

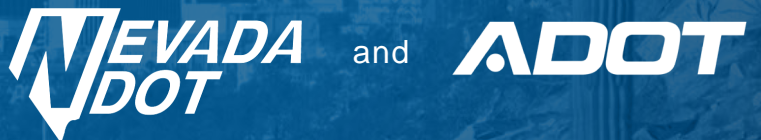


I-11 and Intermountain West Corridor Study

Implementation Program



Prepared for



October 2014

*I-11 AND INTERMOUNTAIN WEST CORRIDOR
STUDY*

Implementation Program

Prepared for
Nevada Department of Transportation
and
Arizona Department of Transportation

October 2014

Prepared by
CH2MHILL® and **AECOM**

DISCLAIMER

The contents of this planning document are based on information available to the Arizona Department of Transportation and the Nevada Department of Transportation (herein referred to as the Sponsoring Agencies) as of the date of this report. Accordingly, this report may be subject to change.

The Sponsoring Agencies' acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project-level environmental impact assessments and/or studies of alternatives will be necessary.

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1. Introduction and Overview

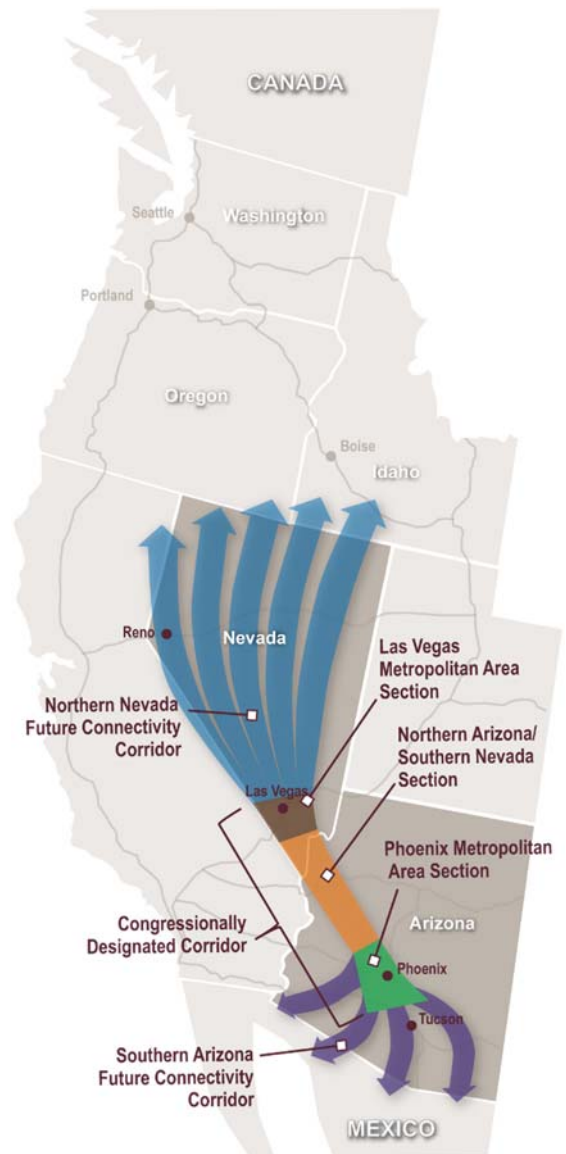
The Arizona Department of Transportation (ADOT) and Nevada Department of Transportation (NDOT), in consultation with the Federal Highway Administration (FHWA) and the Federal Railroad Administration (FRA), and in partnership with the Maricopa Association of Governments (MAG) and the Regional Transportation Commission of Southern Nevada (RTC), referred to as Core Agency Partners, are conducting the *Interstate 11 (I-11) and Intermountain West Corridor Study*.

The study is the latest action in a decades-long effort by Arizona, Nevada, and other Intermountain West states and the federal government to develop a transportation corridor between the Rocky Mountains and the Cascade Range/Sierra Nevada Mountains linking Mexico and Canada—initiated by the recent Moving Ahead for Progress in the 21st Century (MAP-21) legislation. The two-year study includes detailed corridor planning of a possible high-capacity transportation link connecting Phoenix and Las Vegas, and high-level visioning for extending the corridor north of Las Vegas to Canada and south of Phoenix to Mexico. The Corridor is proposed to include an upgraded highway facility, but it could be paired with rail and other major infrastructure components—such as energy and telecommunications—to serve the nation’s needs from Mexico to Canada.

The Study Area

Figure 1-1 illustrates the corridor study area. The central segment, extending between the greater Phoenix and Las Vegas Metropolitan Areas, is known as the Congressionally Designated Corridor because Congress designated this segment as future I-11. This Congressionally Designated Corridor, in turn, consists of three sections, designated from south to north as Phoenix Metropolitan Area, Northern Arizona/Southern Nevada, and Las Vegas Metropolitan Area. To the south of the Congressionally Designated Corridor lies the Southern Arizona Future Connectivity Segment, extending from the southern fringe of metropolitan Phoenix to the Mexican border. Similarly, the Northern Nevada Future Connectivity Segment extends from the north edge of metropolitan Las Vegas to the northern border of Nevada and beyond.

Figure 1-1. Study Area Segments



Report Purpose

This report presents background information and identifies implementation actions to continue to move the I-11 and Intermountain West Corridor forward. These actions will be presented by differing geographies, including actions that could be taken by the two-state region, one state, or metropolitan regions, depending on the corridor segment being discussed.



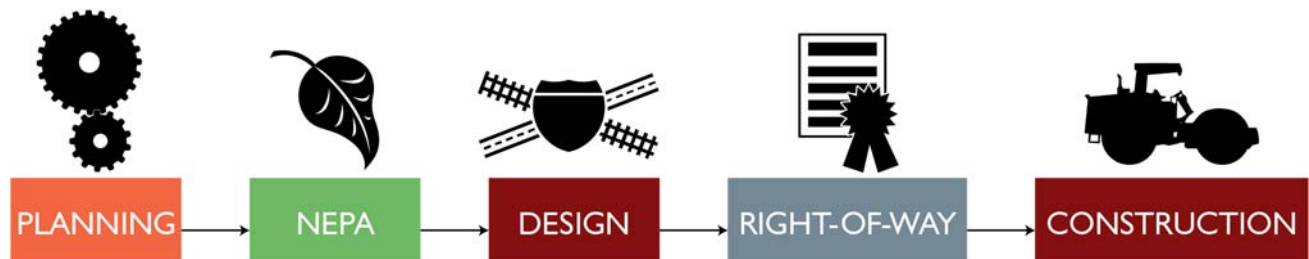


2. Project Development Process

Project Development Process

The United States Department of Transportation (USDOT) Project Development Process allows transportation officials to make project decisions that balance engineering and transportation needs with social, economic, and natural environmental factors. During the process, a wide range of partners, including the public, businesses, interest groups, and agencies at all levels of government, provide input into project and environmental decisions. **Figure 2-1** illustrates the traditional project development process.

Figure 2-1. Project Development Process



Planning/Pre-NEPA Processes

While the National Environmental Policy Act (NEPA) process is the official initiation of the project review and approval process, many “projects” begin with pre-NEPA studies, such as feasibility assessments and corridor studies, which are generally completed over a one- to two-year span. These often occur as part of regional transportation system network planning that identifies a need for a corridor—or “the project”—for which then a planning/pre-NEPA study on that specific corridor will commence. Planning studies frequently are initiated before funding is available for full project implementation, allowing advanced planning initiatives to set the foundation for more detailed evaluation. These studies would likely establish a corridor vision, define existing natural and man-made conditions, perform a needs analysis, develop and evaluate multimodal/multi-use alternative corridors, formulate preliminary order-of-magnitude cost estimates, and initiate the public and stakeholder outreach process.

The Planning and Environmental Linkages (PEL) process has been developed to carry forward the planning-level research, recommendations, and outreach into NEPA—so as not to lose any advanced planning progress. ADOT and NDOT have both worked with the FHWA to adapt the federal PEL guidance into state-led processes, which include checklists to be completed throughout a study’s process. The PEL processes of the two states are similar and have been carried forth throughout this study to identify important issues early so that agencies, stakeholders, and the public can make informed and timely decisions.

NEPA Process

NEPA is triggered when a federal action is needed. Federal actions include projects, activities, or programs funded in whole or in part under the direct or indirect jurisdiction of a federal agency (including those



2. PROJECT DEVELOPMENT PROCESS

carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license, or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a federal agency), the need to utilize Federal or Tribal lands, and/or a change of access conditions along the Interstate Highway System Non-federal projects become “federal actions” when the project “cannot begin or continue without prior approval of a federal agency.” The key determinant is the federal government’s ability to exercise discretion over the outcome. Projects that would not trigger NEPA would include those have no federal financial assistance, do not require a federal permit, license or approval and are not subject to state or local regulation that requires approval by a federal agency.

What constitutes a proposal that triggers the provisions of NEPA is often a question of timing. Agencies consider many proposals and projects in various stages of formulation and planning. While federal agencies are encouraged to apply NEPA early in the project planning process, it is practical to initiate the formal NEPA process only at a stage where a proposal is developed to a point where it can be meaningfully evaluated - or more simply, at the point where an agency has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing the goal and the effects of those alternatives and implementing the goal can be meaningfully evaluated.

For transportation projects such as the potential I-11 and Intermountain West Corridor, the NEPA process normally begins after a project has been incorporated into a fiscally-constrained plan (Transportation Improvement Program, Regional Transportation Plan, Statewide Transportation Improvement Program, etc.) or full funding can reasonably be made available for construction of all project phase(s) (if not included in a fiscally-constrained plan, NEPA can occur, but a Record of Decision [ROD] cannot be achieved). Depending on the scope and scale of the project at hand, there are several options for which NEPA framework applies. An overview discussion of these options is presented below. Additional details on each step of this process is available online at: <http://environment.fhwa.dot.gov/projdev/>.

Categorical Exclusion

Categorical exclusions (CE or CATX) are actions or activities that do not have significant or cumulative environmental effects, meaning that the project:

- Does not involve significant impacts to planned growth or land use for the area
- Does not require the relocation of significant numbers of people
- Does not have a significant impact on any natural, cultural, recreational, historic or other resource
- Does not involve significant air, noise, or water quality impacts
- Does not have significant impacts on travel patterns
- Project lies entirely within existing right-of-way

CE projects tend to be minor improvements to existing facilities, and can be completed in a short timeframe (two to three months).



Environmental Assessment

An Environmental Assessment (EA) is conducted when the significance of impacts of a project is unknown, allowing the completion of an EA to help the lead federal agency determine whether or not an EIS is needed. The EA should address only those resources or features which the lead federal agency is not certain that no impact exists. The EA should be a concise document. If it is found that significant impacts will result, the preparation of an EIS should commence immediately. If it is determined that there will be no significant impacts, a Finding of No Significant Impact (FONSI) can be prepared to conclude the process and document the decision. Generally, completion of an EA can range from six to nine months.

Environmental Impact Statement

An Environmental Impact Statement (EIS) is a detailed analysis that serves to insure that the policies and goals defined in NEPA are infused into the ongoing programs and actions of the federal agency. EISs are generally prepared for projects that are anticipated to have significant environmental impact. The EIS should provide a discussion of significant environmental impacts of proposed and alternative actions (including a No Action alternative) and strategies to avoid, minimize, and/or mitigate adverse impacts or enhance the quality of the environment. Upon completion of the EIS, a ROD is issued that identifies the selected alternative, presents the basis for the decision, identifies all alternatives considered, and provides information on the adopted means to avoid, minimize, and/or mitigate environmental impacts in subsequent planning and design processes. Of all environmental clearance options, EIS tend to be the lengthiest to complete, typically ranging from two to four years.

