Salt Wells. From Salt Wells, the alternative follows the existing US 50 to the intersection with SR 116. A new corridor connects US 50 to US 95 northeast of Fallon, following US 95 at the most northern end, connecting to an existing interchange at I-80. *This alternative was developed as a shortest route from Tonopah to I-80 and US 95 via Fallon.*
Route B2 Tonopah to I-80 Fernley Interchange	This alternative follows US 95 through Coaldale north past Luning. A new corridor bypasses the town of Hawthorne and runs along the east side of Walker Lake. The corridor connects with US 95 north of Walker Lake to Fallon. A new corridor bypasses Fallon to connect with US 50 ALT north to I-80 and Fernley. *This is the most direct route to I-80 that follows existing highways as much as possible.*
Route B3 Tonopah to I-80 Fernley Interchange	This alternative follows US 95 through Coaldale north past Luning. A new corridor bypasses the town of Hawthorne and runs along the east side of Walker Lake (same as Route B2). The corridor connects with US 95 north of Walker Lake to Schurz where the corridor deviates from B2 to follow US 95 ALT to I-80 and Fernley. New corridor segments will bypass Yerington, Sliver Springs, and Fernley. *This alternative follows existing highways as much as possible, and was developed to minimize impacts on tribal lands.*
Route B4 Tonopah to I-80 Reno Interchange	This alternative follows Routes B2 and B3 along US 95 past Walker Lake/Hawthorne. Route B4 deviates north of Walker Lake to a new corridor that travels west and connects to SR 829 and follows SR 208 west to US 395, continuing along US 395 north to Carson City with a bypass around Minden/Gardnerville. At Carson City, the corridor follows I-580 north to its interchange with I-80. *This alternative was developed to minimize impacts on tribal lands and to connect I-11 directly to Reno via Carson City.*

Alternative	Description
Route B5 Tonopah to I-80 Fernley Interchange	This alternative follows Routes B2, B3, and B4 along US 95 through Walker Lake/Hawthorne. Route B5 deviates east of Walker Lake to SR 839, which travels northeast to US 50. SR 839 follows low elevation passes through the mountain range and is paved for the northernmost 18 miles and mostly unimproved or requiring new corridor development for the approximately southern 37 miles. The corridor connects US 50, US 95, and US 50A to connect to I-80 at Fernley. *This alternative responds to public comment..*

4.2 Route Options

The primary corridor alternatives for Segment B (Routes B1 through B4) were analyzed based on the evaluation criteria in Table 1. The route options are shorter segments that provide connections between and within the primary corridor alternatives. These segments were not analyzed using the evaluation criteria, but rather a qualitative analysis was summarized for each option to identify the opportunities and challenges and how they impact the primary corridor alternatives. If a major flaw is detected in one of the primary corridor alternatives, one of these options could be substituted for the flawed segment.

Route options a-g were developed by the technical team, in conjunction with stakeholder feedback. Options h-r were suggested by the public at the March 2018 public meetings, and are presented on **Figure 7**. A high-level constraints analysis was conducted to eliminate options that are infeasible from an engineering or environmental perspective. Thus, only options h, j, k, m, and r remain as viable options to explore further. **Table 4** describes each option under consideration and/or proposed, as well as the disposition for those suggested through public comment.

While no options are proposed for Segment A, public feedback from Nye County includes a series of proposed corridor deviations from US 95, including community bypasses and a new connection to I-15 via Pahrump, south of and bypassing the Las Vegas metropolitan area (**Figure 8**). Altogether, this route was deemed not viable as the deviation around Las Vegas does not meet the corridor's Purpose and Need. However, the shorter community bypass options may be considered in future NEPA studies when specific alignment options of US 95 will be explored in more detail.

Figure 6. I-11 Corridor Alternatives

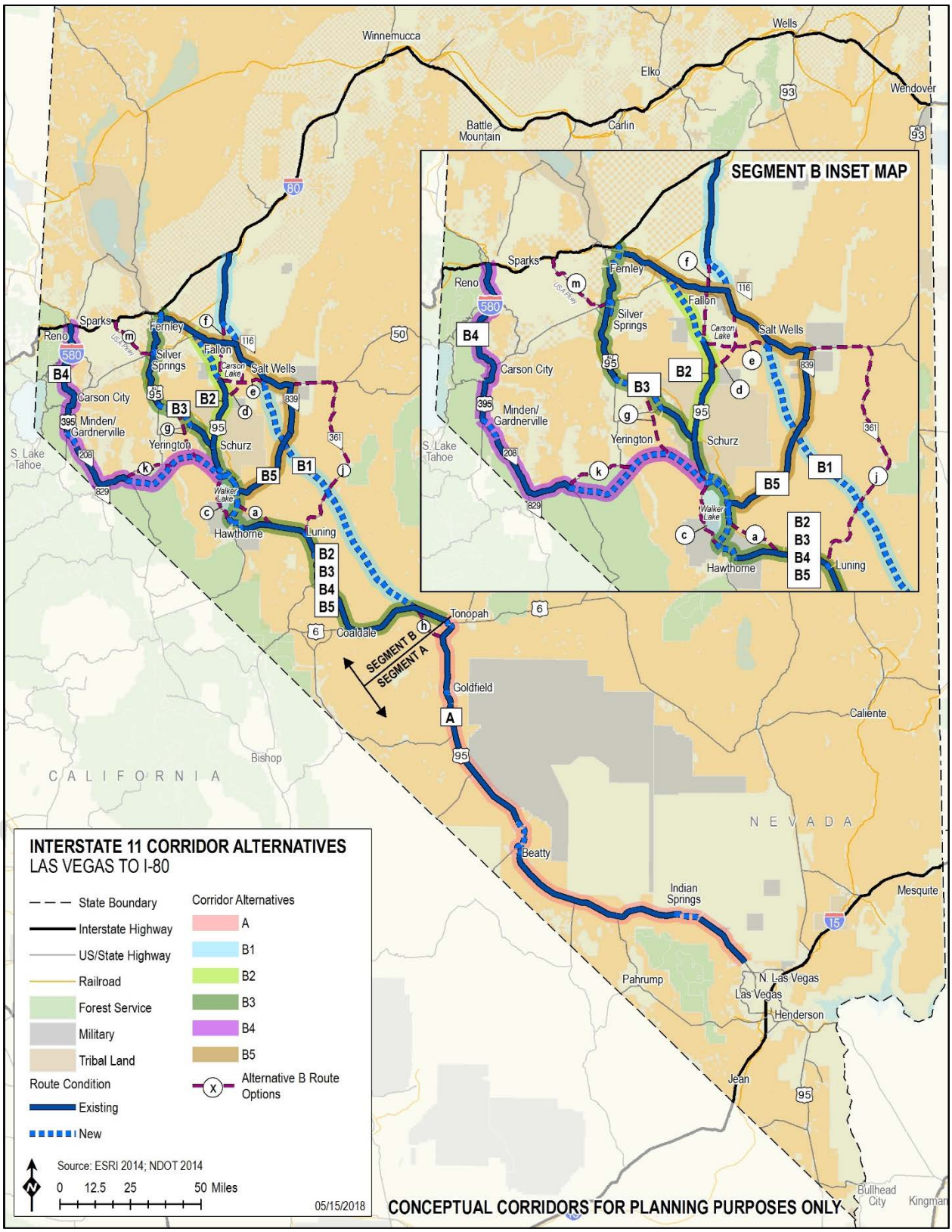


Figure 7. Segment B Options Proposed at Public Meetings

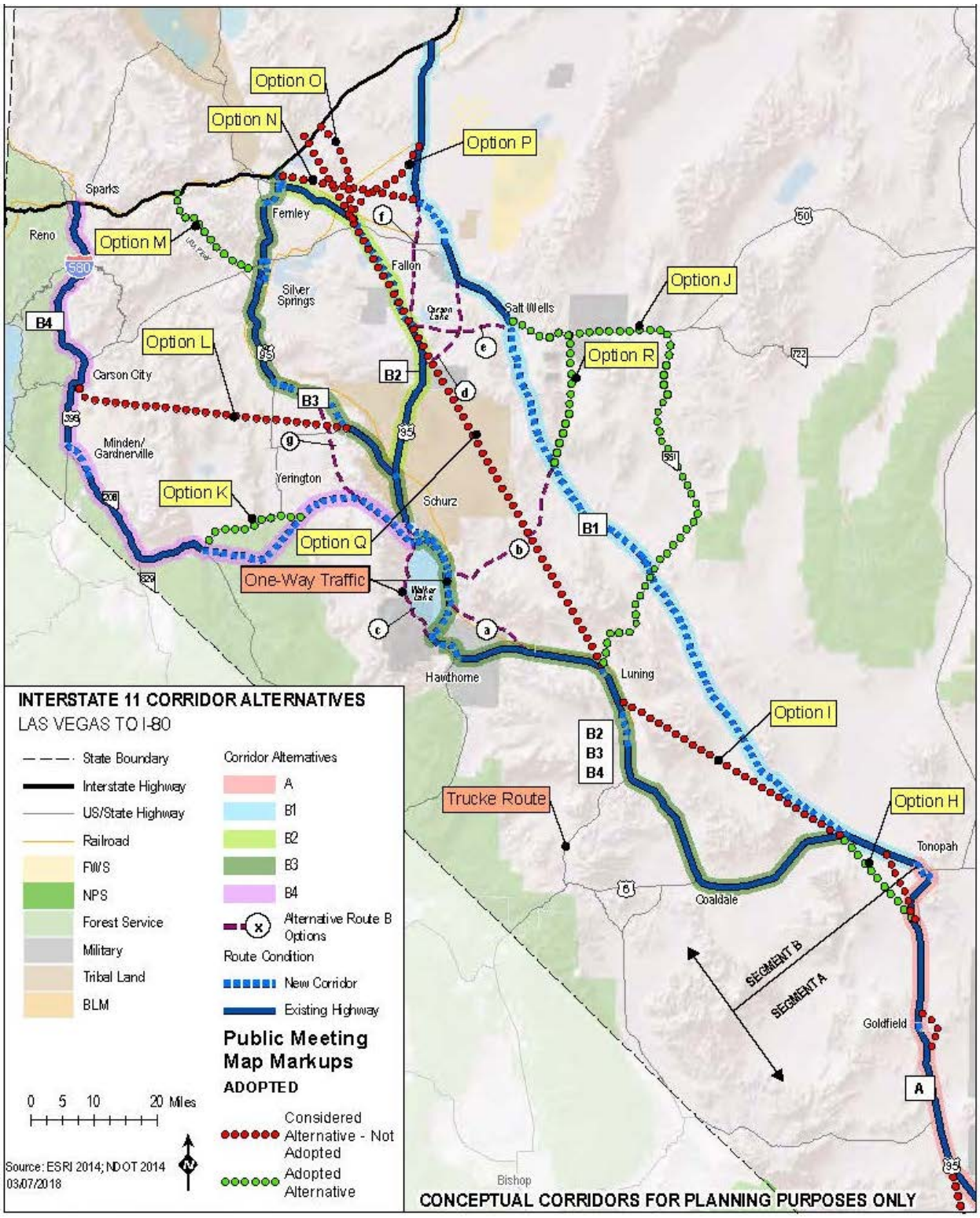


Figure 8. Segment A Options Proposed at Public Meetings

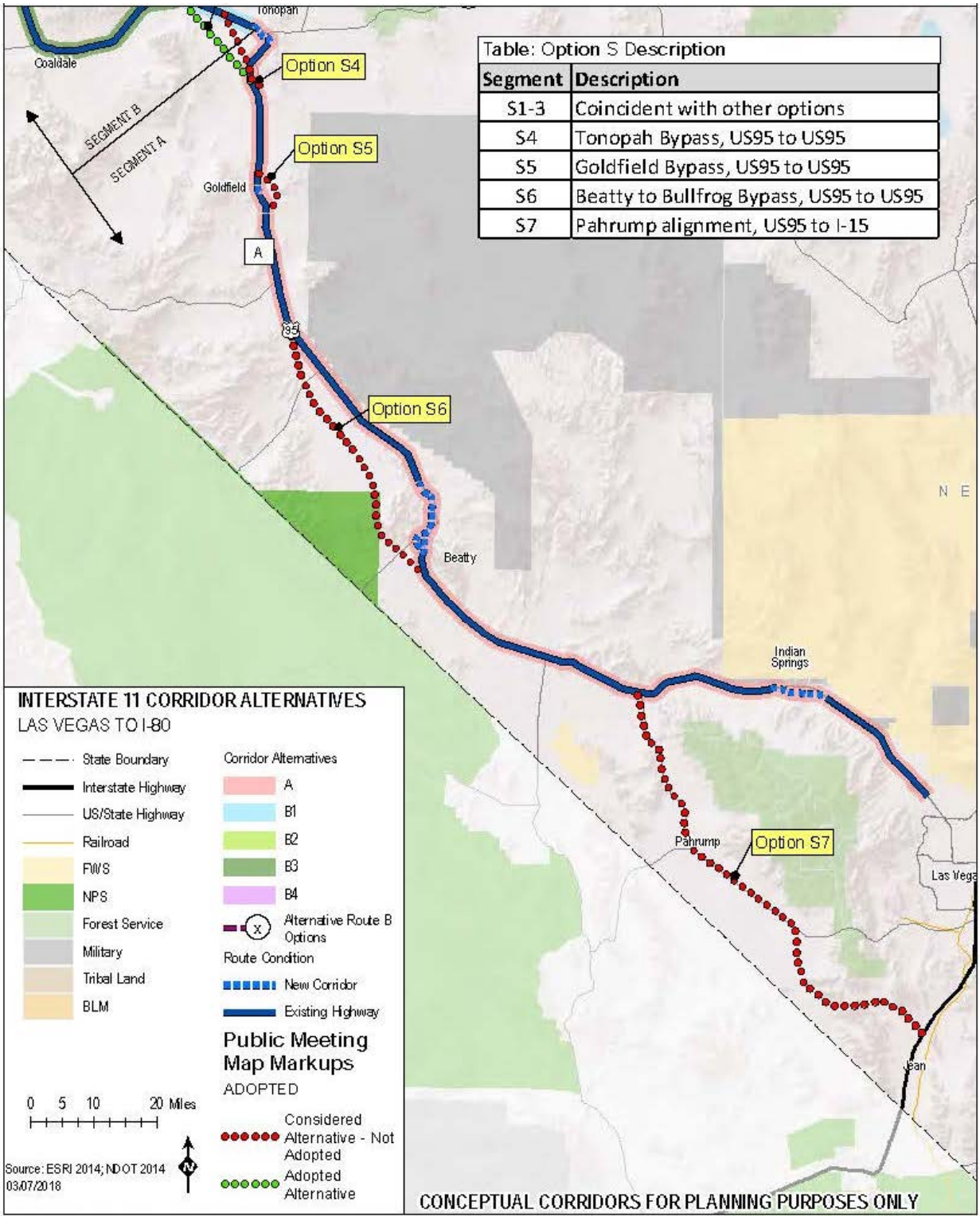


Table 4. Segment B Options

Option	Description	Disposition
a	New corridor providing a more direct bypass of Hawthorne to the east side of Walker Lake, shortening overall length of the route and minimizing impacts within the City of Hawthorne.	*Developed by study team and stakeholder group for consideration.*
b	New corridor connecting B2/B3/B4 to B1 on the east side of Walker Lake, based on a request from Mineral County that I-11 would not bypass Hawthorne.	*Developed by study team and stakeholder group for consideration; used a component of Alternative B5.*
c	New corridor connecting existing US 95 along the west side of Walker Lake to existing US 95 north of Walker Lake. This option would follow existing US 95 along the westerly edge of Walker Lake, rather than establishing a new route on the easterly side.	*Developed by study team and stakeholder group for consideration.*
d	New corridor from US 50 at Salt Wells west to US 95, providing a bypass for Fallon, thereby minimizing impacts to the City and wetlands.	*Developed by study team and stakeholder group for consideration.*
e	New corridor connecting existing US 95 south of Carson Lake to US 50 at Salt Wells, connecting B1 to US 95 south of Fallon.	*Developed by study team and stakeholder group for consideration.*
f	Improvement of the existing US 95 corridor through Fallon, minimizing development of new routes.	*Developed by study team and stakeholder group for consideration.*
g	New corridor west of Schurz to minimize impacts on tribal lands.	*Developed by study team and stakeholder group for consideration.*
h	New corridor and more direct route west of and bypassing Tonopah.	This route has no known issues. However, it would bypass Tonopah, potentially impacting the business community. *Adopted for further consideration.*
i*	New corridor connecting Tonopah and Luning, bypassing Coaldale.	This route would need to cross a mountain range at an elevation of 8,500 feet with no low elevation passes. No corridor options meet acceptable roadway design criteria. *Not viable due to topographic constraints.*
j	Improvement of existing highways, SR 361 and US 50, from Luning to Fallon.	A portion of US 50 passes through a gap in Department of Defense (DOD) property, presenting potential issues with widening the right-of-way for a freeway. *Adopted for further consideration, with further coordination required..*
k	Improvement of existing highway SR 208 through Wilson Canyon.	This route would follow the Walker River through Wilson Canyon, with potential geometric issues and reduced speeds. However, this route provides an alternative to the portion of B4 that passes through an USFS designated roadless area. *Adopted for further consideration.*