Tiered Environmental Impact Statement

On exceptionally large projects, especially proposed highway and railroad corridors that cross long distances, the lead agency may use a two-tiered process prior to implementing the proposed action. The basic concept of tiering is that rather than preparing a single EIS as the basis for approving the entire project, the agency conducts two or more rounds—or “tiers”—of environmental review. Tiering is typically adopted for several reasons, including:

- Complexity of managing the NEPA process for lengthy corridors
- Desire to authorize corridor/right-of-way preservation, where construction is not anticipated for many years
- Ability to look at programmatic and/or advanced mitigation strategies
- Lack of funding to complete a traditional EIS which require more detailed studies than is typically required for a Tier I EIS

Another reason for tiering is to prevent the numerous studies associated with a traditional EIS from becoming outdated because the funding shortage prevents the project from moving forward.

The Tier I EIS (also known as a programmatic EIS) would analyze the potential socio-environmental impacts along a general corridor, but would not identify the exact location of where the action would occur. A Tier I ROD would be issued approving the general area where the action would be implemented. A Tier I EIS may be conducted and adopted without corridor incorporation into a fiscally-constrained plan.



2. PROJECT DEVELOPMENT PROCESS

Following the Tier I ROD, the approved Tier I area is further broken down into subareas (segments of independent utility [SIUs]), and a Tier II document is then prepared for each SIU, that identifies the exact location of where the proposed action and alternatives will take place. The Tier II study can be an EIS, EA, CE, or a combination of different classes of action. The preparation of Tier II documents for each SIU proceeds at its own pace, independent from the other SIUs within the Tier I area.

Public Involvement during NEPA

Although the level of public involvement for transportation projects being evaluated under NEPA can vary by a project's level of impacts, public controversy and the practices and policies of the project's lead agency, there are general guidelines that establish a minimum level of public participation in the process. FHWA's policy is that public involvement and a systematic interdisciplinary approach are essential parts of the development process for proposed actions (23CFR § 771.105(c)). FHWA's public involvement requirements require each state to have procedures approved by the FHWA to carry out a public involvement/public hearing program. The previous federal surface transportation law, known as SAFETEA-LU notably expanded the public's ability to participate in the NEPA process for EISs and influence the content of the NEPA document.

Due to the multimodal nature of this corridor, the "lead agency" may not always be FHWA, and could consist of more than one federal agency. An excellent example of such a partnership is ADOT's *Arizona Passenger Rail Corridor Study*, where FRA and FTA are co-leading development of the EIS for intercity passenger rail service between Tucson and Phoenix.

Connected Actions

Although the I-11 and Intermountain West Corridor could accommodate more than one transportation mode (e.g., highway and rail) and also transport energy, fuel, water, or other commodities (by pipeline), the complexities of each type of major action (highway, rail, transmission towers/pipeline) within the Corridor makes it very difficult for each action to follow the same NEPA path. For multiple modes and/or uses to follow the same NEPA path, they must be a "connected action", defined as actions that are "closely related" to the proposal and alternatives. Connected actions have the same logical termini, would be implemented at the same time, and have a shared purpose and need.

For much of the Corridor, the various major actions that could occur in the Corridor's footprint are unlikely to be developed to a point where they could be evaluated in NEPA at the same time. However, the benefit of having agencies representing these other modes and uses participating in this PEL project, is that it allows the establishment of a corridor that meets the needs of all modes. This early agreement on the Corridor location will prevent the need to establish corridor boundaries at the start of the NEPA process for each mode and use.

Design, Right-of-Way Acquisition, and Construction

Upon completion of preliminary corridor planning, environmental review, and/or the NEPA process, a preferred alternative is selected and funding is allocated or identified for the project. At this step, projects may be adopted in a regional and/or statewide program for implementation (e.g., Regional Transportation Plan, Statewide Transportation Improvement Program).



Following acceptance into the program, projects advance to the Design Phase where a number of design, utility and right-of-way activities take place. The project design is finalized and documents are prepared for bid and construction. Utility plans and agreements are prepared, right-of-way plans are developed and necessary rights-of-way are acquired. Also during this phase, any joint project agreements are developed and executed. Special provisions are developed and included in the contract documents for prospective bidders.

The final project right-of-way requirements are established as a part of this Design Phase. In both Arizona and Nevada, the Right-of-Way Section/Group is responsible for the coordination and processing of all right-of-way matters. Acquisition of right-of-way can be authorized after acceptance of the project in the Statewide Transportation Improvement Program (STIP). Normally, all rights-of-way are acquired prior to the advertisement for construction bids.

Upon authorization of DOT leadership, each state follows their own process to advertise and award contracts for construction. After the construction contract is awarded, the contractor is responsible for constructing the project in accordance with the terms, conditions, and provisions set forth in the contract.

Major Project Delivery Process

On large projects (those over \$500 million, or those designated by the Secretary of Transportation) where federal funding may be used to finance the facility, a secondary project delivery workflow must be followed to demonstrate that the project has been carefully planned out. As part of this process, various financial and management plans are subject to undergo federal agency review before funding can be released for the project. Milestone deliverables occur during NEPA, final design/right-of-way, and construction. A detailed timeline of the process is available online:

http://www.fhwa.dot.gov/ipd/project_delivery/defined/fhwa_delivery_process.aspx

Multi-Use Evaluation Next Steps

The I-11 and Intermountain West Corridor is envisioned to accommodate multiple modes and multiple uses (highway, rail, and utilities). In terms of the project development process, preliminary planning studies should occur jointly for all modes anticipated as part of the Corridor, whenever possible. Upon completion planning, the process for implementation of each mode diverges. Different agencies/organizations will lead implementation of each mode/use; funding will most likely come from separate sources; and the timeframe for the demand for each mode/use will likely differ—potentially impacting the initiation of design and construction activities, as well as ongoing corridor operations.

ADOT and NDOT will both be responsible for building the highway component of the I-11 and Intermountain West Corridor, unless public-private partnerships (PPP or P3) are involved, in which case ADOT and NDOT would have major oversight roles. While passenger and freight rail corridors are planned by the DOTs in their respective State Rail Plans, implementation of passenger rail is generally the responsibility of an external transport agency, or coalition of agencies, of which the DOTs may be a participant (state law prohibits NDOT from operating any rail). Freight rail, however, would most likely be under the jurisdiction of a private Class I or multiple railroad companies. Major utilities are also controlled and implemented by a variety of independent private and quasi-public companies. Conversely, implementation of any or all of these corridors could be led by a non-profit entity or joint development agreement (hypothetically, a coalition that does not exist today, but may be formed to foster a “NAFTA transportation corridor”).



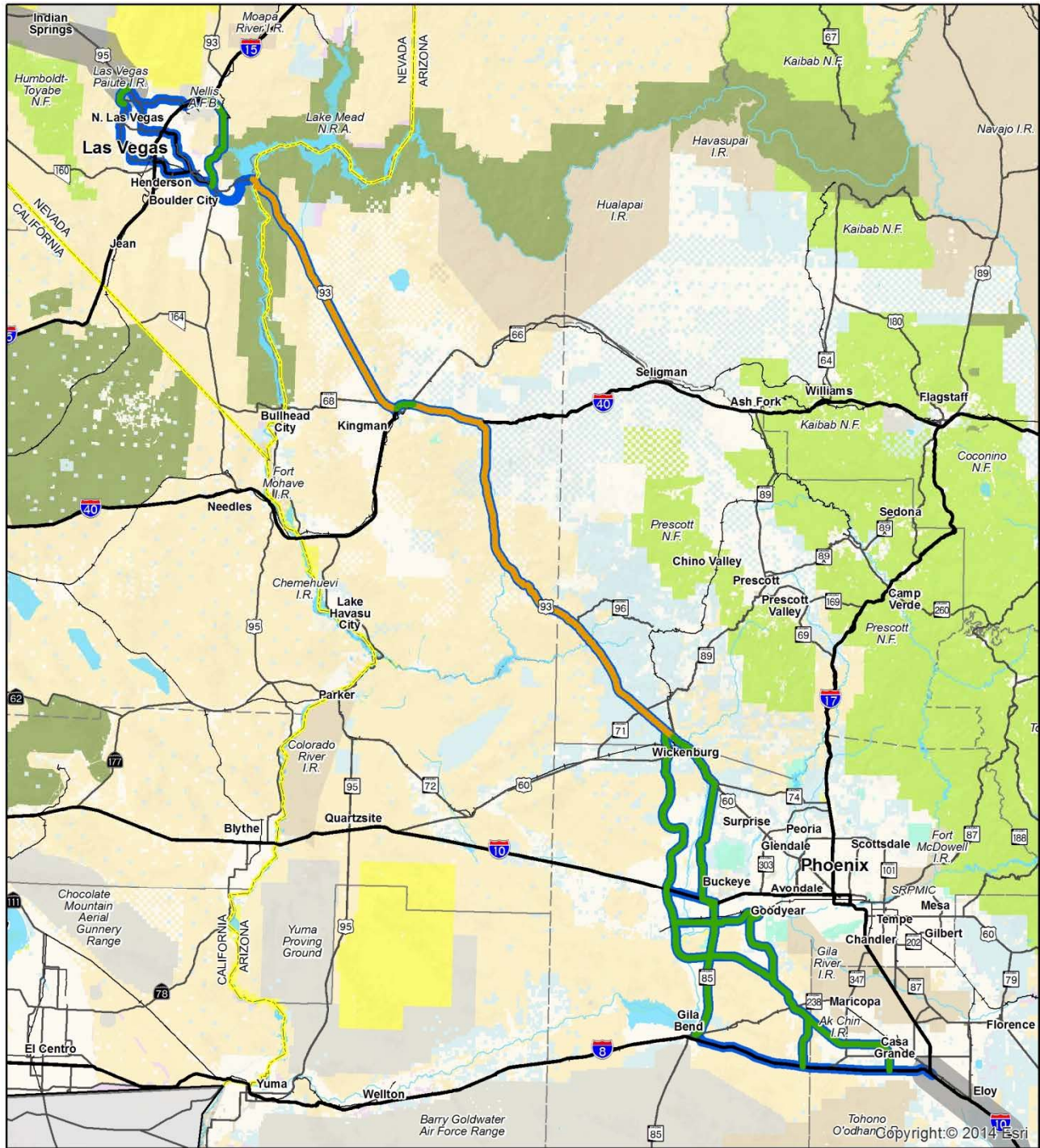
2. PROJECT DEVELOPMENT PROCESS

A high-level multi-use evaluation was conducted as part of this study to determine each alternative's ability to accommodate multiple modes and multiple uses (highway, rail, and utilities). **Figure 2-2** illustrates the portions of the recommended corridors that are suitable for multiple uses and modes, including highway, rail, and major utility infrastructure. Through this analysis, it was discovered that many of the corridors are not able to accommodate multiple modes, specifically rail, throughout the entire length of the corridor due to right-of-way or terrain constraints. Therefore, alternate rail corridors that could close north-south gaps in the existing rail network were proposed for possible consideration in ongoing and future planning studies conducted by public agencies and private sector stakeholders (**Figure 2-3**). While private rail companies are responsible for decisions regarding their networks, the analyses and recommendations proposed in this study may provide insight and support for those decisions as well as foster communication between public transportation agencies, private transportation companies (including, but not limited to railroads), and economic development partners.

Other uses within the corridor, such as transmission of energy and communications, are feasible through most of the corridors, and continue to be a priority for consideration as the ultimate corridor is refined and developed. In fact, the I-11 and Intermountain West Corridor and its vicinity represent promising territory for the production and transmission of renewable energy, especially solar. With respect to generation, most of the corridor traverses the Sonoran and Mojave deserts, which have more sunny days per year than nearly anywhere else in the U.S. **Appendix A** provides an overview of renewable energy development in the Southwest U.S., and opportunities provided by the I-11 and Intermountain West Corridor for transmission and generation of renewable energy resources.

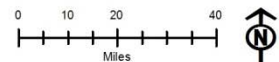


Figure 2-2. Combined Highway, Rail and Utility Corridor Feasibility



Legend

- National Boundary
- Interstate/Expressway
- Feasible I-11 Highway/Utility Corridor Alternative
- I-11 Corridor Alternative
- State Boundary
- State/US Highway
- Feasible I-11 Highway/Rail/Utility Alternative Corridor
- County Boundary
- Railroad
- Future Connectivity Area Recommended Connection(s)



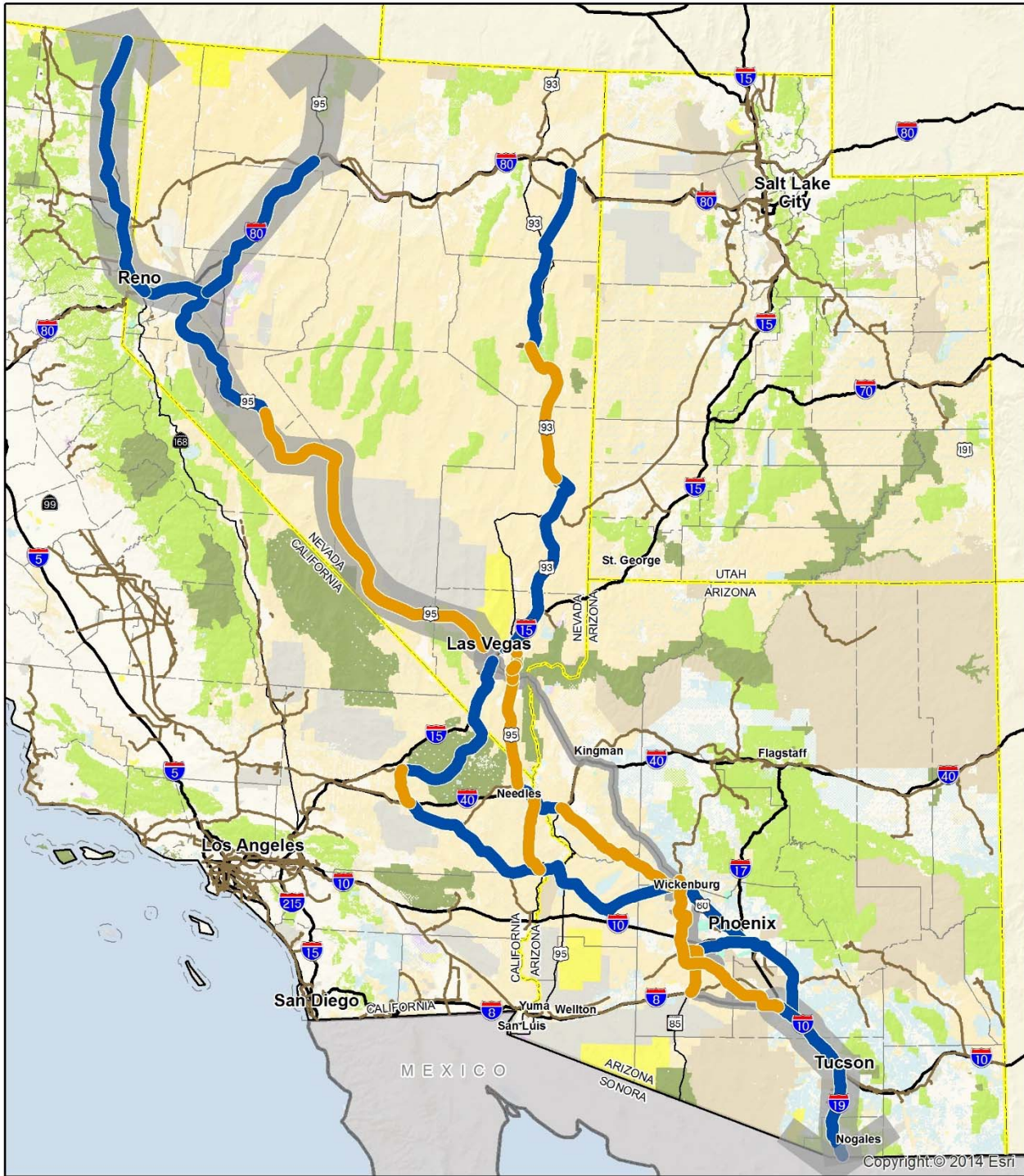
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Maps identify desired connections between metropolitan areas. Alternatives do not identify specific alignments, nor preclude multiple alignments within each alternative.



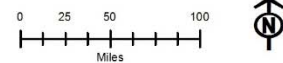
2. PROJECT DEVELOPMENT PROCESS

Figure 2-3. Multimodal Considerations



Legend

- National Boundary
- Interstate/Expressway
- Recommended Corridor Connection
- State Boundary
- State/US Highway
- Existing Rail Corridors
- County Boundary
- Existing Rail Network
- Potential Alternate Rail Corridors



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Maps identify desired connections between metropolitan areas. Alternatives do not identify specific alignments, nor preclude multiple alignments within each alternative.



Additional follow-on actions to foster implementation of a multimodal/multi-use corridor could include:

- ADOT and NDOT should update their state rail plans to include continuous north-south rail corridors to take advantage of I-11 trade corridor freight and passenger movement.
- ADOT and NDOT should include I-11 as a key trade corridor in individual state freight mobility plans.
- ADOT and NDOT should help establish (with a lead organization to be determined) a joint Arizona/Nevada I-11 Trade Corridor Freight Rail Working Group (including representatives from ADOT, NDOT, Arizona Commerce Authority, Nevada Governor's Office of Economic Development, FRA, FTA, FHWA, Class I railroads, etc.) to:
 - Review findings of the *I-11 and Intermountain West Corridor Study*;
 - Ascertain markets for north-south freight rail movements, generally within the broader I-11 and Intermountain West Corridor;
 - Evaluate current freight rail corridors that could potentially contribute to the eventual establishment of a continuous north-south I-11 freight rail corridor;
 - Identify gaps to completing such a corridor (starting with the opportunities identified on Figure 2-3);
 - Prepare a high-level feasibility study for gap closure and constructability analysis, including a preliminary cost estimate, as well as operational implications;
 - Identify potential terms and conditions for such a location within the I-11 and Intermountain West Corridor;
 - Identify interface with potential planning, design, and construction activities for other modes;
 - Identify and evaluate potential public and private responsibilities for gap closures and the possible financial resources that could be tapped for such an effort; and
 - Evaluate the potential to also accommodate passenger rail service in such an I-11 freight rail corridor (which would encompass expanding the Working Group to include passenger rail operators such as Amtrak).
- The Arizona Commerce Authority and the Nevada Governor's Office of Economic Development should help establish (with a lead organization to be determined) a joint Arizona/Nevada I-11 Trade Corridor Infrastructure Working Group (including representatives from ADOT, NDOT, state corporation commissions, U.S. Department of Energy, utility industry representatives [energy providers, renewable energy producers, telecommunications/data and commodities transfer, etc.], and various interest groups) to:
 - Review findings of the *I-11 and Intermountain West Corridor Study*;
 - Ascertain interest by the utility market segment for north-corridor utility transmission corridor development, generally within the broader I-11 and Intermountain West Corridor; and
 - Based on interest expressed by utility market segments, a team of state transportation, economic development and utility regulatory staff could then conduct focus groups within each utility market segment to:
 - Explore the feasibility and potential specific utilization of the I-11 and Intermountain West Corridor for infrastructure installation, including right-of-way requirements and long-term access for maintenance, safety procedures, etc.



2. PROJECT DEVELOPMENT PROCESS

- Identify potential terms and conditions for such a location within/along the I-11 and Intermountain West Corridor
- Identify interface with potential planning, design, and construction activities for other modes
- Identify potential roles and responsibilities for installation, maintenance and long-term operations of corridor infrastructure





3. Segments of Independent Utility

As explained in the previous chapter, the USDOT outlines a process for evaluating and implementing transportation corridor projects through the NEPA transportation decision-making process. In developing a project concept which can be advanced through the project development process, the project sponsor needs to consider a "whole" or integrated project that satisfies an identified need. As a pre-NEPA study, the *I-11 and Intermountain West Corridor Study* has identified a "whole" project in the corridor portion spanning the states of Arizona and Nevada, and performed preliminary planning, documented in this project's various technical reports and memoranda. In accordance with the PEL process, these outcomes have resulted in the formulation of a preliminary Purpose and Need document for the whole corridor, as well as identification of a reasonable range of alternatives to advance into NEPA. In order to ensure meaningful evaluation of alternatives in NEPA, and to avoid commitments to transportation improvements before they are fully evaluated, the action evaluated in each environmental document shall:

- Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
- Have independent utility or independent significance, i.e., be usable and be a reasonable expenditure even if no additional transportation improvements in the area are made; and
- Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

Because of the broad scope and scale of the overall I-11 project concept, this document seeks to break the corridor into Segments of Independent Utility (SIUs) to meet the NEPA requirement of both logical termini and independent utility. Segmentation allows more efficient implementation through the project development process, while still supporting the overall need for the corridor as a whole. These SIUs are anticipated to form the basis of independent follow-on studies, all joined together under a shared project vision.

The following lists and maps present the identified SIUs for both states. As discussed earlier, these are grouped into this project's study area segments, as presented in Figure 1-1.

Generally, the corridor's SIUs are truncated at major transportation junctions—allowing logical termini and independent utility. SIUs are not identified for the Northern Nevada Future Connectivity Area, as further planning studies are required to refine the range of reasonable alternatives.

Arizona SIUs

Figures 3-1 through 3-3 illustrate the recommended SIUs for Southern Arizona, the Phoenix Metropolitan Area, and Northern Arizona, respectively. In Southern Arizona, the identified SIU is quite lengthy due to the additional level of planning study that must occur to identify the reasonable range of alternatives. It is possible that this segment could be broken into sub-segments after subsequent study. Additionally, the Northern Arizona/Southern Nevada segment has been subdivided by respective state.

Southern Arizona

1. Arizona-Sonora Border to I-19 (international border crossing)
2. I-19 to I-10/I-8 (Casa Grande)



3. SEGMENTS OF INDEPENDENT UTILITY

Phoenix Metropolitan Area

3. I-10/I-8 (Casa Grande) to, and including, I-10 (Buckeye)
4. I-10 (Buckeye) to US 93 (Wickenburg)

Northern Arizona

5. US 93 (Wickenburg) to I-40
6. US 93 co-location with I-40, including system interchanges
7. US 93, Kingman/I-40 to Pat Tillman/Mike O'Callaghan Bridge

Nevada SIUs

Figure 3-4 illustrates the recommended SIUs for Southern Nevada and the Las Vegas Metropolitan Area. Due to the number of recommended SIUs, the SIUs are listed by alternative. In some cases, SIUs are duplicated to comprehensively present the alternative corridor. Figure 3-4 depicts the complete range of independent SIUs. These segments are more preliminary than those identified in Arizona because of previous work done to refine alternatives in Arizona. The Nevada corridors will require further refinement to identify which alternative is recommended as a component of the I-11 and Intermountain West Corridor, and the selection of a singular preferred I-11 Corridor alignment will reduce the range of SIUs. However, the recommended alternative may also require improvements along the other alternatives in order to function as intended.