Option	Description	Disposition
l*	New corridor connecting the Mason and Carson valleys, shortening the distance to Carson City.	This route would need to cross several mountain ranges at elevations of 6,000 to 7,000 feet with no low elevation passes. No corridor options meet acceptable roadway design criteria. *Not viable due to topographic constraints.*
m	Use of USA Parkway as a more direct route to Tahoe-Reno Industrial Center, bypassing Silver Springs.	*Adopted for further consideration.*
n	New corridor extension to connect B1 to I-80 at Fernley.	*Not viable due to poor soil conditions, topographic, and water resource constraints.*
o	New corridor extension to provide alternate connection from B2 to I-80 northeast of Fernley.	
p	New corridor connection between B2 and B1, creating a direct connection to US 95.	
q	New corridor connection between Luning and I-80 via the shortest path possible.	This route would need to cross several mountain ranges, proposed DOD withdrawals, Sheckler Reservoir, tribal lands, and the Lahontan Valley (poor soil conditions, high groundwater table, wetland impacts). *Not viable corridor..*
r	New corridor extension of Mineral County's suggested Option b, following SR 839 to B1.	Much of SR 839 passes through DOD property, presenting potential issues with widening the right-of-way for a freeway. *Used as a component of Alternative B5, with further coordination required.*

* While several routes were illustrated as straight lines on the public meeting maps, the Study Team investigated various options that connected the intended termini of these lines to determine feasibility for further consideration.

4.3 Other Modal Considerations

The I-11 Corridor is proposed as a new highway facility, but this infrastructure provides an opportunity to review the broader transportation connectivity between southern and northern Nevada, including passenger and freight rail. This study summarizes the results of previous study recommendations as they relate to passenger and freight rail between southern and Northern Nevada as well as recommend rail routes for future consideration. A formal alternative evaluation was not included as part of this study.

The *2012 Nevada State Rail Plan* identifies the two main existing corridors which parallel I-15 through southern Nevada and I-80 through Northern Nevada. The plan identifies a lack of north-south rail or interstate highway link. The plan identified short-term, medium-term, and long-term projects. The long-term projects include high-speed rail across northern Nevada serving Reno and high-speed rail in Southern Nevada connecting Las Vegas with Los Angeles and Phoenix with a high-speed rail passenger terminal in Las Vegas. The long-term projects included a "potential" high speed rail connection between Reno and Las Vegas.

The *2014 Southwest Multi-State Rail Planning Study* led by the Federal Railroad Administration (FRA) analyzed a high-performance rail network in California, Nevada, and Arizona. The Core Express corridors recommended for further evaluation included Southern California from San Diego through Los Angeles to Sacramento, and from Los Angeles to Phoenix and Los Angeles to Las Vegas. A connection between Las Vegas and Reno was identified as a potential future Core Express corridor that may be considered over the long term.

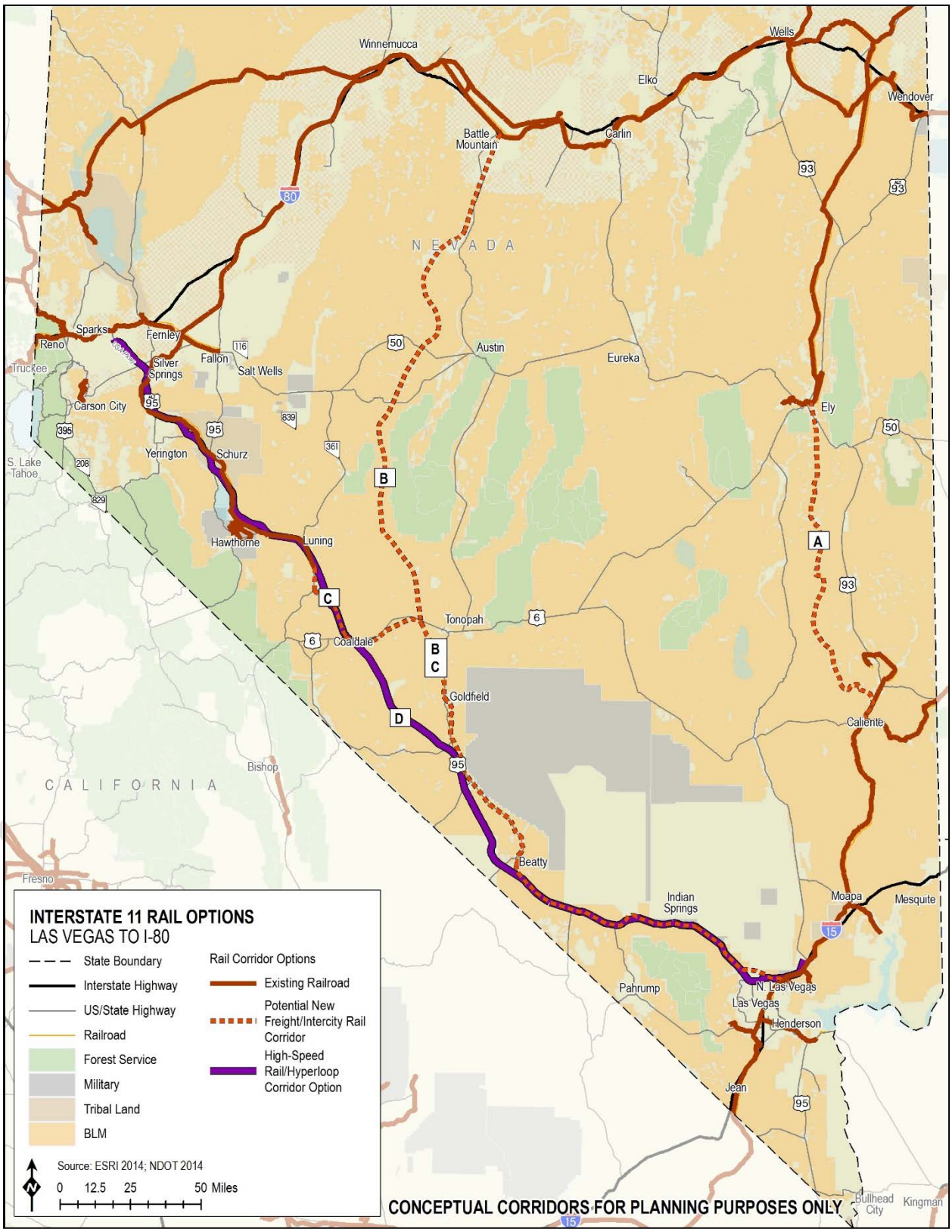
The *2016 Nevada State Freight Plan* identifies multi-use corridor planning for I-11 as a recommended strategy to help reach the state's freight goals. The recommended actions include analyzing the freeway system in southern Nevada to determine an appropriate tie in point, performing detailed corridor planning to identify a preferred corridor, and updating the *Nevada Rail Plan* to analyze the feasibility of a freight rail connection between Las Vegas and Reno.

As part of the previous high-level, multi-use evaluation, it was determined that many corridor alternatives are not able to accommodate multiple modes, specifically rail, throughout the entire length of the corridor due to right-of-way or terrain constraints. Interstates usually have a maximum grade rate of 6 percent, while rail typically has 1.5 percent maximum grades (2 percent for short distances). While the analysis found that an entire corridor could not accommodate multiple modes, portions of the recommended corridors were found suitable for multiple uses and modes and new rail corridors were identified that could close north-south gaps in the existing rail network.

A map of the potential rail segments recommended for further evaluation is presented in **Figure 9**. There are three proposed corridors (Wells – furthest east, Battle Mountain – most central, and Reno/Fernley – furthest west). These corridors were recommended for low speed passenger rail, and could also accommodate freight.

Illustrated in purple on **Figure 9** is a potential route for Hyperloop or high-speed rail. This would require all new track as the design criteria for high-speed rail and hyperloop is different than freight or lower speed passenger rail corridors. This route was developed as part of a 2017 grant application, sponsored by Hyperloop One to facilitate development of pilot hyperloop projects across the world.

Figure 9. Other Modal Considerations



5. Evaluation Results

The following sections describe the evaluation results of the proposed corridor alternatives screening for each criterion, including: modal relationships, travel time, VMT, speeds and safety, economic vitality, transportation plans and policies, environmental sustainability, land use, cost, technology, and community acceptance.

5.1 Scoring of Alternatives

Table 5 summarizes the final scoring for each corridor alternative. A maximum of 100 points could be achieved if an alternative were to score "most favorable" in every category. Segment A only includes one corridor alternative, although some criteria contrast the alternative against the No Build Alternative (no improvements to the US 95 corridor) for comparative purposes. In Segment B, Route B2 and B3 rank the highest with 75 and 64 points, respectively. Routes B1, B4, and B5 score similarly with 58, 54, and 55 points. A summary of the findings is provided below.

Modal Interrelationships

This criterion rates each alternative on its ability to share right-of-way and accommodate multiple modes in the corridor, thereby reducing the disturbance footprint and impact on the environment. Route A1 follows a historic railroad route much of the way, making almost the entire corridor suitable for passenger and freight rail, including high-speed rail and Hyperloop, for portions of the route.

Segment B alternatives are co-located to the south, which follows a historic rail line and makes this portion suitable for accommodating new rail facilities. As the corridors deviate, certain portions continue to follow the historic Tonopah and Goldfield Railroad route. Most routes have the grades to accommodate multiple modes, but portions of existing routes would require widening to accommodate enough rights-of-way.

Travel Times, VMT, Speeds, and Safety

These criteria rate each alternative's ability to improve future (2040) travel time, speeds, and safety conditions throughout the Study Area, compared to the No Build Alternative. The potential demand for the alternatives (VMT) was also assessed. The analysis shows that there are negligible differences in travel times, speeds, and VMT between the No Build Alternative and Route A1. While Route A1 would provide added capacity and safety benefits to US 95, average travel speeds and travel times along the existing highway are projected to remain high, as the corridor is not congested. VMT is also not expected to significantly change.

The Segment B No Build Alternative is also forecasted to have high average travel speeds and travel times. However, because the alternatives have different end points and travel markets, there are some significant differences between the No Build Alternative and between the alternatives themselves. Route B1 is the shortest route and provides the greatest travel time savings end-to-end (44 minutes). Routes B2 and B3 provide moderate travel time savings, while also resulting in a significant increase in VMT. Route B4 serves a substantially different travel market than Routes B1 through B3 and VMT would increase by approximately 76 percent (compared to No Build), the most of any alternative. Travel times for B4 were also compared against several existing routes and showed some improvement in travel time over existing routes. Route B5 is a long circuitous route and travels through a very remote area of Nevada. It does not improve travel times, nor does it increase travel demand. Route B5 has second longest travel time and the lowest VMT.

All the alternatives received a favorable rating for safety. Routes B2 and B3 have minimal geometric and safety issues and do not cross over any high summits, while Routes B1 and B4 require crossing summits, but would generally still have few geometric and safety issues.

Economic Vitality

This criterion rates each alternative on how well it fosters connectivity and links the major economic activity centers in the region, based on data provided by the regional economic development agencies. Route A1 connects various rural communities which operate as independent economic centers. Consideration will need to be given in future studies whether the preferred alignment travels through these communities, or forms a bypass with appropriate connectivity to the community center.

Routes B3 and B4 rate the highest, followed very closely by B2 and B5. Any variations in these alternatives to encompass some of the options under study make all three competitive. The primary shortcoming of B1 is its distance from existing centers of population.

Transportation Plans and Policies

This criterion rates each alternative on how well it fits with the current transportation plans. The analysis was conducted for the alternatives relative to short-term projects as well as long-term visions. The alternatives that have near-term projects with scheduled funding rated higher than alternatives without any funded projects. The long-term analysis focused on transportation visions and plans, with higher ratings for the growth areas where future expansion projects are documented were rated higher.

Route A1 has recent and planned improvements including the expansion of US 95 in the Northwest Corridor outside of Las Vegas as well as scheduled pavement rehabilitation projects.

Route B4 rated the highest as there is current and future planned investment to meet the growing demand in the Reno metropolitan area. Route B1 has not been documented as an interstate alternative prior to this study. B2 scored higher than B3 because there are planned improvements to US 95, and there are expansion discussions in the Fallon area. B5 scored in the middle as there are planned improvements along SR 839 and US 50, but expanding the existing roads into interstates is not consistent with military expansion plans.

Environmental Sustainability

This criterion includes four sub-criteria to address impacts to protected or sensitive species, lands managed for conservation, undisturbed water resources, and important paleontological and cultural resources. Overall, Route B2 rates the best in each environmental sustainability category, with B4 ranking the worst overall. A moderate/poor rating for Route B1 is due to the nature of a nearly all-new transportation corridor that would disturb the environment and bisect or form a barrier to environmental resources.

Moderate to poor ratings for wildlife impacts are due to the potential presence of species listed as threatened/endangered, as well as bisecting large blocks of undisturbed habitat. Lands managed for conservation and habitat purposes include such designations as USFS roadless areas, Bureau of Land Management (BLM) areas of critical environmental concern, wilderness areas, and wildlife management areas. All corridors pass through dry lakes and adjacent wetland habitat, mapped/unmapped flood areas, and rivers/riparian habitat. Similarly, all corridor alternatives overlap current or historic mining or agricultural towns, each with varying densities of cultural and historic resources. Ratings in these last two categories reflect the abundance of these resources along each alternative.