Southern Nevada

8. US 93/Boulder City Bypass, Pat Tillman/Mike O'Callaghan Bridge to I-515/Foothills grade separation

Las Vegas Metropolitan Area

Alternative BB-QQ

9. New Eastern Corridor (Boulder City Bypass [I-515 and Foothills grade separation] to I-15)
10. I-15, Eastern Corridor to Northern Beltway
11. Northern Beltway, I-15 to US 95
12. US 95, Northern Beltway to SR 157

Alternative Y

13. I-515/US 93, Foothills Grade Separation to I-215
14. I-215, I-515 to I-15
15. CC 215, I-15 to future Sheep Mountain Parkway
16. Future Sheep Mountain Parkway, CC 215 to US 95

Alternative Z

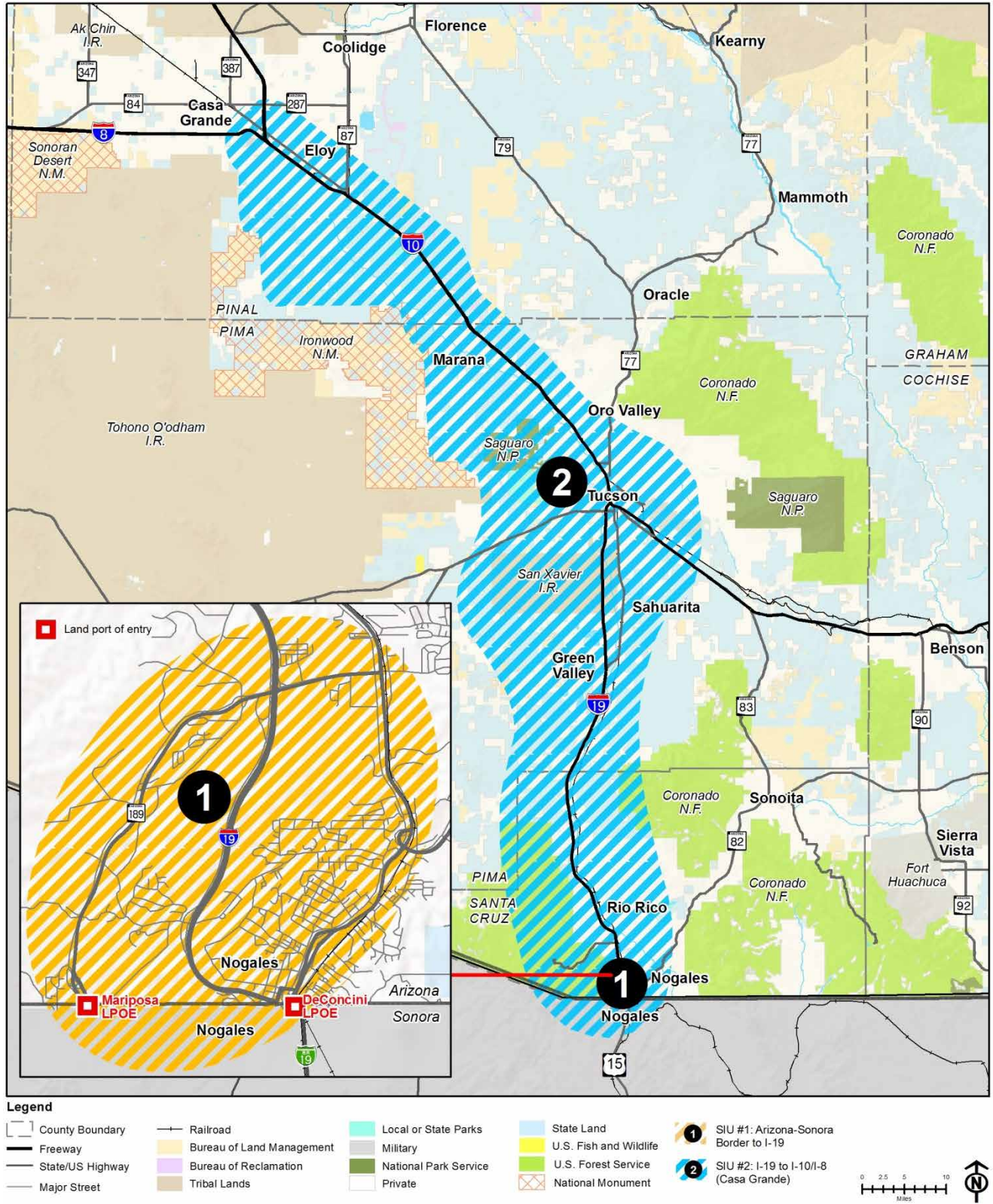
13. I-515/US 93, Foothills Grade Separation to I-215
17. I-515, I-215 to I-15 (includes Spaghetti Bowl)
18. US 95, I-15 to CC 215/Northern Beltway
12. US 95, Northern Beltway to SR 157

Northern Nevada

Additional studies are recommended in Northern Nevada which will identify the SIUs.



Figure 3-1. Southern Arizona SIUs

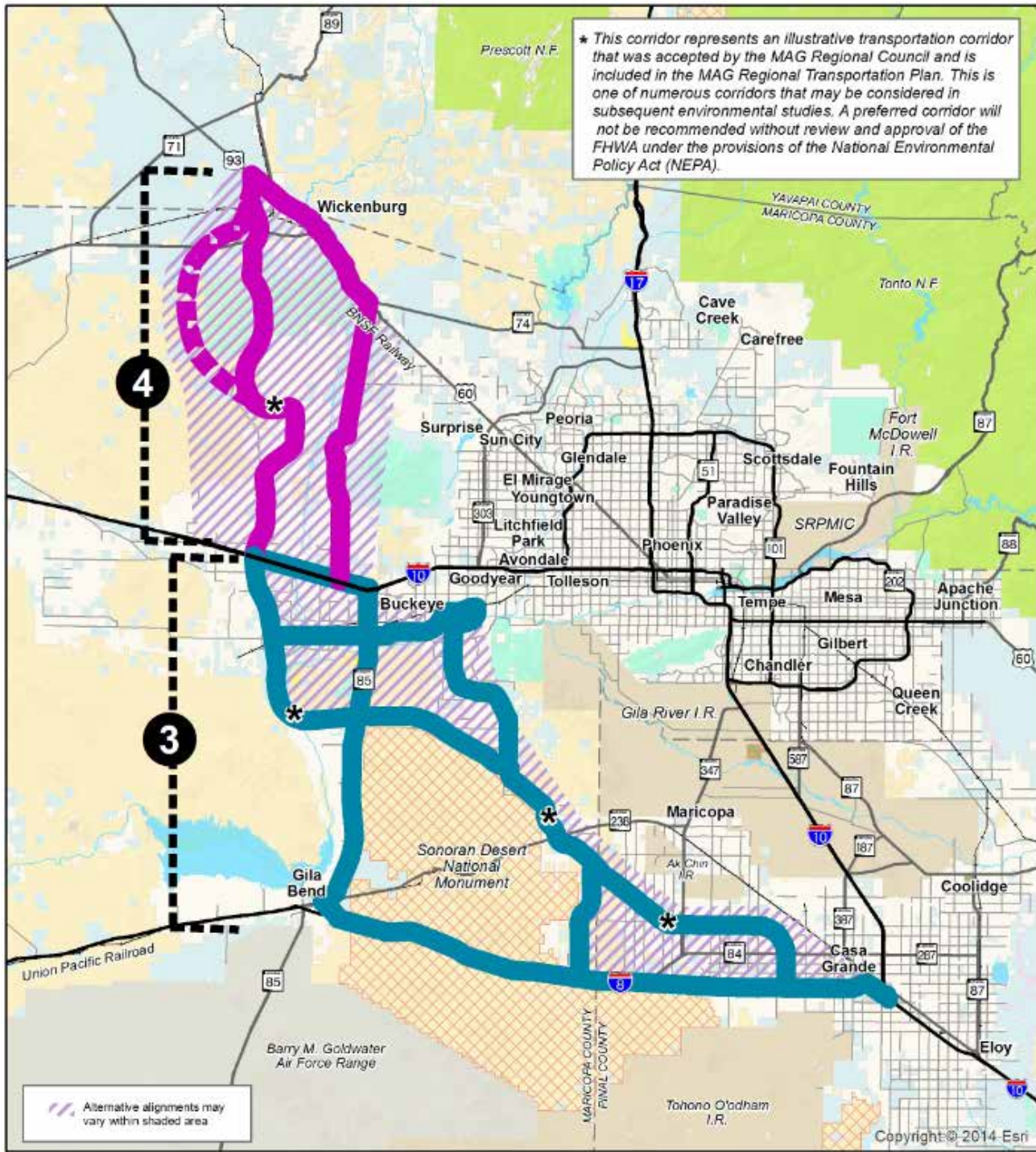


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3. SEGMENTS OF INDEPENDENT UTILITY

Figure 3-2. Phoenix Metropolitan Area SIUs



Legend

County Boundary	Railroad	Local or State Parks	National Park Service	U.S. Forest Service
Freeway	Bureau of Land Management	Planned Recreation Management Area	Private	National Monument
State/US Highway	Bureau of Reclamation	Military	State Land	SIU #3: I-8/I-10 (Casa Grande) to, and including, I-10 (Buckeye)
Major Street	Tribal Lands		U.S. Fish and Wildlife	SIU #4: I-10 (Buckeye) to US 93 (Wickenburg)

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Figure 3-3. Northern Arizona SIUs



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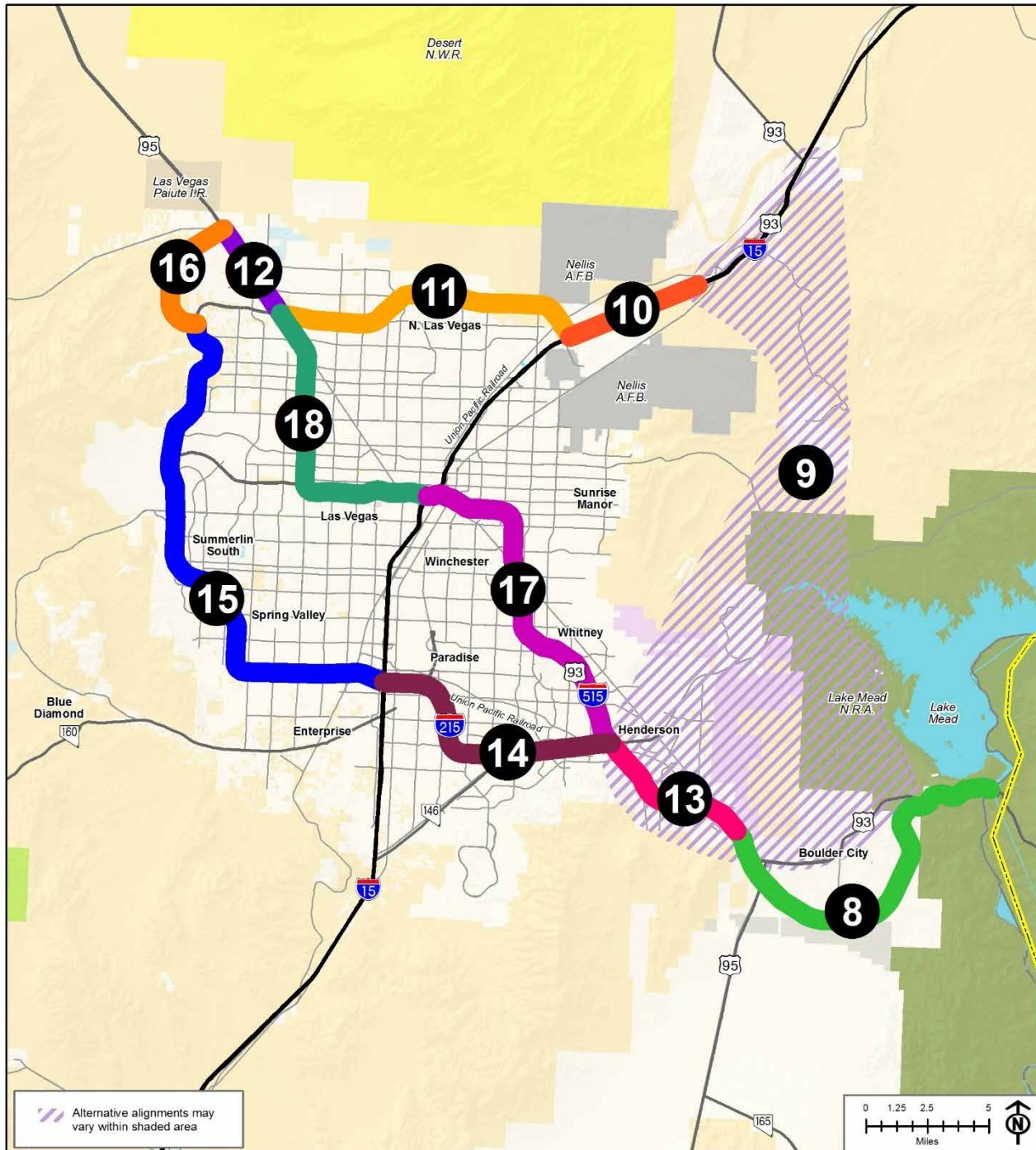
County Boundary	Railroad	Local or State Parks	Private	SIU #5: US 93
Freeway	Bureau of Land Management	Planned Recreation Management Area	State Land	SIU #6: US 93 co-location with I-40
State/US Highway	Bureau of Reclamation	Military	U.S. Fish and Wildlife	SIU #7: US 93
Major Street	Tribal Lands	National Park Service	U.S. Forest Service	