Land Use and Ownership/Management

From a land use perspective, corridor alternatives were rated based on the extent to which designated land uses on federally-managed lands or current and planned uses in towns or cities may constrain or conflict with the alternatives. Regarding land ownership and management, corridor alternatives were rated based on the extent to which lands are privately held, are tribal lands, or are managed by state or federal governments in the public interest.

Route A1 rates high in both categories, as US 95 exists today and would avoid major conflicts. In Segment B, Route B1 rates the highest and B4 the lowest. Routes B2, B3 and B4 pass through Hawthorne Army Depot and the Walker Indian Reservation which may place design constraints on this portion of the corridor alternatives. Route B2 passes between Fallon and Naval Air Station (NAS) Fallon Range B-16 to the west, and must avoid encroachment and provide unimpeded access to this range from other facilities to the east. Route B3 may impact several monuments and recreation areas. Route B4 crosses a USFS roadless area, and is adjacent to tribal lands, state parks and wildlife management areas in Washoe Valley.

Cost

Planning-level capital cost estimates were prepared for each corridor alternative using the NDOT Project Estimation Wizard. Given the preliminary nature of the analysis, interchange and bridge locations, which have a meaningful impact on potential construction costs, were assumed for each corridor alternative, but are likely to change as more detailed alignment studies occur. Accounting for potential construction, right-of-way, and maintenance costs, Routes A1 and B2 had the lowest overall project costs, with costs increasing in order for B1, B3, and B4.

Technology

This criterion was scored on each alternative's and option's ability to provide communications for motorists and Intelligent Transportation Systems (ITS), electrical power and natural gas for alternative fueled vehicles, and electric power for ITS and other highway uses, such as lighting.

US 95 is part of Nevada's Electric Highways and the communities of Indian Springs, Beatty, Tonopah, Hawthorne, and Fallon, along US 95, as well as Yerington, Gardnerville, Carson City, Reno, and Lovelock, along other routes, have charging stations for electric powered vehicles. The effects of these potential I-11 corridor alternatives on the ability of electric powered vehicles to have access to power was considered during the scoring.

Community Acceptance

This criterion is based on the sentiment of feedback received from both stakeholders and the public, in favor of, or not in favor of, specific corridor alternatives. Route A1 received relatively neutral feedback, focused more on details that will be determined further in NEPA. Routes B2 and B3 received the highest degree of positive feedback, while B4 received the highest balance of negative feedback. B5 was developed per public feedback and will be vetted in the next round of outreach.

Table 5. Evaluation Screening Results

Evaluation Category		Segment A	Segment B				
		A1	B1	B2	B3	B4	B5
Modal Interrelationships							
1A	How well does this corridor provide sufficient opportunity for a multi-use corridor?	4	3	2	2	3	2
Capacity/Travel Times, Speeds, and Safety							
2A	What are the estimated travel time savings over No Build (2040)?	1	5	4	4	1	1
2B	What are the total long-distance vehicles miles traveled (VMT)?	1	3	5	5	5	2
2C	What is the average travel speed on the corridor?	5	5	5	5	5	5
2D	How well does this corridor provide for a safe trip for travelers and meet motorists' expectations?	5	4	5	5	4	4
Economic Vitality							
3A	How well does this alternative improve access and connectivity to major economic activity centers in the Study Area?	4	2	4	5	5	4
Transportation Plans and Policies							
4A	How well is this alternative consistent with funded transportation projects?	4	1	3	2	5	3
4B	How well is this alternative consistent or compatible with long-term transportation visions and plans?	4	1	4	1	4	1
Environmental Sustainability							
5A	What is the impact to wildlife and habitat (year-round, seasonal, and/or connective)?	4	2	4	2	1	3
5B	What is the impact to land managed for conservation or wildlife purposes?	4	2	4	2	1	4
5C	What is the impact to undisturbed water resources (floodplains, waterways, and wetlands)?	4	3	3	3	2	4
5D	What is the impact to important paleontological and cultural resources?	3	2	4	3	3	2
Land Use and Ownership/Management							
6A	How consistent is this alternative with regional and local land use plans?	4	4	3	2	1	1
6B	How compatible is this alternative with major land management patterns?	4	4	3	3	1	2

Evaluation Category		Segment A	Segment B				
		A1	B1	B2	B3	B4	B5
Cost							
7A	What is the order of magnitude cost for this alternative, including construction and right-of-way?	5	3	4	2	1	3
Technology							
8A	How well does the alternative accommodate alternative fuel vehicles (power availability)?	5	2	5	5	3	2
8B	What is the level of wireless communication availability/accessibility?	5	4	5	5	5	4
Community Acceptance							
9A	How well is this alternative accepted by the Stakeholder Partners Group?	4	3	4	4	2	4 [1]
9B	How well is this alternative accepted by the public?	4	3	4	4	2	4 [1]
Total Score		**74**	**56**	**75**	**64**	**54**	**55**

[1] Route B5 was developed per public and stakeholder feedback during the March 2018 outrech process and therefore has not yet been vetted by the community; scoring serves as a placeholder, based on similar feedback, until next round of outreach.

Notes:

- Rating Scale = Least Favorable (1) – Most Favorable (5)
- The evaluation rating scale is relative; alternatives are considered in relation to each other. An alternative receiving a "least favorable" rating does not inherently mean that the alternative is flawed, but rather it least meets the established criterion as compared to the other alternatives. Likewise, if an alternative receives the highest rating, it may still face issues or obstacles with respect to that criterion.
- Segment A alternative is not being compared against Segment B alternatives.

5.2 Detailed Evaluation Results

5.2.1 Modal Interrelationships (1A)

Rights-of-ways for highway use are often shared with other modes, such as rail lines and utilities. Sharing rights-of-way reduces the disturbance footprint and the impact on the environment. This criterion evaluated the potential for a multi-use corridor.

Route A1

The existing US 95 alignment, from Las Vegas to Tonopah, for the most part follows the historic Las Vegas and Tonopah Railroad route from Las Vegas to south of Beatty, and then the historic Tonopah and Tidewater Railroad to south of Goldfield. As such, most of this route is also suitable for passenger and freight rail, including high-speed rail. A large portion of it is also suitable for a Hyperloop route. Due to the mostly level terrain the existing 400-foot right-of way can accommodate utilities, as well. Most of this route also traverses BLM lands. Portions of this route fall within a BLM designated utility corridor.

Routes B1-B5

Route B1 from Tonopah to US 50 and Fallon follows some existing unimproved roads, but for the most part does not follow existing roadways. Virtually all of this route is on BLM Lands up to US 50. Portions of the segment that runs from Tonopah to Mina (B2, B3, and B4) follow the historic Tonopah and Goldfield Railroad route, from Mina to Luning (B2, B3, and B4) and from Luning to Hawthorne (B2, B3, and B4) along the existing Mina Branch Railroad, and are suitable for passenger and freight rail, including high-speed rail. High-speed rail may require some minor deviations from this alignment. Most of this route would also be suitable for a Hyperloop route. Some of the right-of-way along this route may have to be widened to accommodate the highway, as well as other modes. Route B5 follows some unimproved roads, some new alignment, and 18 miles of existing SR 839. SR 839 passes through a proposed Department of Defense withdrawal for military training purposes, which makes right-of-way expansion for other modes a challenge.

5.2.2 Travel Times, VMT, Speeds, and Safety (2A-2D)

The current version of the Nevada Statewide Travel Demand Model (NVTDM) was used to perform a broad overview of travel times, VMT and speeds for each of the alternative corridors. The NVTDM is a TransCAD software based three step statewide travel demand model maintained by NDOT. The purpose of the model is to test proposed major highway facilities, identify potential deficiencies on state and interstate facilities that fall outside of MPO areas, and to assist with forecasting future volumes on major roadways throughout the state.

The model assessed future (2040) No Build conditions and future (2040) Build Corridor conditions. Please note that a No Build (or “do no improvements” scenario) is only used for this criteria to establish a context for the travel demand results. A No Build Alternative is a required option during NEPA, but is not being compared to all corridor alternatives at this level of study, as the purpose of this study effort is to identify and advance the most viable corridor alternatives into a future NEPA study.

For the purposes of this analysis, faster travel times between endpoints and an increase in average travel speeds are beneficial effects of the project, compared to the No Build. Travel time is improved with grade separations required through interstate design standards, and bypasses reduce slower traffic through existing communities – although the portions of each corridor passing through existing communities is minimal.

An increase in VMT is an indicator of the demand for the alternative and is also a beneficial effect of the project. A summary of the evaluation results is provided below.

5.2.2.1 Travel Times, VMT, and Speeds (2A-2C)

The travel demand model results for the No Build Alternative and Route A1 are presented in **Table 6**. The No Build Alternative A assumes travel on the existing US 95 corridor, between Las Vegas and Tonopah. The highway varies from a two-lane highway with no passing lanes to a four-lane divided highway. Travel speeds along the corridor are high and average 68 mph, with a total end-to-end travel time of 174 minutes.

Route A1

Route A1 follows existing US 95 between Las Vegas and Tonopah and is an improvement over the No Build Alternative for every criterion, primarily because of a slightly shorter travel distance (1.6 miles shorter). However, the differences are negligible. The total travel time is 169 minutes, approximately 5 minutes faster than the No Build Alternative. There would be a negligible decrease in VMT (-0.1 percent). Route A1 does not provide a significant improvement in travel speeds because speeds are already high along this route.

Table 6. Segment A Travel Demand Model Results (Travel Time, VMT, and Speed)

Criteria	No Build A	Route A1	Difference
Travel Time (mins.)	174	169	-5 mins (-3.1%)
Length (miles)	198.5	196.9	-1.6 miles (-0.8%)
Vehicle Miles Traveled	454,758	454,362	-396 vmt (-0.1%)
Average Speed (mph)	68.4	70.0	+1.6 mph (+2.3%)

Routes B1-B5

The travel demand model results for the No Build Alternative and Routes B1 through B5 are presented in **Table 7**. For comparative purposes, the No Build Alternative B is based on the most direct route between Tonopah and I-80, via SR 376, US 50, and SR 305. However, there are various existing route possibilities for travel between Tonopah and I-80. The model results are intended to provide a general understanding of the future travel conditions in the Study Area and will be refined in future NEPA-level analyses to more comprehensively evaluate the No Build versus Build conditions.

Table 7. Segment B Travel Demand Model Results (Travel Time, VMT, and Speed)

Criteria	No Build B	Route B1	Route B2	Route B3	Route B4	Route B5
Travel Time (mins.)	186	142 (-44 mins/-24%)	168 (-18 mins/-10%)	171 (-15 mins/-8%)	245 (+59 mins/+32%)	197 (+11 mins/+6%)
Length (miles)	207	165 (-41 mi/20%)	196 (-11 mi/-5%)	200 (-7 mi/-3%)	277 (+70 mi/+34%)	227 (+20 mi/+10%)

Criteria	No Build B	Route B1	Route B2	Route B3	Route B4	Route B5
Vehicle Miles Traveled	341,962	384,144 (+42,182 VMT/+12%)	481,916 (+139,954 VMT/ +41%)	456,195 (+114,233 VMT/ +33%)	600,983 (+259,021 VMT/ +76%)	306,753 (-35,209 VMT/ -10%)
Average Speed (mph)	67	70 (+3 mph/5%)	70 (+3 mph/5%)	70 (+3 mph/5%)	68 (+1 mph/+1%)	69 (+2 mph/+4%)

The No Build Alternative consists of a two-lane highway and is approximately 207 miles long. Travel speeds along the corridor are high and average 67 mph, with a total end-to-end travel time of 186 minutes.

Route B1

Route B1 is a new corridor and was developed as the shortest route from Tonopah to I-80 and US 95 via Fallon. The route is approximately 41 miles shorter than the No Build Alternative and provides significant travel time savings (44 minutes). VMT would increase by over 42,000 miles (12 percent), indicating demand for the facility.

Route B2

Route B2 is an alternative short route to I-80 via Fallon, following existing highways as much as possible. The route is approximately 11 miles shorter than the No Build Alternative and provides moderate travel time savings (18 minutes). VMT would increase by approximately 140,000 miles (41 percent). The significant increase in VMT is attributed to higher demand for an access-controlled hgihway. The corridor would travel near Fallon and other smaller communities.

Route B3

Route B3 follows a similar route as B2, but deviates from B2 to follow US 95 ALT to I-80 and Fernley, instead of Fallon. This alternative follows existing highways as much as possible and was developed to minimize impacts on tribal lands. The route is approximately 7 miles shorter than the No Build Alternative and provides moderate travel time savings (15 minutes). VMT would increase by approximately 114,200 miles (33 percent). The significant increase in VMT is attributed to higher demand for the highway. The corridor would travel near Fernley and other more populated communities than those near B1 and B2.

Route B4

Route B4 follows Routes B2 and B3 along US 95 past Walker Lake/Hawthorne. Route B4 deviates north of Walker Lake to a new corridor that travels west and connects to SR 829 and follows SR 208 west to US 395, continuing along US 395 north to Carson City, and I-580 north to its interchange with I-80. This alternative was developed to minimize impacts on tribal lands and to route I-11 directly to Reno via Carson City. The route is approximately 70 miles longer than the No Build Alternative and serves a substantially different travel market than Routes B1 through B3. Given the longer route, travel time would be 59 minutes longer than the No Build Alternative and VMT would increase by approximately 259,000 miles (76 percent), the most of any alternative. B4 travels through Carson City, which has the second largest population in the Study Area.

Route B4 has a different endpoint serving a substantially different travel market than the other alternatives, therefore, travel times for additional existing routes were estimated from Google Maps to compare travel times between Tonopah and Reno. **Table 8** presents the travel time comparison for

Route B4. Travel on US 95 north to US 95 ALT north to I-80 west provides the fastest existing route between Tonopah and Reno (224 minutes). Travel on US 95 to I-80 west provides a comparable travel time at 227 minutes. The existing routes, while faster, do not provide service to Carson City.

Table 8. Comparison of Route B4 Travel Times to Existing Routes

Route	Origin/Destination	General Route	Travel Times (mins.)	Length (miles)
Alt. B4	Tonopah-Reno, via Carson City	US 95- US 395/I-580- I-80 + new corridors	245	277
Existing	Tonopah-Reno, via Silver Springs	US 95- Alt 95- I-80	224	228
Existing	Tonopah-Reno, via Fallon	US 95- I-80	227	237
Existing	Tonopah-Reno, via Carson City	US 95- US 395/I-580- I-80	292	292

Route B5

Route B5 follows Routes B2, B3, and B4 along US 95 through Walker Lake/Hawthorne. Route B5 deviates east of Walker Lake to SR 839, which travels northeast to US 50. The corridor connects US 50, US 95, and US 50A to connect to I-80 at Fernley. Route B5 is the second longest route with the second longest travel time, only behind Route B4. This route is circuitous and travels through a very remote area of Nevada. This is reflected in the fact that this route also has the lowest VMT. The travel demand model indicates that travel on US 95 is preferred over Route B5 even though travel speeds on US 95 are slower through the local communities.