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3. SEGMENTS OF INDEPENDENT UTILITY

Figure 3-4. Southern Nevada/Las Vegas Metropolitan Area SIUs



- | | | | | | |
|------------------|---------------------------|------------------------|---------------------|------------------------------|---------------------------------|
| Legend | | | | | |
| County Boundary | Railroad | Military | U.S. Forest Service | SIU #9: New Eastern Corridor | SIU #14: I-215 |
| Freeway | Bureau of Land Management | National Park Service | Private | SIU #10: I-15 | SIU #15: CC 215 |
| State/US Highway | Bureau of Reclamation | Local or State Parks | State Land | SIU #11: Northern Beltway | SIU #16: Future Sheep Mtn Pkwy |
| Major Street | Tribal Lands | U.S. Fish and Wildlife | | SIU #12: US 95 | SIU #17: I-515 (Spaghetti Bowl) |
| | | | | SIU #13: I-515/US 93 | SIU #18: US 95 |
| | | | | | |
| | | | | | |

ALL INFORMATION IS PRELIMINARY / SUBJECT TO REVISION



Characterization of SIUs

The following section describes the overall character and implementation considerations for each SIU. An overriding major classification category is assigned to each SIU and in some areas, to sub-segments of SIUs. The purpose of this high-level classification is to broadly define the setting of the SIU. In addition, each SIU is broken down into a more detailed table that quickly illustrates the degree of challenges/opportunities presented by a range of specific corridor characteristics, including adjacent land use, corridor access, environmental sensitivity, wildlife connectivity, jurisdictional complexity, right-of-way, constructability.

While not directly related to specific implementation actions, these characteristics will help inform future study efforts by providing an easy to use summary of corridor conditions.

Major Classification Categories

Table 3-1 displays the major features associated with each classification category. These categories are meant to provide an overall understanding of the nature of the SIU.

Table 3-1. Major Classification Categories






















	Urban	Urbanizing	Rural
Location	Urbanized areas that are generally built out	Areas currently developing or with significant entitlements	Rural location, utilization of existing corridor or construction in relatively undeveloped area
Common Challenges	Constrained right-of-way; and/or environmental justice	Coordination with adjacent land uses to minimize impacts and ensure connectivity	Design of new corridor, or expansion of existing corridor, with least disturbance on surrounding natural environment; public opposition to new corridor
General Roadway Footprint	8-10 travel lanes with potential high occupancy vehicle lanes and frontage roads	8-10 travel lanes with phased construction effort	4-6 travel lanes
Multimodal Considerations	Limited right-of-way and compatibility with existing development can impact number of modes accommodated in the same footprint	Accommodation of rail and/or utility corridors in same or nearby right-of-way	Accommodation of rail and/or utility corridors in same or nearby right-of-way; new corridors could likely co-locate all modes in same footprint
Typical Improvements	Corridor reconstruction or expansion; incorporate travel demand management techniques	Capacity enhancements to existing corridors; new corridor construction	Capacity enhancements, reconstruction to interstate standards, or new construction
Next Steps	Design studies and environmental clearance; construction	Design studies and environmental clearance	Further alignment planning (new corridors), design, and environmental clearance



Implementation Characteristics

Table 3-2 displays the symbols for the seven implementation characteristic categories that will be rated for each SIU, along with an explanation of what the three variations in symbology color represent, with the darkest color signifying an element of high sensitivity (provides the greatest challenge or opportunity), and the lightest color signifying an element with low sensitivity toward that characteristic (provides the least challenge or opportunity).

Table 3-2. Implementation Characteristic Descriptions

Characteristic	Sensitivity During Implementation		
	High	Medium	Low
Adjacent Land Use	 Existing development; built out	 Entitled; planned communities and subdivisions	 Mostly undeveloped
Corridor Access	 Frequent access needed; interchange spacing every 2-3 miles	 Moderate access needed; interchange spacing every 3-5 miles	 Limited access needed; interchange spacing every no more frequent than every 5 miles
Environmental Sensitivity	 High environmental constraints	 Moderate environmental constraints	 Limited environmental constraints
Wildlife Connectivity	 High wildlife movement; consider in design	 Moderate wildlife movement; consider in design	 Limited wildlife movement
Jurisdictional Complexity	 Coordination with multiple jurisdictions and/or regulatory agencies	 Coordination with multiple jurisdictions	 Coordination with one jurisdiction
Right-of-Way	 Limited R/W available or high cost of acquisition	 Moderate R/W available or moderate cost of acquisition	 R/W available or low cost of acquisition
Constructability (drainage, topography)	 High degree of challenges	 Moderate degree of challenges	 Low degree of challenges

Arizona SIU Characterization

Table 3-3 provides a summary of the major classification category and implementation characteristic sensitivity for each SIU in Arizona. The last column in the table allows additional descriptions for unique factors or outstanding characteristics that are not described elsewhere.

Nevada SIU Characterization

Table 3-4 provides a summary of the major classification category and implementation characteristic sensitivity for each SIU in Nevada (Southern Nevada and Las Vegas Metropolitan Area). The last column in the table allows additional descriptions for unique factors or outstanding characteristics that are not described elsewhere.



Table 3-3. Arizona SIU Characterization

SIU	Major Classification Category	Adjacent Land Use	Corridor Access	Environment	Wildlife Connectivity	Jurisdictional Complexity	Right-of-Way	Constructability	Unique Factors	
Southern Arizona										
1	Arizona-Sonora Border to I-19	Urban								SIU is oriented toward the international border crossing at Nogales—connectivity to the land port of entry (LPOE) and efficiency of crossing.
2	I-19 to I-10/I-8 (Casa Grande)									
	I-19 to Tucson metropolitan area	Urbanizing								Potentially utilize existing corridor, with much development adjacent to corridor due to the Santa Cruz River and railroad corridor (Union Pacific Railroad [UPRR] Nogales Subdivision).
	Tucson metropolitan area	Urban								Additional study required to understand if corridor passes through, or around to the west, the core of Tucson; implementation characteristics could change.
	Tucson metropolitan area to Casa Grande	Urbanizing								Additional study required to understand if corridor utilizes existing facilities or a new corridor; implementation characteristics could change.
Phoenix Metropolitan Area										
3	I-10/I-8 (Casa Grande) to, and including, I-10 (Buckeye)									
	Casa Grande area	Urbanizing								Portion of corridor expected to be new (approximate Montgomery Road alignment) and portion uses existing I-8 through Casa Grande.
	Casa Grande to Buckeye (new corridor alternative)	Rural								Portion of proposed corridors (corridor bordering northern edge of Sonoran Desert National Monument) is environmentally cleared for utility transmission under the West-Wide Energy Corridors PEIS; similar portion under study (draft EIS) for clearance of a two- to six-lane parkway (250 feet right-of-way).
	Casa Grande to Buckeye (existing corridor alternative)	Rural								Traverses Sonoran Desert National Monument.
	Buckeye area (new corridor alternative)	Urbanizing								Potential co-location of I-11 and I-10 requires additional study to understand travel demand impacts.
4	I-10 (Buckeye) to US 93 (Wickenburg)	Urbanizing								Potential Bureau of Land Management (BLM)/ Maricopa County Planned Recreation Management Area spans current corridor options.



3. SEGMENTS OF INDEPENDENT UTILITY

Table 3-3. Arizona SIU Characterization

SIU	Major Classification Category	Adjacent Land Use	Corridor Access	Environment	Wildlife Connectivity	Jurisdictional Complexity	Right-of-Way	Constructability	Unique Factors
Northern Arizona									
5 US 93 (Wickenburg) to I-40	Rural – Existing Corridor								Most of this segment has been widened to 4 lanes, with minimal access control; gaps of approximately 50 miles remain to be improved
6 US 93 co-location with I-40, including system interchanges	Urbanizing								Co-location of I-11 and I-40 requires additional study to understand travel demand impacts, including impact on West Kingman interchange.
7 US 93, Kingman/I-40 to Pat Tillman/Mike O’Callaghan Bridge	Rural								Majority of this segment has been widened to 4 lanes on an incremental basis, with minimal access control



Table 3-4. Nevada SIU Characterization

SIU	Major Classification Category	Adjacent Land Use	Corridor Access	Environment	Wildlife Connectivity	Jurisdictional Complexity	Right-of-Way	Constructability	Unique Factors	
Southern Nevada										
8	US 93/Boulder City Bypass, Pat Tillman/Mike O'Callaghan Bridge to I-515/Foothills grade separation	Rural – New Corridor								An Environmental Impact Statement (EIS) has been completed for the Boulder City Bypass and received a Record of Decision in 2005. Construction of Phases 1 and 2 is anticipated in the near-term.
Las Vegas Metropolitan Area										
Alternative BB-QQ										
9	New Eastern Corridor (Boulder City Bypass [I-515 and Foothills grade separation] to I-15)	Rural								Corridor could potentially traverse Lake Mead National Recreation Area (LMNRA) and environmentally sensitive lands. Also adjacent to rural residential communities. Extensive agency coordination and public involvement required.
10	I-15, Eastern Corridor to Northern Beltway	Urbanizing								Co-location of I-11 and I-15 requires additional study to understand travel demand impacts and conflicting directions (I-15 south, I-11 north)
11	Northern Beltway, I-15 to US 95	Urbanizing								This segment is generally urbanizing, but from Aliante Parkway to US 95 is mostly urban.
12	US 95, Northern Beltway to SR 157	Urbanizing								
Alternative Y										
13	I-515/US 93, Foothills Grade Separation to I-215	Urbanizing								
14	I-215, I-515 to I-15	Urban								Traverses densely populated residential and commercial areas with development directly adjacent to corridor.
15	CC 215, I-15 to future Sheep Mountain Parkway	Urbanizing								
16	Future Sheep Mountain Parkway, CC 215 to US 95	Urbanizing								This segment is currently undergoing an Environmental Assessment as part of the Sheep Mountain Parkway planning process.
Alternative Z										
13	I-515/US 93, Foothills Grade Separation to I-215	Urbanizing								
17	I-515, I-215 to I-15 (includes Spaghetti Bowl)	Urban								Traverses densely populated residential and commercial areas with development directly adjacent to corridor with potential air quality and environmental justice impacts.
18	US 95, I-15 to CC 215/Northern Beltway	Urban								Traverses densely populated residential and commercial areas with development directly adjacent to corridor with potential air quality and environmental justice impacts.
12	US 95, Northern Beltway to SR 157	Urbanizing								





4. Implementation Program

The purpose of this chapter is to lay out the broad implementation items for each SIU. The I-11 and Intermountain West Corridor is comprised of many different project segments at varying degrees of progress in the project development process. The focus of this Implementation Program is to achieve an interim border-to-border corridor as efficiently as possible from a timing and cost perspective. This interim facility is defined as a continuous and cohesive corridor from the Mexican border to the Las Vegas metropolitan area (may utilize existing facilities with excess capacity). This corridor is anticipated to be a safe, limited access, and high-speed facility. Understanding the long-term vision is important too, and this chapter will also lay out the actions required to implement the complete build out of the multimodal transportation corridor envisioned. Follow-on actions are organized in three topic areas:

- **Technical actions:** The technical actions presented are comprised of a range of corridor improvements required to implement the interim and full build multimodal I-11 and Intermountain West Corridor. The exact details of many of these actions are unknown until further planning and design occurs, however the general progression from existing transportation facilities to the interim and ultimate corridor recommendations can be logically presented. Technical actions are presented by SIU.
- **Public policy actions:** The public policy actions are described on a broader scale, either relating to policy actions required by the individual states, or potential actions that both states might partner on for implementation.
- **Marketing/branding:** The marketing/branding actions relate to the entire corridor as a whole, and present actions that should be conducted to develop the “image” of the I-11 and Intermountain West Corridor to maintain implementation momentum.