5.2.2.2 Safety (2D)

The possible number of segment and option combinations make it impractical, at this stage of the PEL process, to quantify the estimated reduction in crashes and improvements in safety. **Table 9** provides crash data for existing highways that are in the study area and potential routes for the I-11 Corridor.

The FHWA collects crash data and before and after studies of roadway improvements from agencies nationwide and provides the results of the studies as crash reduction factors (CRF) and crash modification factors (CMF).

The *Desktop Reference for Crash Reduction Factors*, FHWA 2008, documents the estimates of the crash reduction that might be expected if a specific countermeasure or group of countermeasures is implemented with respect to roadways departure. The CRF for installing a median on a rural multi-lane highway freeway indicates that there would be a 12 percent reduction in injury crashes.

Crash reduction factors are also available from FHWA's Crash Modification Factors Clearinghouse, an online repository of before and after safety studies of roadway improvements. The crash reduction factor, dated 2015, for all crash types indicates when converting a two-lane roadway to a four-lane divided highway the crashes are reduced by 21 percent for rural roadways with less than 10,000 AADT (annual average daily traffic) and by 29 percent for rural roadways with at least 10,000 AADT. The reduction for fatal and injury crash types is 45 percent (not AADT or rural/urban specific). All of the two-lane highways, in the study area, have less than 10,000 AADT.

Table 9 provides a summary of the number of crashes, by fatality, injury, and property damage only (PDO) crashes for the selected roadways in the study area. Based on this analysis, all the alternatives have received a favorable rating.

Table 9. I-11 Las Vegas to Northern Nevada Crash Data Summary

Route	County	Mileposts		Location	Number of Crashes			Existing Lanes	Route or Option
		From	To		Fatality	Injury	PDO		
US 95	Clark	92.63	132.13	Kyle Canyon to Clark/Nye Line	5	47	53	4	A1
US 95	Nye	0.00	6.96	Clark/Nye line to End 4-Lanes	0	2	7	4	A1
US 95	Nye	0.00	107.24	Clark/Nye line to Nye/Esmeralda Line	8	99	137	2	A1
US 95	Esmeralda	0.00	44.13	Nye/Esmeralda Line to Nye/Esmeralda Line	3	29	52	2	A1
US 95	Nye	107.24	108.44	Nye/Esmeralda Line to US 6	0	3	4	2	A1
US 6	Nye	0.00	1.80	Nye/Esmeralda Line to US 95	0	10	17	2	B1- B4
US 6	Esmeralda	18.99	57.74	US 95 to Nye/Esmeralda Line	6	17	44	2	B1- B4
US 95	Esmeralda	83.12	96.78	US 95 to Esmeralda/Mineral Line	1	8	8	2	B1- B4
US 95	Mineral	0.00	92.56	Esmeralda/Mineral Line to Mineral/Lyon Line	6	65	143	2	B1- B4
US 95	Lyon	0.00	2.67	Mineral/Lyon Line to Lyon/Churchill Line	0	5	5	2	B1, B2, f
US 95	Churchill	0.00	59.14	Lyon/Churchill Line to I-80	1	51	156	2	B1, B2, f
US 50	Churchill	21.17	67.73	US 95 to SR 361	5	26	60	2	B1
US 50A	Churchill	0.00	9.29	Lyon/Churchill Line to US 50	0	24	51	4	B2
US 50	Churchill	11.26	20.61	US 50A to US 95	4	114	295	4	B2
US 50A	Lyon	15.43	23.27	SR 343 to Lyon/Churchill Line	1	38	68	4	B2
US 95A	Lyon	59.67	60.63	US 50A/SR 828 to I-80	0	42	98	4	B2, B3
US 95A	Mineral	0.00	10.68	US 95 to Mineral/Lyon Line	0	0	10	2	B3
US 95A	Lyon	0.00	44.25	Mineral/Lyon Line to US 50A	1	63	109	2	B3
US 50A	Lyon	0.00	15.43	US 95A to SR 343 on Main St. Fernley	3	52	148	2	B3
SR 208	Lyon	0.00	2.37	Lyon/Douglas Line to SR 829	0	1	4	2	B4
SR 208	Douglas	0.00	8.77	US 395 to Lyon/Douglas Line	1	5	6	2	B4
US 395	Douglas	2.82	33.96	SR 208 to Douglas/Carson City Line	10	311	636	4	B4
US 395	Carson	0.00	0.56	Douglas/Carson City Line to US 50/I-580	0	32	50	4	B4
SR 839	Mineral	74.82	78.97	End of Pavement to Mineral/Churchill Line	0	1	1	2	b
SR 361	Mineral	0.00	22.20	US 95 to Mineral/Nye Line	0	3	11	2	N/A
SR 361	Nye	0.00	22.28	Mineral/Nye Line to Mineral/Nye Line	0	4	6	2	N/A
SR 361	Mineral	22.20	24.96	Mineral/Nye Line to Mineral/Churchill Line	0	0	1	2	N/A
SR 361	Churchill	0.00	15.69	Mineral/Churchill Line to US 50	0	2	13	2	N/A
US 50	Churchill	20.39	21.17	US 50 Fallon 4-Lanes	0	22	59	4	N/A
SR 839	Churchill	0.00	13.92	Mineral/Churchill Line to US 50	0	0	1	2	N/A

Route A1

A portion (approximately 25 percent) of Segment A is already a divided four-lane highway. Upgrading the four-lane section to a freeway will provide additional safety measures by eliminating at-grade intersections and additional median safety measures. For the most part, the rest of the two-lane section provides long straight stretches for safe passing and large radii curves. The only exceptions are near and through Beatty, Goldfield, and Tonopah.

Route B1

Route B1 provides the most direct route to I-80 with few geometrical issues. However, it crosses over two summits, one with an elevation of about 5,800 feet and the other at approximately 6,300 feet. These summits would likely have more snow and freezing conditions than a lower route, with these conditions extending over a longer season.

Route B2

Route B2 follows existing US 95 from Tonopah to Hawthorne, then around the east side of Walker Lake before joining back with US 95 until south of Fallon. The route then bypasses Fallon on the southwesterly side of the City and follows US 50A to Fernley. This route has minimal geometric and safety issues and does not cross over any high summits.

Route B3

Route B3 follows existing US 95 from Tonopah to Hawthorne, then around the east side of Walker Lake before joining back with US 95 and then following US 95A to Fernley. This route has minimal geometric and safety issues and does not cross over any high summits.

Route B4

Route B4 follows existing US 95 from Tonopah to Hawthorne, then around the east side of Walker Lake before crossing over US 95 and crossing the Wassuk Mountain Range northwest of Walker Lake. The route then connects to SR 208, then to US 395 north of Topaz Lake, then to I-580 in Carson City. This route would require crossing over a summit with an elevation of 6,200 feet. There may also be vertical and horizontal geometric issues through the mountain range. After crossing the Wassuk Range the rest of the route would have few geometric and safety issues.

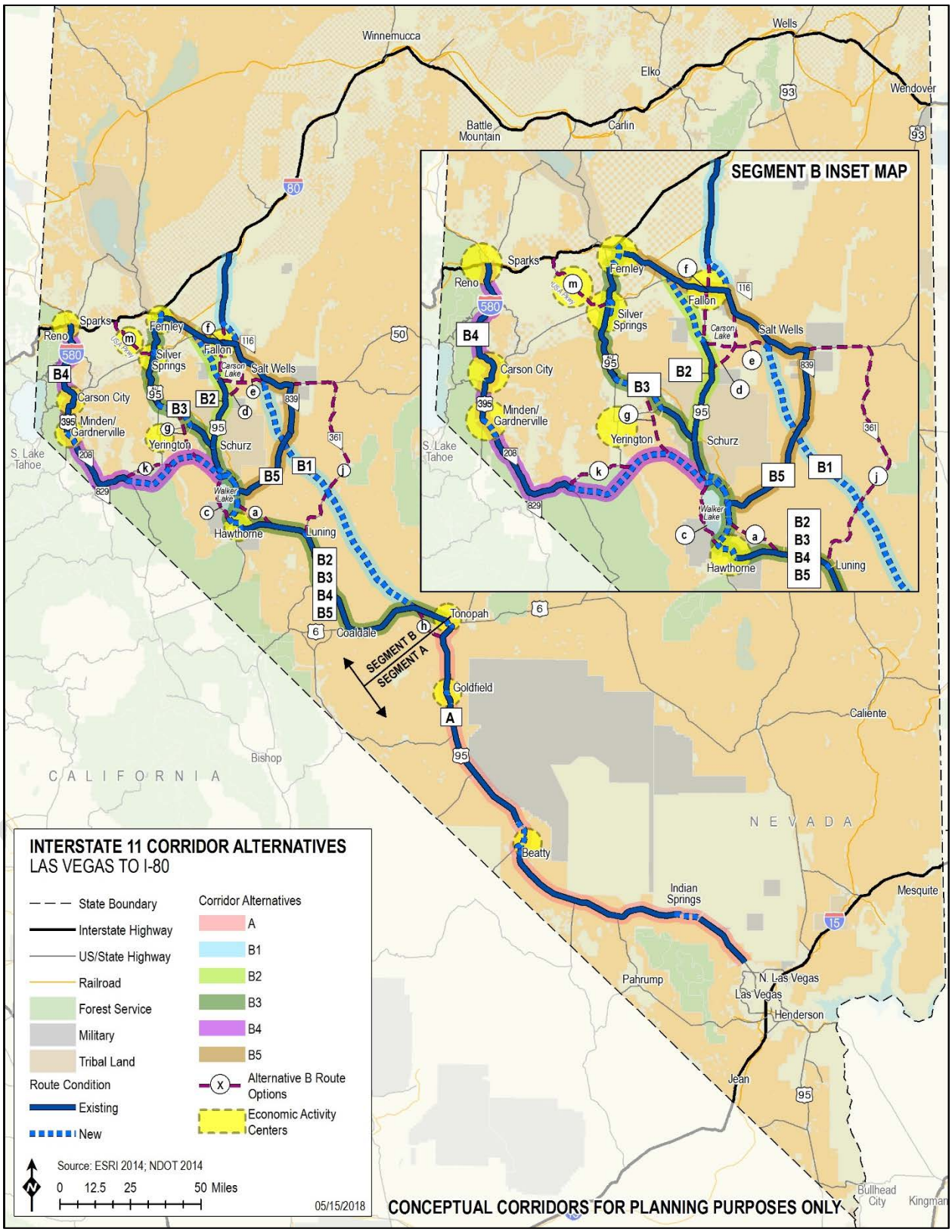
Route B5

Route B5 is partly a new alignment, follows some unimproved roads, and 18 miles of the existing SR 839. It crosses over one summit with an elevation of 5,800 feet and another with an elevation of 6,400 feet. There may also be vertical and horizontal geometric issues through the mountainous areas.

5.2.3 Economic Vitality (3A)

In coordination with the Governor's Office of Economic Development (GOED), a questionnaire was distributed to regional economic development stakeholders in Northern Nevada to solicit input on this evaluation criteria. The goal was to define community-level economic activity centers, or the broad centers of employment and commerce in the region (e.g., not individual business parks or employers). Each agency was asked to circle such centers on a map (shown on **Figure 10**), and cite additional documents that could aid the study team in understanding the goals for regional economic development. Input was received from Nye County Regional Economic Development Authority, Mineral County, Storey County, and the Northern Nevada Development Authority (questionnaire and feedback received included in **Appendix B**; please note that while agencies were asked to score the individual alternatives, the evaluation results reflect the performance from end-to-end, not just in each geographic area, and therefore scoring will not necessarily match).

Figure 10. Regional Economic Activity Centers



The economic vitality criterion compares each alternative via the number of regional economic activity centers each alternative connects. The degree of connectivity will aid in selecting the most reasonable corridor to meet the purpose and need of the I-11 Corridor through the Intermountain West, of which key tenants include trade and economic growth.

This a broad measure and does not ascertain the level of economic impact I-11 may have on individual communities. That is a more complex question that requires a greater understanding of the corridor itself (e.g., specific alignment, existing/planned land uses), and more quantitative inputs to answer. That level of analysis will come in subsequent study phases. However, to begin to frame one factor in the local economic success of I-11, a white paper has been developed on the economic impact of bypassing small communities. More information on this topic can be found in **Appendix C**.

Route A1

Route A1 runs along US 95 from northwestern Las Vegas to Tonopah. Three economic activity centers have been identified along this alternative: Beatty, Goldfield, and Tonopah. Each of these communities are unique in their development and primary economic drivers. This alternative scores well because it connects each identified center. However, this segment will be important to review in more detail in subsequent NEPA studies to understand how I-11 makes the connections between these communities, specifically – if the alignment will improve the existing US 95 corridor or create a bypass, and if the latter, what impact that may have on these communities.

Routes B1-B5

Alternatives B3 and B4 score the highest for this criterion, both connecting four economic activity centers. Both alternatives form a connection to Hawthorne, while B3 continues north through Silver Springs, Tahoe-Reno Industrial Center (TRIC) (while not an individual community, TRIC represents a large economic activity cluster of the same magnitude as a rural community), and Fernley. B4 continues northwest through Minden, Gardnerville, Carson City, and Reno.

Alternatives B2 and B5 follow close behind B3 and B4. Alternative B2 includes segments of existing and new highway corridors, following the same route as B3 and B4 from Tonopah to Hawthorne, and then forming a connection through Schurz, west of Fallon, and connecting to I-80 near Fernley. B5 makes a circuitous route to the east, connecting Hawthorne, Fallon, and Fernley.

Alternative B1 scores the lowest, making only one economic activity center connection (Fallon). As a new corridor, it is in a rural area with little development today and limited anticipated emerging development.

5.2.4 Transportation Plans and Policies (4A and 4B)

The documents reviewed for this criterion included statewide plans, regional plans and studies, and corridor specific studies completed since 2000. These documents were compiled from multiple agencies ranging from NDOT, RTC Southern Nevada, RTC Washoe County, Carson Area Metropolitan Planning Organization, and multiple counties. A full list of the documents reviewed can be found in **Appendix D**.

The idea of I-11 is not new. The *IWCS* was born out of the congressional designation of I-11 between Las Vegas and Phoenix. Since that study, the FAST Act extended the I-11 designation from Las Vegas to I-80. The *IWCS* has set the study area for this analysis by limiting the region to western Nevada and providing high level corridor alternatives for consideration. The FHWA has also designated High Priority Corridors and established the Intermountain West Corridor from Las Vegas to I-80.

Because I-11 does not exist today, and this effort is the catalyst for future planning and environmental efforts, specific I-11 recommendations are sparse, particularly in the older planning documents. A

consistent message, despite the age or focus of the documents, is a goal of improving regional connectivity which supports the purpose of and need for a new interstate facility.

This analysis focused on two main criteria: 1) consistency with funded transportation projects, and 2) consistency with long term transportation visions and plans. Federal and state legislation require long term planning documents for metropolitan areas and regions, and thus much of the planning efforts reviewed were focused in the urban areas where there are existing facilities and calculated growth. There are major capacity and preservation projects proposed on US 95 outside of Las Vegas and on I-580 near Reno which are important to note for this study but only differentiate corridor alternatives A1 and B4 in the analysis. Because of the distance covered by the proposed I-11, the evaluation for the alternatives and options outside of the regional planning areas was more focused on community goals and regional connectivity rather than capacity improvements.

Route A1

NDOT has made significant investments in the US 95 corridor, even prior to the I-11 classification. The program of projects that are a part of the Northwest Corridor improve US 95 from Washington Avenue to Kyle Canyon Road and include a new system to system interchange at CC-215. The second phase of improvements is a $78 million construction package that is currently under construction to widen US 95 between Durango Drive and Kyle Canyon Road and construct an interchange at Kyle Canyon Road. Future phases will complete the interchange movements and upgrade CC-215 to a divided freeway. These improvements are consistent with the desire to upgrade this segment to a limited access freeway and provide a gateway into the metropolitan area.

Beyond the Las Vegas metropolitan area, there are several projects in the Statewide Transportation Improvement Program (STIP) along US 95. Shoulder widening and slope flattening improvements proposed along US 95 from Kyle Canyon Road to Lee Canyon Road. Mill and surface projects are proposed on US 95 both north and south of Beatty totaling $26 million in 2019 and 2021. In Tonopah, a $12 million Complete Streets and Roadbed modification project is proposed.

The long-term vision for the US 95 corridor is consistent with the desire to upgrade the facility in the near term and beyond to serve greater regional connectivity needs as well as support the local communities along the corridor. The Nevada State Freight Plan prioritized an upgrade to US 95 to a four-lane divided highway from Kyle Canyon Road to Tonopah as a critical freight project.

Nye County and Esmerelda County both have master plans, which reference the importance of the existing US 95 to pass-through regional traffic, particularly trucks, as well as land use restrictions that eliminate alternative options for regional connectivity. Improving the maintenance requirements and the travel time reliability for this corridor is in line with the proposed community plans.

Routes B1-B5

Route B1 has not been documented for consideration in any previous planning studies, but there is mention of improved regional connectivity throughout the documents, thus the goal of B1 would align with the general goal of regional connectivity. The same is true for B3, which has little documentation in long-term visions or plans.

There are funded improvements on the existing US 95 corridor to improve the pavement between Schurz and Fallon, which is along the B2 corridor alternative.

The recently completed Carson City Freeway, which overlaps a portion of the B4 corridor alternative, would be an opportunity to leverage existing infrastructure to accommodate I-11 traffic, although the freeway was built to accommodate planned growth without consideration for the induced demand of a new regional interstate. There are also several funded improvements along US 395 and I-580 (within

the B4 corridor alternative) including ITS improvements and road rehabilitation. The B5 corridor alternative has a handful of funded improvements including a chip seal on SR 839 and slope repair on US 50, which are both schedule for 2018.

The Reno metropolitan area has a robust planning process, performed by NDOT, as well as the Carson Area Metropolitan Planning Organization which represents Washoe, Storey, and Douglas Counties. With the growth in population and traffic in this area, several pavement preservation and capacity improvements projects are proposed. In the long term, a new interchange at US 395 and I-580 is the next phase of the Carson City Freeway project. The Douglas County 2030 Transportation Plan also shows future proposed town bypasses that could be utilized should Route B4 move forward, and this document also identifies a range of short term to long term projects that upgrade additional segments of US 395 to a freeway.

Studying freight movements was a common recommendation within the plans as there is significant north south freight traffic on USA Parkway, US 95 ALT, and US 95 and the connections to east-west distribution on I-80 is important.

The other long-term planning document relevant to a proposed I-11 is the Fallon Range Training Complex Modernization Environmental Impact Statement (EIS). This project includes expansion of land ranges, airspace modifications, and public land withdrawal renewal. The Draft EIS is scheduled for release in fall of 2018. Routes B1 and B5 would require further coordination with the military expansion plans as the current SR 839 is located in the middle of the proposed expansion.

5.2.5 Environmental Sustainability (5A-5E)

Potential impacts on environmental sustainability were evaluated using four sets of criteria, as well as other criteria or resources the public or stakeholders identified. Readily available information or data were obtained and evaluated. Resource specialists compiled the information, identifying resources potentially impacted by the corridors and where those resources or their management may constrain the corridor. Summaries of the results are provided below, focusing on the most significant impacts on the resources or constraints on the corridor. Additional details of the evaluation and results are included in **Appendix E**.

5.2.5.1 Wildlife and Habitat (5A)

Known populations of protected animal and plant species and important habitat to support the sustainability of those populations were identified along each of the corridors.

Route A1

Much of Route A1 passes through habitat for the desert tortoise (State and Federal Threatened Species), and where highway expansion or new construction would be required, habitat may be impacted. Multiple riparian areas are present within the corridor near Beatty and Indian Springs, and multiple protected riparian species rely on these areas, including but not limited to the Amargosa toad, southwestern willow flycatcher, and yellow-billed cuckoo. Alignments within this area should avoid these features. Newly constructed bypasses around Beatty would pass through several bighorn sheep movement corridors. Mitigation measures including provision of highway under- or over-passes in this area may be required.

Route B1

Newly constructed highway between Tonopah and Fallon would pass through habitat and movement corridors for bighorn sheep, pronghorn antelope, and mule deer. Mitigation measures including provision of highway under- or over-passes in this area would likely be required. The large swaths of

newly constructed highway required for this alternative have potential to bisect habitat for many unevaluated species in the area. Sections of new construction in the Fallon area are likely to a have a high level of impact on riparian and wetland areas and multiple protected riparian species that rely on these areas, including but not limited to Lahontan cutthroat trout, yellow-billed cuckoo and other wetland bird species, and many sensitive bat species.

Route B2

Riparian habitat is present along areas of new construction bypassing Sodaville and Mina, and several protected riparian species may be present in these areas, including but not limited to yellow-billed cuckoo and Sodaville springfish. Alignments within this area should be planned in a way that avoids these features. Small areas of newly constructed highway bypassing Sodaville, Mina, and Luning, as well as areas of highway expansion could impact potential and known habitat for pale kangaroo mouse, a BLM Sensitive Species in Nevada.

Sections of new construction and potential highway expansion in the Walker River, Fallon, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat and multiple protected riparian species that rely on these areas, including but not limited to Lahontan cutthroat trout, yellow-billed cuckoo and other wetland bird species, northern leopard frog, and many sensitive bat species. Sections of newly constructed highway would pass through habitat and movement corridors for mule deer and bighorn sheep. Mitigation measures including provision of highway under- or over-passes in these areas may be required.

Route B3

Potential impacts to riparian habitat and wildlife habitat would be similar to those identified for Route B2. In addition, sections of new construction and potential highway expansion in the Walker River, Yerington, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat and multiple protected riparian species that rely on these areas, including but not limited to Lahontan cutthroat trout, yellow-billed cuckoo and other wetland bird species, northern leopard frog, and many sensitive bat species.

South of Silver Springs along the Carson River, USFWS-designated Critical Habitat for yellow-billed cuckoo occurs along existing highway likely requiring expansion. This could pose significant constraints and mitigation would be required. Sections of newly constructed highway would pass through habitat and movement corridors for mule deer and bighorn sheep. Mitigation measures including provision of highway under- or over-passes in these areas may be required.

Route B4

Riparian areas are present along areas of new construction bypassing Sodaville and Mina, and several protected riparian species may be present in these areas, including but not limited to yellow-billed cuckoo and Sodaville springfish. Alignments within this area should avoid these features. Small areas of newly constructed highway bypassing Sodaville, Mina, and Luning, as well as areas of highway expansion could impact potential and known habitat for pale kangaroo mouse, a BLM Sensitive Species in Nevada.

New highway construction in portions of this alternative would pass through areas noted as key for conservation for greater sage-grouse, including the bi-state distinct population. New highway construction may also fragment habitat for this species in areas where no physical barriers are currently in place.

Sections of new highway around Walker Lake, crossing the East Walker River, in the Toiyabe National Forest, and bypassing Gardnerville, as well as areas of potential highway expansion are likely to have a high level of impact on riparian and wetland habitat and multiple protected riparian species that rely on

these areas, including but not limited to Cui-ui, Lahontan cutthroat trout, yellow-billed cuckoo and other wetland bird species, several sensitive frog species, and many sensitive bat species. USFWS-designated Critical Habitat for Webber's ivesia occurs along existing highway possibly requiring expansion. This could pose severe constraints and mitigation would be required.

Sections of newly constructed highway would pass through habitat and movement corridors for bighorn sheep and mule deer. Mitigation measures including provision of highway under- or over-passes in these areas may be required. This corridor passes through areas providing habitat for a significant number of protected and sensitive federal and state-listed species.

Route B5

Riparian habitat is present along areas of new construction bypassing Sodaville and Mina, and several protected riparian species may be present in these areas, including but not limited to yellow-billed cuckoo and Sodaville springfish. Alignments within this area should be planned in a way that avoids these features. Small areas of newly constructed highway bypassing Sodaville, Mina, and Luning, as well as areas of highway expansion could impact potential and known habitat for pale kangaroo mouse, a BLM Sensitive Species in Nevada.

Sections of new construction and potential highway expansion in the Salt Wells, Fallon, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat and multiple protected riparian species that rely on these areas, including but not limited to Lahontan cutthroat trout, yellow-billed cuckoo and other wetland bird species, northern leopard frog, and many sensitive bat species.

Sections of newly constructed highway and expansion of existing roads from Walker Lake to Salt Wells would bisect crucial habitat and movement corridors for pronghorn antelope, mule deer and bighorn sheep. Mitigation measures including provision of highway under- or over-passes in these areas may be required. The construction of new highways and highway expansion in relatively undisturbed mountain ranges and valleys between Walker Lake and Salt Wells have the potential to bisect habitat for many unevaluated species in the area.

5.2.5.2 Special Designated Areas for Conservation (5B)

Land management agencies designate lands as special or protected to support the conservation of important resources, such as presence of endangered species (plant and animal), historic and current cultural uses, unique visual resources, and many others. A least favorable corridor alternative would be the alternative impacting the greatest amount of specially designated areas, or the corridor with the greatest potential for degradation of the value of these areas.

Route A1

Existing highway of Route A1 is adjacently north to the BLM Red Rock Canyon National Conservation Area. Highway expansion to the south would likely be constrained in this area. New highway construction near Beatty would intersect two areas of privately owned conservation areas, collectively called the Oasis Valley Macrosite. They are classified as Level 2 conservation areas, where "ecological disturbance events should be suppressed."

Route B1

Route B1 is adjacent to or may overlap a portion of the Gabbs Valley Range Wilderness Study Area (WSA). No permanent facilities or surface disturbance may occur in a WSA. Newly constructed highway would bisect the BLM-designated Stewart Valley Paleontological Area of Environmental Concern (ACEC) from its southeast corner to its northwest corner; alignments must avoid the area.

Portions of newly constructed highway would pass through BLM lands with Visual Resource Management (VRM) ratings of Class I and Class II. Class I lands are designated to preserve the existing character of landscapes, providing only for changes caused by natural ecological processes. Class II lands are also designated to preserve existing character of the landscape but allow for changes that do not attract the attention of the casual observer. Highway construction does not comply with the VRM plans in these places.

Route B2

New construction and probable highway expansion at the northern terminus of Alternative B2 encroaches into the Nevada Department of Wildlife (NDOW) Fernley Wildlife Management Area (WMA) and would likely be constrained in this area.

Route B3

New construction north of Yerington intersects with the NDOW Mason Valley WMA. In areas where it does not intersect, both sides of the highway would be immediately adjacent to, possibly encroaching into the WMA. Highway construction would likely be significantly constrained in this area. The portions of newly constructed highway bypassing Silver Springs would pass through BLM lands with VRM ratings of Class II. Highway construction does not comply with the VRM plans in this location.

South of Silver Springs along the Carson River, USFWS-designated Critical Habitat for yellow-billed cuckoo occurs along existing highway likely requiring expansion. This could pose significant constraints and mitigation would be required. New construction at the northern terminus of the alternative may encroach into the NDOW Fernley WMA and would likely be constrained in this area.

Route B4

New highway construction passing through USFS land would occur in the USFS Pine Grove North Roadless Area. Construction would likely be prohibited or highly constrained in this area. A small section of new highway construction in the Toiyabe National Forest would pass through an area designated under the USFS Visual Quality Objective for Partial Retention.

Probable highway expansion would encroach into two private conservation areas: the Carson River Megasite Environmental System and the Walker River/Walker Lake Environmental System. Constraints are probable if expansion is required in these areas. They are classified as Level 2 conservation areas. USFWS-designated Critical Habitat for Webber's ivesia occurs along existing highway possibly requiring expansion. This could pose severe constraints and mitigation would be required. Existing highway expansion in Washoe Valley, if needed, would encroach into the NDOW Scripps WMA and the Washoe Lake State Park and would likely be constrained in this area.

Route B5

New construction and probable highway expansion at the northern terminus of Route B5 encroaches into the NDOW Fernley Wildlife Management Area and would likely be constrained in this area. This route would require new construction between two adjacent VRM Class II areas east of Walker Lake. Existing highway near Salt Wells also passes through a VRM Class II designated area. Class II lands are designated to preserve existing character of the landscape but allow for changes that do not attract the attention of the casual observer.

5.2.5.3 Waterways and Floodplains (5C)

Rivers, streams, and associated wetlands and floodplains are unique resources in the desert environment, and these resources have enhanced protections and regulations over other desert environments. Digital information on known perennial waterways, wetlands, and floodplains were

obtained from webpages maintained by the US Geologic Survey (USGS), USFWS, Federal Emergency Management Agency (FEMA), EPA, Nevada Department of Water Resources (NDWR), BLM, USFS, and NDOW to identify the location of these resources. The presence of these resources along each corridor was evaluated and their relative abundance within or adjacent to the corridors was summarized. Impacts associated with developing new corridors in areas with wetlands or other water resources were considered to have a greater impact than the potential expansion of existing highways given the existing disturbance. However, all impacts to wetlands or other water resources will require detailed delineation, jurisdictional determination, and permitting under the Clean Water Act.

Route A1

New highway construction bypassing Beatty would likely have a moderate to high level of impact on riparian and wetland habitat. Alignment within this area should be planned in a way that avoids these features. New highway construction bypassing Beatty would cross the Amargosa River in two places. Mitigation measures would likely be required. Sections of new construction bypassing Beatty are within a FEMA 1% Annual Chance Flood Hazard Area and mitigation would be required.

Route B1

New highway construction near Fallon would likely have a high level of impact on sensitive riparian and wetland habitats. Construction in this area should be planned in a way that avoids these features and extensive mitigation may be required. New highway construction between Tonopah and Fallon would likely have a moderate level of impact on desert riparian and wetland habitat. Alignment within this area should be planned in a way that avoids these features.

New highway construction near Fallon would cross the Carson River, a 303(d) Listed Impaired Waterway. Mitigation measures and permitting would likely be required. Sections of new construction are within a FEMA 1% Annual Chance Flood Hazard Area and mitigation would be required.

Route B2

Portions of new highway bypassing Sodaville and Mina as well as existing highway along the route would likely have a moderate level of impact on desert riparian and wetland habitat. Alignment within this area should be planned to avoid these features. New highway construction would cross the Walker River and mitigation would be required.