All actions are described by the timeframe for implementation (as applicable), lead agency responsible for actions, and partnerships required. It is important to keep in mind that timeframes associated with identified actions depend on the availability of funding. “Short-term” actions would commence once a funding source for that SIU is available. Funding options are discussed in the last chapter.

This chapter lists a range of implementation actions required to see the multimodal I-11 and Intermountain West Corridor successfully built. A culmination of the specific critical next steps for all three topic areas is presented in the following chapter.

Technical Implementation Actions

In whole, the I-11 and Intermountain West Corridor has the potential to be over 530 miles long between the southern Arizona border and the Las Vegas Metropolitan Area—and double that length to the northern Nevada border. A phased implementation strategy is required to achieve the full build condition that fulfills the vision of a multimodal I-11 and Intermountain West Corridor. For many corridor segments, facilities that exist today can be upgraded or replaced through future improvements over time. In other portions of the corridor though, no facility currently exists—precluding an interconnected corridor through Arizona to Nevada. The technical implementation actions outlined in this section are based on identified projects for constructing the interim facility through both states to fill gaps and serve the regional transportation systems, as well as projects required to achieve implementation of the “full build” condition. The three



4. IMPLEMENTATION PROGRAM

conditions described below are based on the conditions used in the benefit-cost analysis for the I-11 Final Business Case.

- The baseline or “trend” condition includes projects in both states that are funded in long-range transportation plans. These projects have already been identified and prioritized by the respective public agency (state DOT or regional MPO) for the sake of improving the regional transportation network. Generally speaking, complete implementation of the baseline condition can range more than ten years, depending on the duration and status of the current RTP/STIP.
- The interim condition assumes completion of the trend projects, plus additional targeted improvements as required to create a continuous four-lane divided highway from Nogales to Las Vegas. The goal of implementing this interim condition is to facilitate trade movements between Mexico, Arizona, and Nevada – until such a time as the ultimate trade corridor is deemed needed.
- The “full build” condition builds upon the previous two conditions to complete build-out of a multimodal transportation corridor that will match the needs of future demands for the movement of people and goods. The full build condition is the long-term vision for the Corridor.

Interim Corridor

The interim condition of the I-11 and Intermountain West Corridor achieves a continuous and cohesive corridor through Arizona and Nevada. ***It is important to note that many segments of the Corridor have infrastructure in place today that lays the foundation for this interim corridor.*** Components of the statewide and regional transportation systems with current excess capacity are great candidates to contribute to a border-to-border corridor for the short-term, and even potentially the long-term. Such facilities in Arizona include I-19, portions of I-10, I-8, and US 93, and portions of the Union Pacific Railroad, BNSF Railway, and Arizona & California Railroad main and branch lines; and in Nevada include portions of US 93, US 95, the near-term Boulder City Bypass, and segments of the metropolitan Las Vegas freeway system. In some areas, minimal improvements are recommended to enhance the Corridor for accommodation of trade traffic. In other portions of the Corridor, gaps exist that need to be filled to provide a cohesive connection. Overall though, the foundation for this Corridor exists and can be leveraged to adequately plan and design the vision for this multimodal super-corridor.

Table 4-1 presents a list of projects that contribute to this interim corridor for both Arizona and Nevada. Currently, each SIU identified for the I-11 and Intermountain West Corridor is at varying stages of the project development process. Table 4-1 outlines the logical next step for each SIU, including any regulatory documents required; the anticipated outcome of this next step; the interim scenario action; and the priority for completion (criticality).

The projects listed in Table 4-1 include improvements that contribute to both the trend and interim condition, which cumulatively, will result in a free-flow, high-speed, safe, and continuous “interim corridor.” For a detailed breakdown of the specific projects included in each scenario, see **Appendix B**. The more near-term projects may be included in cost-constrained transportation plans, with others noted in long-range transportation plans as “illustrative” or “unfunded needs” projects. The interim corridor condition is desired to be implemented as soon as environmental clearance processes are complete and funding is available for construction. With that said, certain projects are deemed more critical than other projects. Table 4-1 associates the projects within each SIU with a certain “criticality.”



The “criticality” of implementation is tied to the immediacy of need for corridor segments. The definition of criticality allows both Arizona and Nevada to prioritize certain SIUs to attain continuity in the I-11 and Intermountain West Corridor, with the goal to achieve an end-to-end corridor as quickly as possible and at the lowest cost.

All projects contributing to the interim condition are important to incrementally achieve implementation of the I-11 and Intermountain West Corridor, however the criticality ties to sequencing of projects that allows the most efficient implementation of the corridor. Just because an SIU has a low criticality does not mean that the segment is not important or that there is no immediate implementation actions required. A low criticality might be assigned to an SIU because an existing facility with ample capacity currently exists—requiring minimal to minor improvements over a longer timeframe before a new facility or increased capacity is warranted. However, preliminary planning and design studies may still be necessary for these SIUs of low criticality in the near-term. In some cases, no projects are listed for an SIU. Like the “low” criticality, this could occur where adequately functioning corridors exist to meet the needs for this interim corridor.

- SIUs of “high” criticality are determined based on whether the SIU fills a gap in the existing transportation system. A “gap” is defined as:
 - No corridor exists today, or
 - An existing facility exists, but it is not, at a minimum, a 4-lane divided, access-controlled transportation facility.
- SIUs of “moderate” criticality are determined based on whether the SIU includes projected congestion (level of service D, E or F).
- If an SIU falls into neither of the above two categories, the criticality is deemed “low.”

Table 4-1 presents the list of projects required to achieve the interim corridor condition, and assigns the related criticality for SIUs in each state. Timeframes are not generally associated with the varying degrees of criticality, as they will depend on funding availability and programming of projects in statewide and regional transportation plans, however “high” criticality actions are those anticipated to occur within the next two years.

While existing facilities exist in SIU #1 (Arizona-Sonora Border to I-19), this is given a “high” criticality due to the importance of the border crossing to the entirety of the Corridor. Currently, I-19 does not extend to the border—instead terminating less than one-half mile before the border. Grand Avenue, the extension of I-19 which connects to the DeConcini LPOE, is an arterial roadway that traverses downtown Nogales and is often congested due to parked trains awaiting security checks at the border. The Mariposa LPOE, 1.5 miles to the west, is the crossing planned for trade and freight traffic, however does not currently have a rail crossing. Additionally, it is only open from 6:00 am to 10:00 pm, shortening the time period for which traffic can pass through. Increasing efficiency and capacity and accommodating rail at the Mariposa border crossing is the most critical project of this corridor. Without efficient access across the international border, trade traffic will not utilize this Corridor.



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Table 4-1. Projects for Interim Corridor

SIU	Project Development Next Step	Anticipated Outcome of Next Step	Interim Corridor Improvements (including Trend projects)*	Criticality
Arizona				
1 Arizona-Sonora Border to I-19	NEPA Process: EA	Preferred alignment, corridor plan, and right-of-way requirements for SR 189; additional study of international freight movement needs at Nogales port of entry	<ul style="list-style-type: none"> • Increase capacity on SR 189/Mariposa Road, I-19 to International Border (and potentially reserve right-of-way for new rail corridor to connect to Mariposa LPOE). 	High
2 I-19 to I-10/I-8 (Casa Grande)	NEPA Process: Tier 1EIS	Preferred alignment (existing or new corridor segment) and ultimate corridor plan for I-11, including intercity passenger rail between Phoenix and Tucson and interconnected freight rail	<ul style="list-style-type: none"> • Increase capacity on I-19 from Nogales to I-10; construct frontage road. • Increase capacity on I-10 (Prince Road to Pima County Line). • Reconstruct interchanges and railroad grade separations, where appropriate, on I-10 and I-19. 	Moderate
3 I-10/I-8 (Casa Grande) to, and including, I-10 (Buckeye)			<ul style="list-style-type: none"> • Upgrade SR 85 to a freeway, (re)construct SR 85/I-10 and SR 85/I-8 system interchanges. • Increase capacity on I-8, reconstruct I-8/I-10 system interchange. 	Low
4 I-10 (Buckeye) to US 93 (Wickenburg)			<ul style="list-style-type: none"> • Construct new limited access parkway facility connecting I-10 and US 93 (alignment to be determined in future study). 	Moderate
5 US 93 (Wickenburg) to I-40	Design/Construction	Completion of capacity enhancements to upgrade US 93 to a four-lane divided highway, including improvement of I-40 system interchange ^{1,2}	<ul style="list-style-type: none"> • Upgrade US 93 to a 4-lane divided highway. 	High
6 US 93 co-location with I-40, including system interchanges			<ul style="list-style-type: none"> • Construct East Kingman interchange, Rattlesnake Wash interchange. 	Low
7 US 93, Kingman/I-40 to Pat Tillman/Mike O'Callaghan Bridge			<ul style="list-style-type: none"> • Improve corridor shoulders and rumble strips • Construct West Kingman interchange. 	Moderate



Table 4-1. Projects for Interim Corridor

SIU	Project Development Next Step	Anticipated Outcome of Next Step	Interim Corridor Improvements (including Trend projects)*	Criticality	
Nevada³					
8	US 93/Boulder City Bypass, Pat Tillman/ Mike O'Callaghan Bridge to I-515/ Foothills grade separation	Design/Construction	Design-Build contract to be awarded Fall 2014, with construction immediately following	<ul style="list-style-type: none"> Construct new freeway, with related interchanges and features. 	High
Alternative BB-QQ					
9	New Eastern Corridor (Boulder City Bypass [I-515 and Foothills grade separation] to I-15)	Advanced Planning or NEPA Process (type of document to be determined)	Selection of one corridor alternative for I-11 and determination of modes to be accommodated	<ul style="list-style-type: none"> Construct new corridor. 	High
10	I-15, Eastern Corridor to Northern Beltway			<ul style="list-style-type: none"> Increase capacity on I-15. 	Moderate
11	CC 215/ Northern Beltway, I-15 to US 95			<ul style="list-style-type: none"> Upgrade corridor to a freeway Upgrade traffic interchanges to system interchanges at I-15 and at US 95; construct 2 service interchanges. 	Low
12	US 95, CC 215/Northern Beltway to SR 157 ⁴			<ul style="list-style-type: none"> Increase capacity on US 95. 	Low
Alternative Y					
13	I-515/US 93, Foothills Grade Separation to I-215	Advanced Planning or NEPA Process (type of document to be determined)	Selection of one corridor alternative for I-11 and determination of modes to be accommodated	<ul style="list-style-type: none"> Increase capacity on I-515. 	Moderate
14	I-215, I-515 to I-15			<ul style="list-style-type: none"> Increase capacity on I-215, with new HOV ramps Upgrade traffic interchanges as appropriate. 	Moderate
15	CC 215, I-15 to future Sheep Mountain Parkway			<ul style="list-style-type: none"> Increase capacity on CC 215, with new/upgraded interchanges and railroad overpasses as appropriate. 	Moderate
16	Future Sheep Mountain Parkway, CC 215 to US 95			<ul style="list-style-type: none"> Complete staged construction of Sheep Mountain Parkway, with related interchanges and features. 	High

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Table 4-1. Projects for Interim Corridor

SIU	Project Development Next Step	Anticipated Outcome of Next Step	Interim Corridor Improvements (including Trend projects)*	Criticality
Alternative Z				
13 I-515/US 93, Foothills Grade Separation to I-215	Advanced Planning or NEPA Process (type of document to be determined)	Selection of one corridor alternative for I-11 and determination of modes to be accommodated	• Increase capacity on I-515.	Moderate
17 I-515, I-215 to I-15 (includes Spaghetti Bowl)			• Increase capacity on I-515, include HOV lanes and construct/upgrade interchanges as appropriate. Improve Spaghetti Bowl interchange.	High
18 US 95, I-15 to CC 215/Northern Beltway			• Increase capacity on US 95 and upgrade interchanges as appropriate.	Moderate
12 US 95, CC 215/Northern Beltway to SR 157 ⁴			• Increase capacity on US 95.	Low
Northern Nevada Future Connectivity Segment	Planning	Corridor Study	• No action.	Low

* Listed improvements for interim corridor conditions are subject to change, pending project development status.