Sections of new construction and potential highway expansion in the Walker River, Fallon, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat. Construction in this area should avoid these features and extensive mitigation may be required. Sections of new construction are within a FEMA 1% Annual Chance Flood Hazard Area and mitigation would be required.

Route B3

Like Route B2, portions of new highway bypassing Sodaville and Mina, as well as existing highway along the route would likely have a moderate level of impact on desert riparian and wetland habitat. Sections of new construction and potential highway expansion in the Walker River, Yerington, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat. Construction in this area should avoid these features and extensive mitigation may be required.

New highway construction would cross the Walker River, and expansion of existing crossings would be required along the Carson River. Mitigation would be required. Sections of new construction are within a FEMA 1% Annual Chance Flood Hazard Area and mitigation would be required.

Route B4

Like Route B2, portions of new highway bypassing Sodaville and Mina as well as existing highway along the route would likely have a moderate level of impact on desert riparian and wetland habitat. New highway or expansion of existing highway crosses the Walker River, East Walker River, West Walker River, and the Carson River and is adjacent to Walker Lake and Washoe Lake (most of which are on the impaired waters list). The corridor crosses the Truckee River south of I-80, but expansion of the highway is not anticipated in that area.

The corridor may impact riparian or wetland habitat along each of the river crossings and lakes mentioned above. In addition, the corridor crosses or is adjacent to numerous small creeks and canals with riparian or wetland habitat. The bypass around Minden and Gardnerville crosses agricultural lands as well as canals that may be considered wetlands. Sections of new construction are within a FEMA 1% Annual Chance Flood Hazard Area in multiple locations and mitigation would be required.

Route B5

Portions of new highway bypassing Sodaville and Mina as well as existing highway along the route would likely have a moderate level of impact on desert riparian and wetland habitat. Alignments within this area should be planned to avoid these features.

Sections of new construction and potential highway expansion in the Salt Wells, Fallon, and Fernley areas are likely to a have a high level of impact on riparian and wetland habitat. Construction in these areas should avoid these features and extensive mitigation may be required. New highway construction would cross the Carson River, a 303(d) Listed Impaired Waterway, and mitigation would be required. Areas likely requiring highway/roadway expansion and small sections of new construction are within FEMA 1% Annual Chance Flood Hazard Areas and mitigation would be required.

5.2.5.4 Paleontological and Cultural Resources (5D)

Prehistoric and historic resources are prevalent in many areas of western Nevada and both are protected under state and federal laws and regulations. The presence of each of these resources were evaluated to the extent data and other existing information was available.

The Nevada State Historic Preservation Office (SHPO) maintains the Nevada Cultural Resources Information System (NVCRIS), a repository of maps and other information of known Cultural Resources throughout the state, including those listed in the Register of National Historic Places. Records from the NVCRIS were obtained and a sensitivity map using GIS was developed, evaluating each corridor into segments based on the presence, density, and sensitivity of the cultural resources present. In addition, a qualitative evaluation of the proposed corridors was conducted by examining historic maps and written sources relating to historic mining in Nevada.

Paleontological Resources were reviewed using known records of resources based on previous surveys and using locations of geologic layers known to have high probability of containing unique paleontological resources. Areas were assigned to a class based on the potential for significant resources to be present. Classifications ranged from “Class 1 – Very Low Potential” and “Class 2 – Low Potential” which will likely require minimal further evaluation or mitigation, to “Class 5 – Very High Potential” which are areas that consistently and predictably produce scientifically significant fossils, and field surveys are usually necessary prior to surface-disturbing activities or land tenure adjustments. Mitigation will often be necessary before and/or during these actions. In addition, Class 5 areas are often officially designated as areas of avoidance or special interest.

Route A1

New construction of bypasses around historic settlements may require extensive surveys or pose substantial constraints. Expansion of existing right-of-way could be constrained along Nevada Test and Training Range (Air Force) due to potential impact on Cold War-Era artifacts. Expansion of existing right-of-way near Mercury may be constrained due to a historic site. The corridor from Las Vegas to Mercury crosses same formations as Tule Springs Fossil Bed National Monument; with a high likelihood of encountering significant resources requiring mitigation.

Route B1

Sensitive architectural resources, historic settlements, and prehistoric archaeological sites are near Fallon, all of which would restrict alignment selection and require extensive mitigation and possibly prohibit construction through some areas. Several sites listed on the National Register of Historic Places are in areas of new construction and possible highway expansion near Fallon and substantial constraints would be anticipated. New construction along the entire alternative would pass through highly fossiliferous formations, including an area designated by the BLM as a paleontological Area of Critical Environmental Concern (ACEC).

Route B2

Extensive surveys may be required in the Walker Lake area, Mina, and Luning to identify effects of new highway construction on historic settlements. Expansion of highway near Fallon and Fernley may be constrained by sites listed on the National Register of Historic Places. These sites may require extensive mitigation and may impose significant constraints on alignment selection. The region around Fallon is rich with prehistoric activity and multiple complex sites and surveys, monitoring and mitigation may be required. The expansion of highway along US 50 through the historic settlement of Hazen (east of Fernley) may require surveys, monitoring and mitigation.

Route B3

The expansion of highway south of Silver Springs may be constrained by sites listed on the National Register of Historic Places. Sensitive paleontological formations in the Yerington area may require significant surveying and mitigation. South of Silver Springs near the Carson River, the corridor passes through or is adjacent to Fort Churchill Historic Monument and the Buckland Station, both of which are listed on the National Register of Historic Places. Expansion of the highway in these areas would require additional survey, evaluation and likely mitigation.

Route B4

Extensive surveys may be required in the Walker Lake area, Mina, and Luning to identify effects of new highway construction on historic settlements. New construction around Wellington, Gardnerville, and Minden may impact significant historic sites requiring surveys, monitoring, and possible mitigation. Resources potentially located may require extensive mitigation and may impose constraints on alignment selection. New construction near Yerington and Smith Valley may require extensive paleontological surveys and mitigation.

Route B5

Extensive surveys may be required in the Walker Lake area, Mina, and Luning to identify the effects of new highway construction on historic settlements. Surveys and potential mitigation would be required for known historic settlements and multiple archaeological sites between Walker Lake and Salt Wells. Expansion of highway within and near Fallon and Fernley may be constrained by sites listed on the National Register of Historic Places. Three sites in Fallon are adjacent to the existing road being considered for the corridor, and others are the area. These sites may require extensive mitigation and

may impose significant constraints on alignment selection. The region around Fallon is rich with prehistoric activity and multiple complex sites and surveys, monitoring and mitigation may be required. The expansion of highway along US 50 through the historic settlement of Hazen (east of Fernley) may require surveys, monitoring and mitigation.

5.2.5.5 Other Concerns

Stakeholders and the public have had the opportunity to identify issues and concerns related to environmental sustainability, and provide numerous comments regarding resources or other concerns to be evaluated in this process. In most cases, the issues identified fell within the other criteria being evaluated and are incorporated into other sections of this report.

One comment was provided regarding the BLM inventories of Lands with Wilderness Characteristics. While BLM is required to maintain inventories of these lands, along with many other resources, the presence of inventoried lands that have not been classified as Wilderness or Wilderness Study Areas are afforded no special protections or management constraints. Wilderness characteristics of the lands are to be considered during planning or NEPA reviews for proposed projects, and this project is not at that stage. These characteristics will be addressed when alignments are being considered in corridors selected for further review. As the public and stakeholder outreach process continues, additional issues or concerns may be identified that are not currently addressed. When this occurs, those issues or concerns will be evaluated and incorporated as appropriate.

5.2.6 Land Use and Ownership/Management (6A and 6B)

Potential impacts of the project and potential constraints on land ownership or management, and land use patterns on those lands were evaluated. The analysis was based on readily available information or data.

5.2.6.1 Land Use Plans (6A)

Federal, state and local agencies develop short and long-term plans to guide land use and development on lands within their jurisdiction or management direction. Such plans exist throughout many portions of the project area, and include BLM and USFS Resource Management Plans, comprehensive regional plans, or local master plans. Readily-available resource management and land use plans were obtained in digital format via public websites. Additional plans have been provided by local and regional agencies as part of the stakeholder process. Coordination with federal, state, and local agencies will continue throughout the process to obtain additional or updated documents.

Plans were evaluated to identify constraints or restrictions placed on these lands that may be incompatible with the development of I-11. Land uses may have varying degrees of incompatibility with project development and may include parks, wildlife management areas, open-space, residential areas, or similar land uses. On federal lands incompatible land uses may include utility corridors, solar/wind/geothermal production, or similar uses. Detailed evaluations of the compatibility of the corridor with land uses are provided in **Appendix E**. A summary of the evaluation is provided below.

Route A1

Route A1 may conflict with Land Use plans in Beatty depending on the alignment of the bypasses. The corridor is adjacent to or intersects the Section 368 Energy Corridor. New or expansion of right-of-way within this corridor shall not conflict with the potential use of the Corridor for energy purposes and the Department of Energy (DOE) must review all applications within the corridor. Right-of-way expansion may require coordination with DOD for potential impacts to the Nellis Air Force Base access area and

proposed buffer expansion. The corridor overlaps private/state lands used for riparian habitat conservation; alignments could be selected to avoid these areas.

Route B1

Route B1 overlaps lands managed by the Bureau of Reclamation (BOR) and impacts to water management facilities on these lands must to be avoided or mitigated. The route also bisects a designated Solar Energy Zone near Tonopah, potentially requiring an adjustment if BLM/DOE determine incompatibility. Route B1 overlaps or is adjacent to areas proposed for withdrawal for expansion of the NAS Fallon Range Training Complex south of Salt Wells along Ryan Canyon Road and may conflict with future use of lands for military training. The corridor bisects one parcel designated for geothermal development along an existing highway and is adjacent to a second parcel designated for geothermal development.

Route B2

Route B2 passes through Hawthorne Army Depot, and alignments may incur design constraints to ensure movement of Army equipment among areas. The corridor also passes through the Walker Indian Reservation which may place substantial constraints on this corridor. The corridor is consistent with BLM management except in the areas where it crosses or overlaps with the Section 368 Energy Corridor. New or expansion of right-of-way within this corridor shall not conflict with the potential use of the Corridor for energy purposes and the DOE must review all applications within the corridors. Route B2 passes between Fallon and NAS Fallon Range B-16 to the west. Training activities preclude use of any part of that range for the highway and access to this range from other facilities to the east cannot be impeded. Private lands would have to be acquired and a grade separation included. Additionally, impacts to Sheckler Reservoir, potentially increasing flood risks, would impact the Range.

Route B2 overlaps lands managed by BOR and impacts to water management facilities on these lands are to be avoided or mitigated. The route overlaps the edge of the Fernley WMA, potentially constraining alignments in the area.

Route B3

Route B3 passes through Hawthorne Army Depot, and alignments may incur design constraints to ensure movement of Army equipment among areas. The corridor also passes through the Walker Indian Reservation which may place substantial constraints on this corridor. The corridor is consistent with BLM management except in the areas where it crosses or overlaps with the Section 368 Energy Corridor and new or expansion of right-of-way shall not conflict with the potential use of the Corridor for energy purposes. The DOE must review all applications within the corridors.

Route B3 overlaps lands managed by BOR and impacts to water management facilities on these lands are to be avoided or mitigated. The route bisects the Mason Valley WMA along existing railroad approximately 9 miles north of Yerington and expansion of the railroad corridor and construction of the highway are likely incompatible with the intended use of the WMA. An alignment northwest of the WMA may be more compatible.

Route B3 is adjacent to Fort Churchill Historic State Monument and bisects associated habitat along the river, 8.5 miles south of Silver Springs. Expansion of the existing right-of-way may encroach on these lands. The use of the land is deed restricted by Land and Water Conservation Fund Act (LWCF) Section 6(f)3 for recreation and conservation. Use may be authorized through acquisition of other property for transfer. Approximately 4.3 miles east of Fernley and north of US Alt 50, the route would bisect the southwest corner of Fernley WMA. East of Silver Springs, the route would bisect the west corner of Lake Lahontan Recreation Area and use of the land is deed restricted by LWCF Section 6(f)3 for recreation and conservation. Use may be authorized through acquisition of other property for transfer.

Route B4

Route B4 passes through Hawthorne Army Depot, and alignments may incur design constraints to ensure movement of Army equipment among areas. The corridor also passes through the Walker Indian Reservation which may place substantial constraints on this corridor. The route is consistent with BLM management except where it bisects two parcels designated for geothermal development, and in the areas where it intersects with the Section 368 Energy Corridor, where the DOE must review projects to ensure compatibility with proposed use of the corridor for energy projects.

The route crosses USFS land and land management may be inconsistent with new construction in the corridor. The area managed is a designated Roadless Area. Local land use plans and existing land uses may constrain the corridor and expansion of or development of new alignments from Wellington to Reno.

Route B5

Route B5 passes through Hawthorne Army Depot, and alignments may incur design constraints to ensure movement of Army equipment among areas. Route may require grade separation to provide military access among multiple ranges south of US 50.

The corridor is consistent with BLM management except in the areas where it crosses or overlaps with the Section 368 Energy Corridor. New or expansion of right-of-way within this corridor shall not conflict with the potential use of the Corridor for energy purposes and the DOE must review all applications within the corridors.

Route B5 is adjacent to existing training ranges for the Fallon Range and Training Complex along SR 839 near Salt Wells, and bisects areas proposed for expansion and closure to the public in this same area. Expansion of the Fallon Range and Training Complex includes proposals to realign SR 839 if this portion of expansion is approved, and Route B5 could follow that realignment.

Route B5 bisects the town of Fallon along US 50. Land within the town of Fallon adjacent to the existing highway is developed commercial and municipal use, with use becoming more residential and agricultural outside of town. Expansion of the existing roadway for an interstate highway is not consistent with the existing land use plans for Fallon.

The corridor bisects one parcel designated for geothermal development along an existing highway and is adjacent to a second parcel designated for geothermal development. Route B5 overlaps lands managed by BOR and impacts to water management facilities on these lands are to be avoided or mitigated. The route overlaps the edge of the Fernley WMA, potentially constraining alignments in the area.

5.2.6.2 Land Ownership/Management (6B)

Land ownership and management patterns in an area may be a key constraint on development of a major infrastructure project. Public lands managed by federal and state agencies are more conducive to such projects given these lands are managed for the interests and benefits of the public, whereas privately-held lands would require acquisition or leasing/rental.

Multiple information sources were gathered to identify the land ownership and management status along the corridors. Using this information, lands were identified as owned by private individuals or entities; tribal lands; and those lands managed in the public trust by federal, state or local agencies.

Land ownership and management patterns are summarized in the tables in **Appendix E**. Lands owned by private individuals or entities were considered to place substantial constraints on the project and impact the land owners. Lands held in public trust were considered to have relatively fewer constraints,

though some of these lands may have significant constraints based on the intended use of the land, as described in the Land Use section.

For note in future studies: BLM identifies lands available for disposal in Resource Management Plans (RMPs) through the federal land management planning process. Parcels of land for current and future disposal are identified along each corridor in current RMPs, and additional parcels likely will be identified as RMPs are updated or amended. In addition, Congressional actions may identify parcels for transfer or disposal in the future. As the I-11 planning process moves forward, updated information on land use, management and ownership must be obtained from the proper agencies and data sources to support the planning and evaluation process.

Route A1

Route A1 primarily crosses lands managed by BLM. The corridor is adjacent to or crosses private lands near Las Vegas, and small parcels at highway junctions and in small towns along the corridor. The corridor is adjacent to or crosses parcels of tribal lands in Las Vegas and near Scotty's Junction. The corridor is adjacent to BLM managed lands proposed for withdrawal for expansion of Nevada Test and Training Range (Air Force).

Route B1

Route B1 primarily crosses lands managed by BLM and BOR. The route crosses privately held lands near Fallon and I-80. The corridor crosses or is adjacent to lands potentially withdrawn for expansion of the NAS Fallon Range Training Complex.

Route B2

Route B2 crosses BLM lands throughout the southern half of the area. The route crosses Hawthorne Army Depot; the Walker River Reservation; BOR lands and lands co-managed by the NDOW at the Fernley WMA. The route crosses through a narrow area between Fallon and the existing and proposed expansion of the NAS Fallon Range Training Complex area west of Fallon. The corridor crosses private lands near the towns of Hawthorne, Fallon and Fernley.

Route B3

Route B3 crosses BLM lands throughout the southern half of the area. The route crosses Hawthorne Army Depot; the Walker River Reservation; BOR lands and lands managed by the NDOW and Nevada Division of State Parks, including the Lake Lahontan Recreation Area and the Fernley WMA. The corridor also bisects the Mason Valley WMA. The corridor is adjacent to the Fort Churchill Historic State Monument, and bisects riparian habitat associated with it. The corridor crosses privately-owned parcels near the towns of Hawthorne, Silver Springs, and Fernley.

Route B4

Route B4 crosses BLM lands throughout the southern half of the area. The route crosses Hawthorne Army Depot, the Walker River Reservation and multiple parcels held in trust by the Bureau of Indian Affairs (BIA) in northern portion of the corridor. The corridor crosses or is adjacent to lands managed by State for recreation purposes along Walker Lake, East Walker River, and Washoe Lake. The corridor also crosses or is adjacent to lands managed by the State for wildlife and crosses lands managed by the USFS. The corridor crosses privately held lands from Wellington to Reno.

Route B5

Route B5 crosses BLM lands throughout the southern portions of the area. The route crosses Hawthorne Army Depot south and east of Walker Lake, lands managed by BOR, and lands co-managed by the BOR and NDOW at the Fernley Wildlife Management Area. The route is adjacent to several

training ranges associated with the Fallon Range and Training Complex and Fallon NAS. The route crosses and is adjacent to privately held lands near around and within the town of Fallon and near I-80. Private lands within and around Fallon would be affected with the expansion of the existing highway.

5.2.7 Cost (7A)

Construction Costs

Planning-level cost estimates were prepared for each alternative corridor. The NDOT Project Estimation Wizard (Revised Version April 5, 2017) was used to develop potential capital costs, including factors used to capture soft costs such as engineering, potential mitigations and construction management. The NDOT Project Estimation Wizard utilizes typical unit costs to estimate probable construction costs for various roadway sections (e.g. new construction, widening, rehabilitation, etc.) on a "per foot" basis. This per foot cost is multiplied by the length of that particular roadway section and summed to determine a conceptual alternative corridor capital cost. Factors are then applied to the conceptual construction cost to arrive at an overall planning-level cost estimate.

Given the very preliminary nature of the analysis, interchange and bridge locations, which have a meaningful impact on potential construction costs, were assumed for each alternative corridor. In general, service interchanges were assumed to be located at all existing state route crossings, significant county road crossings, north and south of community bypasses and to major access roads to mines and other origins/destinations. However, service interchanges were not assumed to be any closer than one-mile from the next closest interchange. One system interchange was assumed at I-80 for each of the Segment B corridor alternatives. Similarly, bridges were assumed to be located at major drainage ways, exiting rivers and streams, and where bridges exist today on overlapping roadway facilities.

Using these interchange and bridge assumptions along with other planning-level attributes, the potential construction costs by alternative are summarized in **Table 10**.

Table 30. Potential Range of Construction Costs

Alternative	$3.0-$3.5 Billion	$2.5-3.0 Billion	$2.0-$2.5 Billion	$1.5-$2.0 Billion	$1-$1.5 Billion
A1				X	
B1			X		
B2			X		
B3			X		
B4		X			
B5		X			

Right-of-Way

Right-of-way is a very important cost consideration given its high proportion of overall project costs for this type of project. However, right-of-way costs are extremely difficult to estimate given the numerous variables that effect any single parcel's valuation. Within the scope of a 450-mile-long project this difficulty is severely compounded. With that GIS analysis was used to identify the potential amount of new land that could potentially be required for each alternative corridor. This provides insight into the relative level of privately-owned right-of-way and resulting costs. The potential right-of-way cost impacts by alternative are summarized in **Table 11.**

Table 41. Potential Range of Right-of-Way Impacts

Alternative	500-600 Acres	400-500 Acres	300-400 Acres	200-300 Acres	100-200 Acres
A				X	
B1					X
B2				X	
B3	X				
B4		X			
B5					X

Maintenance Costs

Maintenance costs were estimated for each of the alternative corridors. The NDOT *State Preservation Report (2017)* notes that Category 1 roads, which include interstates, cost an estimated $2.1 million per mile to rehabilitate. Over a 20-year period, interstate asphalt pavement is likely to be rehabilitated twice. Using this basis, the total increased maintenance cost for each alternative corridor can be estimated over 20 years. The results of this are summarized in **Table 12**.

Table 12. Potential Range of Maintenance Costs

Alternative	$400-$500 Million	$300-$400 Million	$200-$300 Million	$100-$200 Million	$0-$100 Million
A				X	
B1	X				
B2			X		
B3			X		
B4		X			
B5		X			

Cost Summary

Summarizing across all aspects of corridor alternative costs – construction, right-of-way and maintenance, provides a comprehensive consideration of the relative comparison of costs. Given the differences in how these cost elements are measured, a relative scale is used to illustrate how the alternative corridors compare over a 20-year investment period. The results are shown in **Table 13**.

Table 13. Potential Range of Total Corridor Costs

Alternative	Highest Overall Project Costs	High Overall Project Costs	Moderate Overall Project Costs	Low Overall Project Costs	Lowest Overall Project Costs
A					X
B1			X		

Alternative	Highest Overall Project Costs	High Overall Project Costs	Moderate Overall Project Costs	Low Overall Project Costs	Lowest Overall Project Costs
B2				X	
B3		X			
B4	X				
B5			X		

5.2.8 Technology (8A and 8B)

New, and emerging, technologies for automobiles, buses and trucks also require that the highways can support them. Two important requirements are communications and alternate sources of fuel, primarily electric power and compressed natural gas (CNG). Automatic vehicle locating systems are being used more and more for freight and transit, and are also showing up in automobiles. Connected vehicles require communications that range from vehicle to infrastructure, to vehicle to vehicle, to vehicle to everything. Alternative fuel vehicles require charging (for electric-powered vehicles) and fueling (for CNG-powered vehicles) stations to be located conveniently and within the range of the alternate fuel vehicles.

The FHWA and the State of Nevada have designated certain major routes as "Electric Highways", to support electrically powered vehicles.

ITS require both communications systems and power sources.

Route A1

All of US 95 has been designated as an Electric Highway by Nevada Electric Highway (a partnership between the Governor's Office of Energy, NV Energy, and Valley Electric Association) and have, or have planned, charging stations in Indian Springs, Beatty, Tonopah, Hawthorne, and Fallon. A large section of this segment also follows a BLM designated utility corridor (BLM Sec 638). This segment has adequate cell phone coverage.

Route B1

Route B1 bypasses all communities between Tonopah and I-80, although it will have access to Fallon via US 50. Its access to existing utility corridors is also minimal, crossing one power line near SR 361, another near SR 839 and more, closer to US 50. Some sections would have spotty cell phone coverage, in the Monte Cristo and Stewart Valleys, south of Gabbs.

Route B2

Route B2 would have access to Hawthorne, Fallon (via US 95 and US 50) and Fernley (via US 50 Alternate). Power lines are available along or near most of this segment. Cell phone coverage would be comparable to what is currently available along US 95.

Route B3

Route B3 follows existing highway alignments as well as establishing new routes. The existing highways and new routes follow or cross existing power lines relatively frequently. After leaving Hawthorne it passes through or around the communities of Schurz, Silver Springs and Fernley before terminating at I-80. The cell phone coverage should be adequate along this segment.

Route B4

Route B4 also follows existing highway alignments as well as establishing new routes. The existing highways and new routes follow or cross existing power lines relatively frequently. A portion of the new route follows a section of a BLM designated utility corridor and crosses another one. After leaving Hawthorne it passes through the communities of Smith, Wellington, Minden, Garnerville, and Carson City before terminating in Reno. The cell phone coverage should be adequate along this segment.

Route B5

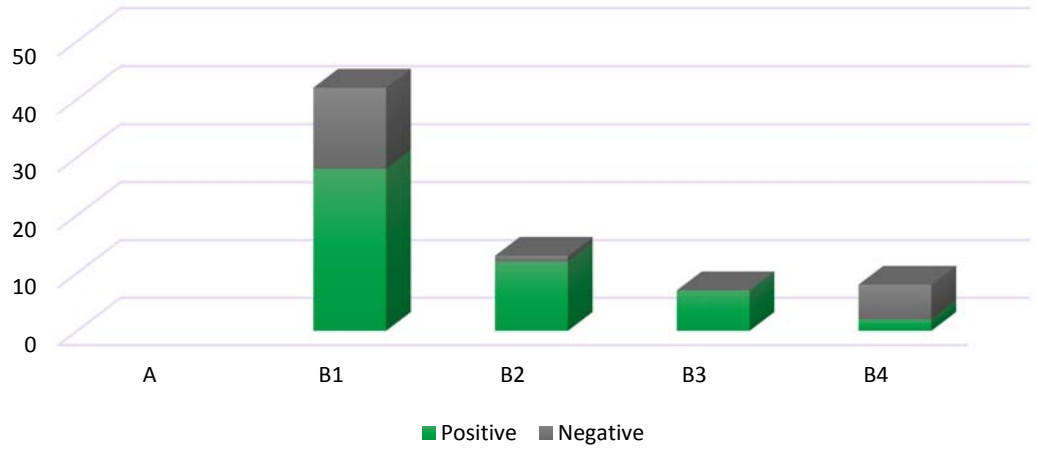
Route B5 follows existing unimproved roads, existing highway alignments, and new routes. The existing highways and new routes follow or cross existing power lines relatively frequently. The cell phone coverage should be adequate along this segment.

5.2.9 Community Acceptance (9A and 9B)

The Stakeholder Partners Group provides an important venue for meaningful input and participation by relevant federal, state and local agencies and tribes. Members have specific knowledge and expertise on technical matters and/or local area characteristics that help inform the evaluation process. To date, feedback on alternatives is positive for alternatives

The public comments have been reviewed to identify those that directly address the alternative corridors, either positively (in favor of) or negatively (not in favor of). Comments that suggested new corridor alternatives and/or connections were documented separately for consideration by the study team. Tallying these positive and negative responses provides measurable insight into the overall acceptability and unacceptability of the alternative corridors. **Figure 11** illustrates the results of this tally.

Figure 11. Public Sentiment by Corridor Alternative



Route A1

While several communities have a keen interest in Route A1, particularly Beatty, Goldfield and Tonopah, no comments were received that were directly positive or negative on the corridor itself. Sizable concerns were voiced as to how I-11 will traverse through or around these towns, including understanding impacts that are not known at this time. Generally, responses focused on details that are will be further explored during NEPA.

A1 is considered “accepted.”

Route B1

Overall, Route B1 solicited the most public sentiment, both positive and negative. Many of the elected officials in Fallon are in favor of B1 as it is seen as providing the most potential economic benefit to the City. Furthermore, numerous comments were received from Winnemucca and surrounding counties in favor of B1 with the hope that future I-11 would extend into Idaho via US 95. This positive sentiment was countered by negative sentiment from landowners in the Fallon area, who are opposed to impacting undeveloped land. Additionally, many Hawthorne residents voiced concern about loss of existing and future economic benefit by bypassing their community.

B1 is considered "moderately accepted."

Routes B2 and B3

Fewer comments were received on routes B2 and B3. Given they are broadly similar with the same termini and similar feedback, they have been combined for the purposes of this summary. Most of the feedback received on B2 and B3 was positive, including noting the proximity of these alternatives to Fallon, Fernley, the Tahoe Reno Industrial Center, and Hawthorne. The use of existing roadway corridors was supported, along with the general viability of implementing these alternatives. Negative feedback received focused on preferences for other alternative corridors, or the potential to impact military land expansion.

B2 and B3, are both considered "accepted."

Route B4

This alternative received a high level of negative public sentiment. Concerns with Route B4 were centered on traffic impacts to the already congested Reno/Sparks and Carson Valley areas. Many respondents felt this alternative would negatively impact the region's traffic congestion. Another major concern included the difficulty in implementing a connection between Mason Valley and Carson Valley due to topographical constraints.

B4 is considered "not accepted."

5.3 Evaluation of Options

A qualitative analysis of the options (a-h, j, k, m, and r) was conducted to identify potential opportunities and challenges and how they impact the primary corridor alternatives. The summary of the analysis is provided in **Table 14**.

Table 14. Summary of Qualitative Analysis of Options

Evaluation Category
Modal Interrelationships
Option a bypasses the Hawthorne Ammunition Depot and the Mina Branch Railroad alignment on the northeasterly side of the valley. Therefore, the route does not follow a railroad alignment. A BLM designated utility corridor is in the general vicinity of this route. Option c is not suitable for rail, hyperloop, or utilities due to topography. The Wassuk Range (on the west side of Walker Lake) is also a habitat for Desert Big Horn Sheep. Option d encroaches on the east side and Option e encroaches on the south of the Carson Lake Wildlife Management Area. Due to topography a portion of the routes may not be feasible for rail nor Hyperloop. Option f follows existing US 95 through the City of Fallon and other modes on this route are not practical because of right-of-way constraints. Option g is not feasible for rail nor Hyperloop due to the topography.