¹ Completion of ongoing capacity enhancements is the immediate next step. Such improvements are highway-oriented only; subsequent study is necessary to understand need and ability to accommodate additional modes (e.g., rail, utility transmission).

² A series of environmental clearance documents have already been completed for the US 93 corridor in Arizona. These documents, in conjunction with other studies (Access Management Plan), provide guidance on upgrading the US 93 corridor to full interstate standards. **Appendix C** cites the improvements anticipated to upgrade the US 93 corridor to full interstate standards.

³ SIUs should be revisited following subsequent Advanced Planning or NEPA studies for the Las Vegas metropolitan area that results in identification of a singular preferred alternative; current list of SIUs related to three separate corridor options.

⁴ Although a Finding of No Significance (FONSI) has been achieved for capacity enhancements on US 95 for SIU 12, alternative corridors in the Las Vegas metropolitan area require additional planning to determine the preferred corridor alignment for the I-11 and Intermountain West Corridor.



Full Build Corridor

The “full build” condition of the I-11 and Intermountain West Corridor consists of those improvements over the interim condition that complete build out of a multimodal transportation corridor. **Table 4-2** presents the list of projects required to achieve the full build corridor condition, but no prioritization scheme is applied. *The list of projects under the full build condition is primarily for reference at this phase in the process, and should be updated as more information becomes available.*

Once a preferred alternative is selected for each SIU (pending future NEPA studies), the list of projects should be revisited and prioritized based on the more detailed information resulting from the NEPA process (e.g., project need, anticipated congestion). Timeframes will depend on funding availability and programming of projects in statewide and regional transportation plans.

Table 4-2. Projects Needed to Complete Full Build Corridor (in addition to Interim Projects)

SIU	Full Build Scenario Action
Arizona	
1 Arizona-Sonora Border to I-19	<ul style="list-style-type: none"> Major multimodal transportation enhancements that could include LPOE improvements, improvements to existing rail or highway corridors, developing new rail or highway corridors, or other improvements recommended in the Arizona-Sonora Border Master Plan
2 I-19 to I-10/I-8 (Casa Grande)	<ul style="list-style-type: none"> Major multimodal transportation enhancements that could include improvements to existing rail or highway corridors, developing new passenger rail or highway corridors, accommodating major utilities, or other concepts to be evaluated in future study(ies)
3 I-10/I-8 (Casa Grande) to, and including, I-10 (Buckeye)	<ul style="list-style-type: none"> New or improved multi-use corridor, including the opportunity for new rail facilities, utilities, and a 6-lane freeway with full interchange build-out and related features/upgrades (alignment to be determined in future study)
4 I-10 (Buckeye) to US 93 (Wickenburg)	<ul style="list-style-type: none"> New or improved multi-use corridor, including the opportunity for new rail facilities, utilities, and a 6-lane freeway with full interchange build-out and related features/upgrades (alignment to be determined in future study)
5 US 93 (Wickenburg) to I-40	<ul style="list-style-type: none"> Upgrade to a multi-use corridor, including the opportunity for utilities and a 4-lane freeway, full interchange build-out, and related features/upgrades
6 US 93 co-location with I-40, including system interchanges	<ul style="list-style-type: none"> Upgrade to a multi-use corridor, including the opportunity for utilities and a 6 lanes with related features/upgrades
7 US 93, Kingman/I-40 to Pat Tillman/Mike O’Callaghan Bridge	<ul style="list-style-type: none"> Upgrade to multi-use corridor, including the opportunity for utilities and a 4-lane freeway (from SR 68 to Kingman Wash) and 6-lane freeway (SR 68 to I-40), full interchange build-out, and related features/upgrades



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Table 4-2. Projects Needed to Complete Full Build Corridor (in addition to Interim Projects)

SIU	Full Build Scenario Action
Nevada*	
8 US 93/Boulder City Bypass, Pat Tillman/Mike O'Callaghan Bridge to I-515/Foothills grade separation	• No action
9 New Eastern Corridor (Boulder City Bypass [I-515 and Foothills grade separation] to I-15)	• New freeway with interchanges
10 I-15, Eastern Corridor to Northern Beltway	• Capacity improvements
11 Northern Beltway, I-15 to US 95	• Capacity improvements
12 US 95, Northern Beltway to SR 157	• Capacity improvements
13 I-515/US 93, Foothills Grade Separation to I-215	• Capacity improvements
14 I-215, I-515 to I-15	• Capacity improvements
15 CC 215, I-15 to future Sheep Mountain Parkway	• Capacity improvements
16 Future Sheep Mountain Parkway, CC 215 to US 95	• Capacity improvements
17 I-515, I-215 to I-15 (includes Spaghetti Bowl)	• Capacity improvements
18 US 95, I-15 to CC 215/Northern Beltway	• Capacity improvements
Northern Nevada Future Connectivity Segment	• Major transportation enhancements to be determined in future Corridor Study

* SIUs should be revisited following subsequent Advanced Planning or NEPA studies for the Las Vegas metropolitan area that results in identification of a singular preferred alternative; current list of SIUs related to three separate corridor options.

Public Policy Actions

Table 4-3, Public Policy Actions, summarizes a set of policy-related actions that ADOT, NDOT, and their partners will need to carry out as part of their implementation planning for the I-11 and Intermountain West Corridor. ***The list is not meant to be final or all-inclusive at this stage; it is designed so that other items can be added as planning, design, programming, and construction progress on various elements of the corridor in Arizona and Nevada.*** It does not include the basic project development process by SIU or technical actions by the two DOTs, which are covered elsewhere in the Implementation Program chapter. In some cases, the necessary policy guidelines may already exist; in others, they may need to be tailored to the unique circumstances of the I-11 and Intermountain West Corridor. Similarly, some of the necessary partnerships already exist or are being established as part of this corridor study.

The table provides the following information for several distinct categories of public policy:

- **Public Policy Action:** Brief description
- **Timeframe for Action Initiation:** Immediate (0-2 years), short-term (2-10 years), mid-term (10-20 years), or long-term (20 years or more)
- **Lead Agency Responsible to Initiate Action:** Agency/organization responsible for initiating action



- **Required Partnerships or Guidance:** Lists key agencies and stakeholders; also indicates sources for design policy

Public policy categories covered include:

- Official corridor adoption
- Multimodal and multi-use
- Corridor marketing
- International trade corridor
- Local planning coordination
- Economic development coordination
- Corridor funding and finance
- Metropolitan routing and connections
- Ancillary facilities
- Selected design considerations

Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
Official Corridor Adoption			
1 Seek formal adoption of Corridor into regional transportation plans of all MPOs in recommended study corridors to allow future federal and local funding.	Short-term (next RTP update)	Corridor MPOs: • MAG • Sun Corridor MPO • PAG • RTC Southern Nevada	• ADOT • NDOT • Support from MPO members and other stakeholders
2 Seek formal adoption of Corridor into long-range transportation plans of all COGs in recommended study corridors, to allow future federal and local funding.	Short-term (next update)	Corridor COGs (WACOG, NACOG, CAG, SEAGO)	• ADOT
3 Adopt I-11 and Intermountain West Corridor into long-range state transportation plans and visions.	Short-term (next update)	ADOT and NDOT	• Arizona and Nevada State Transportation Boards; may require informal legislative support
4 Establish border-to-border Congressional designation of I-11 through Arizona and Nevada.	Short-term (next Federal Transportation Authorization)	Private and non-governmental sector corridor champions	• Members of the U.S. Congress



4. IMPLEMENTATION PROGRAM

Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
Multimodal and Multi-Use			
5 Conduct feasibility study for high-speed rail between Phoenix and Los Angeles.	Mid-term	FRA	<ul style="list-style-type: none"> • UPRR and BSNF Railway • ADOT • Corridor MPOs and COGs
6 Update state rail plans to include this study's recommendations for an I-11 and Intermountain West rail corridor from end to end.	Short-term (next update)	ADOT and NDOT	<ul style="list-style-type: none"> • ADOT Multimodal Planning Division • NDOT Rail Planning Section • Arizona and Nevada State Transportation Boards • Railroad industry
7 Conduct a feasibility study with railroads to evaluate the impact of the proposed Corridor on existing and proposed freight routes, and related to opportunities to close existing gaps.	Short-term	FRA, Arizona Commerce Authority, and Nevada Governor's Office of Economic Development	<ul style="list-style-type: none"> • Railroad companies • ADOT, NDOT • Representatives of other modes • MPOs and COGs along route
8 Conduct a feasibility study to understand potential for accommodating energy and data transmission in Corridor.	Short-term	Traditional and renewable energy providers	<ul style="list-style-type: none"> • Sonoran Institute • ADOT, NDOT, and state energy departments/committees • FHWA • U.S. Department of Energy • Federal Corporation Commission
9 Determine agency responsible for implementation of the Arizona Passenger Rail Corridor between Tucson and Phoenix.	Immediate (lead agency); Mid-term (Phase I projects in both metropolitan areas)	ADOT	<ul style="list-style-type: none"> • FRA, FTA • MAG, CAG, Sun Corridor MPO, PAG • Cities, towns, and counties along the route • Gila River Indian Community • Amtrak • Major rail customers • Other major stakeholders
10 Plan for the accommodation of the I-11 and Intermountain West Corridor and multimodal elements in Corridor preservation and development.	Immediate, continuing throughout project development of all corridor segments	Major land management agencies	<ul style="list-style-type: none"> • FHWA, FRA, FCC • ADOT, NDOT • Flood control and water conservation agencies • Environmental organizations • Private land owners • Cities, towns, and counties along the route • Multimodal stakeholders: UPRR, BNSF, Amtrak, utility providers



Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
Corridor Marketing/Branding			
11 Extend I-11 and Intermountain West Corridor designation and coordination to selected bordering states.	Short- to mid-term	U.S. Congress (proposals coordinated by affected DOTs)	<ul style="list-style-type: none"> • DOTs of AZ, CA, ID, MT, NV, OR, WA, plus FHWA; ultimately, congressional delegations of all participating states
12 Maintain and strengthen multistate advocacy and lobbying coalition.	Immediate, continuing through all timeframes	I-11 Coalition	<ul style="list-style-type: none"> • ADOT and NDOT, jointly • Arizona Commerce Authority • Nevada Governor's Office of Economic Development and Department of Business and Industry • Local/regional business groups • Corridor MPOs and COGs
13 Develop an I-11 and Intermountain West marketing and branding strategy.	Immediate, continuing through all timeframes with details filled in over time	To be determined	ADOT, NDOT
International Trade Corridor			
14 Reinforce coordination with Mexican federal and Sonoran state governments on international trade, tourism and transportation issues.	Immediate, continuing through all timeframes	Arizona-Mexico Commission	<ul style="list-style-type: none"> • ADOT, NDOT • U.S. Department of Homeland Security • Secretaria de Comunicaciones y Transportes (SCT) • Secretaria de Infraestructura y Desarrollo Urbano (SIDUR) • Nevada Governor's Office of Economic Development • Trucking and rail interests • State tourism authorities
15 Ensure consistency with Arizona-Sonora Border Master Plan.	Immediate	Arizona-Mexico Commission	<ul style="list-style-type: none"> • ADOT • FHWA, FRA, SCT, SIDUR • Other stakeholders involved in the border planning process
Local Planning Coordination			
16 Incorporate I-11 and Intermountain West Corridor in long-range general/comprehensive plans, and local/regional transportation plans.	Short- and mid-term	Cities, towns and counties along recommended corridor	<ul style="list-style-type: none"> • ADOT, NDOT • Federal and state land management agencies • Corridor MPOs and COGs • Tribal communities