Evaluation Category
Options h and m provide reasonable accommodation for other modes, with minor constraints. Options j and k follow an existing highway through Wilson Canyon, which may not be feasible for other modes.
Travel Times
Option a bypasses Hawthorne and provides a more direct route, which could improve travel times. Option c would be similar in travel times to Routes B2, B3, and B4. Option d could improve travel times by providing a new direct north-south connection between US 50 and US 95. Option e provides a new east-west route connecting US 95 south of Carson Lake to US 50 at Salt Wells. While this option improves this connection, it is not anticipated to improve travel times. Option f could improve travel times by providing a new direct north-south connection between US 95 south of Carson Lake and US 95 north of Fallon. Option g provides a more direct route north of Walker Lake to US 95 ALT, which could improve travel times. Option h bypasses Tonopah and could improve travel times. Option j provides a more circuitous route along SR 361, likely resulting in longer travel times. Option k provides a short, but more direct route through Wilson Canyon, which could improve travel times. Option m provides a more direct route, bypassing Silver Springs, and could improve travel times.
Safety
Option a provides a more direct route bypassing the City of Hawthorne, with fewer curves. Option c follows existing US 95 on the west side of Walker Lake. The steep terrain and numerous canyons may cause horizontal curvature issues. The Wassuk Range, on the west side of Walker Lake, is also a big horn sheep habitat, with Walker Lake providing a source of water in the summer, resulting in the potential for wildlife crossing the highway. Wildlife crossings would be necessary. Options d and e provide part of a bypass route around Fallon and would have minimal geometric and safety issues. Option f follows US 95 through the center of Fallon. This would require reduced right-of-way widths and reduced median widths with median barrier rail. This route could be designed to meet all safety standards. Option g bypasses the Walker River Indian Reservation for Route B3. It crosses the Wassuk Range northwest of Walker Lake and would require crossing over a summit at 6,200 feet. There may also be vertical and horizontal geometric issues through the mountain range. Option h provides a bypass route to the southwest of Tonopah. This route would have minimal geometric and safety issues. Option j follows existing highways, is a longer route, and has minimal safety issues. Option k would follow Walker river through Wilson Canyon, with potential geometric issues and reduced speeds. Option m would have minimal safety issues.
Economic Vitality
Of the 12 options under review, only Option a is within a reasonable vicinity of an economic activity center: Hawthorne. Most others do not make any connections between activity centers. Option g is near Yerington, including the municipal airport and McLeod Industrial Park, however not within the five-mile threshold for easy and convenient interstate access. One of the primary constraints related to this criterion, is that most of the options do not pass through private land. While some federal lands may be an economic driver on their own (e.g., DOD military installations), the abundance of BLM and National Forest Service lands, in addition to steep terrain, makes major new development enterprises along these routes unlikely. Options e and k traverse the highest amounts of private land, but Option k borders a USFS roadless area (further elaborated in Section 5.2.5), limiting development opportunities to the south. Furthermore, the distance from existing population centers limits the employment base available and willing to work at a new employment center.
Transportation Plans and Policies
The only funded transportation projects with the proposed options are pavement rehabilitation on US 95 approaching Fallon (Option f) and centerline rumble strips on US 50 west of SR 361 (Option j). Option f could have a detrimental impact to town as discussed in Appendix D (Potential Effects of Highway Bypasses on Local Communities). Option j would potentially affect the Navy's expansion plans that are currently going through the environmental review process. Option a bypasses Hawthorne, and option h bypasses Tonopah, so these options are not consistent with the community plans to leverage the economic benefits of regional traffic. While many of these options are not programmed for funded improvements or mentioned in any long-range transportation plans, these are viable connections to provide access between existing routes and the future I-11.

Evaluation Category
Environmental Sustainability*
Wildlife Habitat
Option a bisects pronghorn antelope distribution and potential habitat for BLM Sensitive plant speciesOption c crosses potential habitat for yellow-billed cuckoo, is adjacent to distributions for four big game species, and within seasonal movement corridor for bighorn sheep. Option c also intersects two greater sage-grouse PACs and habitat for several other BLM Sensitive species. Option d crosses potential habitat for yellow-billed cuckoo, passes through or is adjacent to distributions for two big game species, and passes through habitat for BLM Sensitive species (mammals, shore birds, and plant species). Option e crosses potential habitat for yellow-billed cuckoo, is adjacent to or intersects distributions for three game species, is within movement corridor for mule deer, and passes through habitat for BLM Sensitive species (mammals and shore birds). Option f crosses potential habitat for yellow-billed cuckoo and Lahontan cutthroat trout, intersects distributions for three game species, is within movement corridor for mule deer, and crosses habitat for BLM Sensitive species (mammals, shore birds, and plant species). Option g intersects PAC for bi-state population of greater sage-grouse and isolates PAC from other bi-state PACs. This option intersects distributions for three game species and habitat for BLM Sensitive bat and plant species. Option h bisects pronghorn antelope distribution, habitat for pale kangaroo mouse and BLM Sensitive plant species. Option j bisects multiple distributions for three game species, movement corridors for bighorn, mule deer, and pronghorn, and crucial summer habitat for pronghorn. Option j also crosses habitat for many BLM Sensitive species (mammals, shore birds, and plant species). Option k has potential for yellow-billed cuckoo and Lahontan cutthroat trout, intersects distributions for three game species, is within seasonal movement corridor for mule deer, and crosses habitat for BLM Sensitive species. Option m has potential for five ESA-Listed species, intersects distributions for three game species, and crosses habitat for BLM Sensitive bat and plant species.
Special Designated Areas for Conservation
Option c may require expansion in area bisecting Walker Lake State Park. Options e and d would require new construction through lands designated as VRM II and would intersect portion of NDOW Carson Lake and Pasture WMA. Option f may require expansion into NDOW Carson Lake and Pasture WMA. Option g is immediately adjacent to NDOW Mason Valley WMA. Option j is immediately adjacent to Gabbs Valley Wilderness Study area.
Waterways and Floodplains
Option c passes through 1% Chance Annual Flood Zone, is adjacent to small wetland areas, and adjacent to Walker Lake, a 303(d) Impaired Waterway. Option d would require new construction bordered on either side by wetland/riparian habitat. Option e would require new construction largely in and adjacent to 1% Chance Annual Flood Zone and large areas of wetland/riparian habitat. Option f passes through 1% Chance Annual Flood Zone, large wetland areas, and would cross the Carson River, a 303(d) Impaired Waterway as well as three Impaired streams/canals. Option g passes through small wetland patches associated with playas. Option j passes through 1% Chance Annual Flood Zone wetland areas associated with Salt Wells Marsh. Option k passes through 1% Chance Annual Flood Zone, large wetland areas, and would cross the West Walker River, East Walker River, a 303(d) Impaired Waterway as well as an Impaired canal. Option m is adjacent to small areas of 1% Chance Annual Flood Zone and crosses the Truckee River, a 303(d) Impaired Waterway.
Paleontological and Cultural Resources
Option a has potential for historic and prehistoric sites, and Cold War-era resources. Option c would have minor impacts on some resources potentially in the area. Options d and e have numerous historic and prehistoric sites present in the area. Option f passes through Fallon, which may have historic structures within town. For Options g, h, and m, the presence of resources in the area are unknown. Option j crosses area rich in fossiliferous resources and mining towns (Gabbs) may possess historic resources. For Option k, the presence of resources is unknown, but is expected to be high along the river and associated areas.

Evaluation Category
Land Use and Ownership/Management
Land Use Plans
Option a overlaps Section 368 Energy Corridor. Option c has potential constraints on Walker River Reservation and community of Walker Lake would be heavily impacted. This option bisects portion of Walker Lake State Park and north end of route intersects Section 368 Energy Corridor. For options d and e, potential impacts to BOR facilities, if present, must be avoided or mitigated. Option f is not consistent with local land use plans, route would require acquisition of significant amount of agricultural, residential, and commercial properties, and would fragment the community. Impacts to BOR facilities, if present, must also be avoided or mitigated. Option g may be constrained by adjacent land use on Mason Valley WMA. Option j is adjacent to or bisects lands currently used and under consideration for withdrawal for NAS Fallon training. Option k has a short segment on east end that crosses lands designated as State Recreation Area. Private lands are residential, agricultural, and small areas of commercial. Option m is adjacent to lands used for agriculture (grazing) for most of its length, and light industrial at the northern terminus.
Land Ownership/Management
Option a crosses BLM lands and is adjacent to small areas of Army Depot facility. Option h crosses BLM lands. Option c crosses private lands, State lands, BLM lands, Army Depot facility, and a small section of Walker River Reservation. Option d crosses BLM and BOR lands, and is adjacent to the northwest corner of a NAS Fallon range. Option e crosses BLM and BOR lands. Option f crosses a small portion of BOR lands. Most of the route passes through private lands. Option g crosses BLM lands, and small parcels of private land. Option j crosses BLM lands, small private parcels, and is adjacent to existing and proposed expansion of NAS Fallon ranges. Option k crosses private, State, and BLM lands, and is adjacent to Forest Service land. Option m crosses private land from Silver Springs to I-80, and a small parcel of BLM land west of Silver Springs.
Cost
Options not evaluated for cost.
Technology
Option a bypasses Hawthorne and the Hawthorne Ammunition Depot on the east side of the valley. It generally follows an existing and BLM designated utility corridor. It's assumed there would be two interchanges to provide access to Hawthorne and access to existing charging and CNG fueling stations. Cell phone coverage would be adequate. Option c follows existing US 95 along the west side of Walker Lake. This route has limited access to power and the topography makes it difficult to run new power lines. Cell phone coverage would be adequate. Option d traverses the southerly and easterly sides of Carson Lake, south of Fallon, connecting US 95 to US 50 and provides access to existing charging and CNG fueling stations. There are power lines on the south and north ends of the route. Cell phone coverage would be adequate. Option e runs forms part of a bypass, south and east of Fallon, and is near existing power lines near and US 50 and US 95 provide access to existing charging and CNG fueling stations. Cell phone coverage would be adequate. Option f runs through the center of Fallon, providing access to existing charging and CNG fueling stations. Cell phone coverage would be adequate.
Community Acceptance
The main focus of the initial phase of outreach was on the primary corridor alternatives (Routes A1, B1-4), although the connecting options were displayed and available for comment. While very little feedback was received on the options, some notable comments include: (1) maintaining option c as a serviceable road, even if I-11 were to be constructed around the east shore of Walker Lake, to provide redundancy in an area that experiences numerous road closures; (2) should B1 be chosen as the recommended I-11 Corridor, option b provides a key connectivity option between the existing US 95 corridor and the future I-11.

*Options omitted from discussion had no significant issues or constraints

5.4 Other Considerations

High Priority Corridors

Concepts for a high-capacity transportation facility through the Intermountain West have been suggested and studied at various times and levels of detail over the past several decades. Beginning with the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) legislation, the FHWA designated a series of corridors as High Priority Corridors to be included as part of the proposed National Highway System. Through Nevada, this includes (1) corridor #68 Washoe County, which outlined a route connecting Las Vegas and Reno, and (2) corridor #26 (CANAMEX) along I-15.

The 2012 Moving Ahead for Progress in the 21st Century Act (MAP-21) formally designated the I-11 Corridor between Phoenix and Las Vegas, replacing the CANAMEX designation along US 93. The 2015 Fixing America's Surface Transportation Act (FAST Act), extends the formal I-11 designation north of Las Vegas, naming the US 95 corridor as the general routing.

Other High Priority Corridors in the Intermountain West relevant to this study area include US 395 from Reno to Canada (corridor #19), and US 95 from the Idaho/Oregon state border to Canada (corridor #43).

Designation as a High Priority Corridor does not guarantee funding, but elevates the importance of the corridor, improving its chances for obtaining federal funds should a project be found to warrant further consideration.

Connectivity North and Beyond Nevada's I-80 Corridor Summary

The *IWCS* included a high-level visioning approach to possible future connectivity corridors beyond the Nevada state border. This Alternatives Analysis will set the foundation for continued coordination with neighboring states in the future to understand the best corridor connection point to Canada, including the path of travel through the states north of Nevada. This summarizes the "Connectivity North and Beyond Nevada's I-80 Corridor" technical memorandum, which is included as **Appendix F**. Although I-80 is a northern terminus of I-11 in the 2015 FAST Act, coordination with neighboring states took place in the previous *IWCS*.

The following were taken into consideration for developing potential north/south interstate highway routes north of I-80 and Nevada:

- North American Free Trade Agreement (NAFTA)
- National Highway Freight Network (NHFN)
- Congestion
- Ports (seaside and inland)
- Inland terminals
- Connectivity between ports and inland terminals
- State freight plans
- Coordination with other states
- Efficient freight transport

Figure 12. Potential Connections North of I-80

- I-80 connectivity
- Existing highway and freeway corridors

Two potential routes, following existing highway corridors, are proposed north of I-80, one from Western Nevada and the other from Central Nevada. The Western Nevada route would follow US 395 through California and Oregon to SR 20 in Oregon, then along SR 20, US 97, I-84, and I-5 to Canada.

The Central Nevada route would follow US 95 through Oregon and Idaho to I-84, then along I-84, I-82, I-90, and I-5 to Canada. I-84 and I-90 also connect to I-15, providing another route into Canada. The routes are shown in **Figure 12**.

6. Corridor Recommendations

6.1 Alternatives Analysis Findings

NDOT evaluated a series of I-11 corridor alternatives between the northwest edge of the Las Vegas metropolitan area to I-80 to determine a recommendation of corridor(s) to advance into future NEPA studies, including:

- Segment A: Route A1
- Segment B: Routes B2 and B3

This recommendation represents the preliminary findings based on the technical analysis conducted, as well as public and agency input received over the course of the study.

Table 15 presents a summary of the alternatives analysis findings, with the recommendations illustrated on **Figure 13**.

Table 5. Summary of Alternatives Analysis and Findings

Alternative	Advantages	Disadvantages	Recommended for Further Analysis?
A1	Additional coordination and/or analysis is required to understand where bypasses are needed, the location/configuration, and potential economic impacts		Yes
B1	• Good travel time savings • Minimal land use and land management conflicts • Able to accommodate multimodal uses	• High VMT • Likely environmental impacts (wildlife movement, habitat, cultural resources) • Does not connect communities/ economic centers • Least amount of alternative fuel availability • Most inconsistent with transportation plans and visions	No
B2	• Strong travel speeds, VMT, and safety • Good connectivity of economic centers • Least adverse environmental impact expected • Minimal land use and land management conflicts • Lowest planning-level cost • Supports technology/alternative fuel accommodations	• Not as accommodating of multimodal uses	Yes
B3	• Strong travel speeds, VMT, and safety • Best connectivity of economic centers • Supports technology/ alternative fuel accommodations	• Not as accommodating of multimodal uses • Potential for environmental impacts	Yes

Alternative	Advantages	Disadvantages	Recommended for Further Analysis?
B4	• Good travel speeds, VMT, and safety • Best connectivity of economic centers • Supports technology/alternative fuel accommodations	• Highest possibility for environmental impact • Greatest inconsistency with transportation plans, land use, and land management • Highest cost • Very little agency or public support	No
B5	• Good travel speeds	• Low VMT, poor travel time savings • Does not attract traffic to route • Expanding rural highways is not consistent with planned military expansion efforts • Likely environmental impacts (wildlife movement, habitat, cultural resources, visual resources)	No

6.2 Next Steps

The next step in the project development process is to advance the recommended corridors into NEPA. This will likely occur in a phased fashion, with various segments advancing through different environmental studies. For example, future studies may occur separately for Segment A versus Segment B. Each defined segment must have logical termini however, so that when ready to advance to construction, the functionality of one segment is not dependent on improvements to the adjacent segment(s). A preliminary outline of the implementation phasing and strategies is presented in **Appendix G**.

At this time, no funding has been identified to construct I-11. The timing of funding and programming will impact when NEPA can begin, and may influence the level of study conducted. For example, completion of an EIS requires a project to be programmed with funding availability to begin construction within five years of receiving a Record of Decision. A tiered EIS process, however, can be initiated without funding, to continue to study corridors and narrow down the range of alternatives to a single Selected Alternative.

Figure 13. Corridor Recommendations