4. IMPLEMENTATION PROGRAM

Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
Economic Development Coordination			
17 Work to foster alliances for development of a competitive trade corridor.	Initially short-term; with longer-term policies and a detailed mid-term strategic plan	Arizona Commerce Authority and Nevada Governor's Office of Economic Development	<ul style="list-style-type: none"> • ADOT, NDOT • Corridor MPOs and COGs • Chambers of commerce
18 Prepare a phased economic development plan for the Corridor, with agency responsibilities, timeframes, preferred locations, and financial and partner resources.	Short-term; to be revised periodically	Arizona Commerce Authority and Nevada Governor's Office of Economic Development	<ul style="list-style-type: none"> • ADOT, NDOT • State Governor's Offices • Corridor MPOs and COGs • Regional and local economic development organizations (e.g., GPEC, TREO, Las Vegas Global Economic Alliance, etc.) • Regional and local chambers of commerce • State tourism authorities • Federal and state land management agencies • Environmental organizations
Corridor Funding and Finance			
19 Assemble a comprehensive funding strategy for the Corridor and each SIU that maximizes the use of creative funding and finance to facilitate Corridor implementation.	All	I-11 Coalition	<ul style="list-style-type: none"> • ADOT, NDOT • FHWA • Corridor MPOs and COGs • Cities, towns, and counties along recommended corridor • Regional and local economic development organizations • Arizona and Nevada Congressional delegations
Metropolitan Routing and Connections			
20 Select the preferred routing for the I-11 and Intermountain West Corridor location around the southern and western portions of the Phoenix metropolitan area and begin the right-of-way preservation process.	Mid-term; to be further detailed in later phases	MAG and Sun Corridor MPO	<ul style="list-style-type: none"> • FHWA • ADOT • Cities, towns, counties, and tribal communities • Federal and state land management agencies • Environmental organizations and other special interest groups • Private landholders and developers • Public at-large



Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
21 Select the preferred routing for the I-11 and Intermountain West Corridor location in urban Clark County and begin the right-of-way preservation process.	Short-term; to be further detailed in later phases	NDOT, in consultation with RTC Southern Nevada	<ul style="list-style-type: none"> • FHWA, National Park Service, Department of Defense • Federal and state land management agencies • Cities, towns, counties, and tribal communities • Environmental organizations and other special interest groups • Gaming and tourism industries • Public at-large
22 Select the preferred routing for the I-11 and Intermountain West Corridor in northern Nevada and begin right-of-way preservation.	Long-term	NDOT	<ul style="list-style-type: none"> • FHWA • Corridor MPOs • Cities, towns, counties, and tribal communities • Federal and state land management agencies • Environmental organizations and other special interest groups • Gaming and tourism industries • Public at-large
Ancillary Facilities			
23 Identify new traffic interchange sites and other change of access locations; begin preserving right-of-way as soon as laws, regulations, and funding permit.	Mid- to long-term	ADOT and NDOT	<ul style="list-style-type: none"> • FHWA • Cities, towns, counties, and tribal communities • Private landholders
24 Identify locations for wayside facilities (rest areas, truck stops, equipment maintenance yards, etc.).	Mid-term (Clark County to Pinal County)	ADOT and NDOT	<ul style="list-style-type: none"> • FHWA • Cities, towns, counties, and tribal communities • Private landholders
Selected Design Considerations			
25 Provide for safe wildlife movement across the Corridor to avoid habitat fragmentation.	Mid- to long-term	Arizona Game and Fish Department and Nevada Department of Wildlife	<ul style="list-style-type: none"> • FHWA, FRA • USFWS • ADOT, NDOT • Non-governmental ecological organizations



4. IMPLEMENTATION PROGRAM

Table 4-3. Public Policy Actions

Public Policy Action	Timeframe	Lead Agency Responsible to Initiate Action	Required Partnerships or Guidance
26 Ensure that the new corridor does not become an undue barrier to existing and planned linear facilities, including various roadways and bicycle/ pedestrian/ equestrian paths/ trails.	All	MPOs, cities, towns, counties, and tribal communities	<ul style="list-style-type: none"> • ADOT, NDOT • Detailed mapping of facilities; study of various design options for grade separations at each crossing location
27 Finalize planning; design and construct th Corridor using a Context-Sensitive Solutions (CSS) approach.	Mid- to long-term	ADOT and NDOT, jointly to ensure compatible design features	<ul style="list-style-type: none"> • Various CSS design guidelines; prior successful examples in both states and elsewhere
28 Use supplementary access management techniques to ensure corridor purpose is preserved.	Mid- to long-term	ADOT and NDOT	<ul style="list-style-type: none"> • FHWA • Various resources on access management techniques • Existing AASHTO, ADOT, and NDOT guidelines
29 Preserve the visual quality of rural and undeveloped areas.	Mid- to long-term	ADOT and NDOT	<ul style="list-style-type: none"> • Aesthetics Master Plan (NDOT), Corridor Plans and other studies • Existing guidelines and rating scales of federal and state land management agencies
30 Periodically revalidate the Arizona and Nevada state travel demand models, using latest traffic and origin/destination data, so that the design parameters of the proposed Corridor are likely to perform satisfactorily in the design year.	All	ADOT and NDOT	<ul style="list-style-type: none"> • MPOs responsible for metropolitan traffic modeling
31 Design the Corridor to accommodate appropriate ITS, Transportation System Management, and Travel Demand Management strategies in the future, especially in and approaching the metropolitan areas.	Various; dependent upon implementation on phasing	ADOT and NDOT	<ul style="list-style-type: none"> • MPOs • Cities and towns responsible for traffic management • Travel reduction plans

All short- and mid-term items may be long-term for segments north of metropolitan Las Vegas.



Marketing/Branding Actions

Branding the I-11 and Intermountain West Corridor can help create a distinct identity for the Corridor; generate interest among the trade/logistics industry, the traveling public and the economic and community development industry; and create a clear and positive public recognition of the new interstate corridor. In addition to creating or enhancing public acceptance, a successful branding and marketing campaign can also deliver the following benefits:

- **Enhanced commitment to the implementation of the I-11 and Intermountain West Corridor:** Branding of various pieces of the Corridor can establish a long term identity and will help regional agencies reaffirm their commitment to implementing the I-11 and Intermountain West Corridor.
- **Enhanced outreach efforts:** A common brand throughout various components of the Corridor development process will simplify marketing efforts and will allow ADOT and NDOT to more effectively reach their target audience.
- **Potential for attracting community and economic development activity:** An attractive and compelling brand can help attract new economic development or intensify existing, desirable land uses along the multimodal transportation corridor.

Branding can also, over a period of time, bring a feeling of permanence to the idea of a major new transportation corridor which may fully be implemented over 30 to 50 years, such as “Alligator Alley” on I-75 in Florida or “America’s Energy Corridor” on I-49 in Louisiana. This could even include wider mobility corridors, such as Ports-to-Plains or NASCO.

The following sections provide suggestions and examples of marketing and branding actions. States and partner agencies will need to ensure any strategy is consistent with agency policy and determine the best approach or combination for their particular agency.

Branding Strategy

A branding strategy provides the implementing agency the opportunity to proactively define the way stakeholders and communities think and feel about the product, in this case a new multimodal Interstate corridor. The branding strategy can create a targeted brand experience and allow stakeholders to associate with the brand. The branding strategy must build on and incorporate the core values of the implementing agencies, while meeting expectations of the customers.

There are three steps in developing a branding strategy:

Who: identifying and characterizing the target audience



What: determining the right message (brand promise) to be conveyed to the audience

the right message?

How: determining how all the audience “touch points” will communicate the brand message



Target Audience (Who)

In order to create a successful brand identity, it is important to correctly identify the target audience that will ultimately use the Corridor for a variety of purposes, and who will help in maximizing the economic development potential along the I-11 and Intermountain West Corridor. Federal and state congressional delegations, regional agencies, and adjacent counties and municipalities form the most immediate target audience who will need to be onboard with the idea of a new interstate corridor that connects Arizona and Nevada and ultimately forms the backbone of a new Intermountain West trade corridor from Canada to Mexico.

As part of the *I-11 and Intermountain West Corridor Justification Report*, a set of industry targets and clusters were identified, based on state economic development priorities. These industries will be the second most important target audience, as they will directly benefit from the implementation of the I-11 and Intermountain West Corridor. These industry targets include:

- Advanced Manufacturing
- Aerospace, Aviation, Defense
- Agriculture
- Optics
- Biotechnology
- Healthcare
- Information and Computer Technology
- Life Sciences
- Mining, Materials, and Manufacturing
- Renewable Energy
- Science and Technology
- Tourism, Gaming, and Entertainment
- Transportation and Logistics

The public at-large and special interest groups such as the freight trucking industry, environmental groups, and other non-governmental organizations (NGOs) will also be a critical part of the target audience.

Brand Promise (Message) (What)

The brand promise is the message that will be used for marketing the I-11 brand to the stakeholders, interest groups, and communities. The brand promise could be a short, succinct tagline that conveys the potential benefits of the Corridor. These include:

- **Connecting economies**, major trade hubs, existing and future domestic and international deep-water ports, and intersecting transcontinental roadways and railroad corridors.
- **Enhancing the economic vitality** of communities connected and served by the corridor.
- **Improving safety and travel time reliability** for the movement of people and goods throughout the Intermountain West.
- **Providing relief** for congested north-south corridors in the western U.S., such as I-5 and I-15.
- **Enhancing commercial opportunities** by linking trade between Canada, Mexico and the U.S. Intermountain West.
- **Increasing the global competitiveness of the region.**

Examples of brand promises that have been used previously by other agencies for major transportation corridors are provided in **Table 4-5**.



Table 4-5. Brand Promise/Marketing Punchline Examples

Branding/Marketing Campaign	Brand Promise
I-15 Mobility Alliance	Moving people, moving goods
West Coast Corridor Coalition	Clean, Green, and Smart
Arizona's Key Commerce Corridors	Local Jobs, Global Markets
Southern California On The Move	Southern California delivers the goods
Detroit Regional Chamber	Powering the economy for Southern Michigan
Southeast Michigan Council of Governments	Equipping local government leaders for the future
Ports-to-Plains Alliance	Securing the benefits of commerce to North America's Energy and Agriculture Heartland
California High Speed Rail Authority	Modernizing California's Passenger Rail Good for the State, Good for the Environment Investing in California's Small Businesses

Touch Points (How)

The next step in developing the branding strategy is to (a) identify the mediums (touch points) through which the “brand” will communicate with the target audience, and (b) how a consistent message be delivered across all media.

For the purpose of I-11 and Intermountain West Corridor branding, the following touch points could be used to initiate communication with the target audience:

- Public information such as signage, printed materials, and maps
- Publications, media and marketing information
- Advertising and website
- Public events and promotional meetings
- Social media outlets, such as Facebook, Twitter, and YouTube
- Video messages

Branding Tactics

Merging the target audience, brand promise, and touch points, the following strategies and example graphics include a series of branding tactics that could be undertaken for the “I-11 brand”. It is important to note that while many of these strategies have been implemented on the I-11 and Intermountain West Corridor Study, these strategies should be launched for the I-11 and Intermountain West Corridor itself—not the study effort.

- **Corridor vision:** The I-11 and Intermountain West Corridor Vision document is a tri-fold handout that provides a high-level overview of the project and the initial planning process. A similar document should be created, independent of the current and future study efforts, which outline the overall vision of the Corridor and presents the plan for implementation.





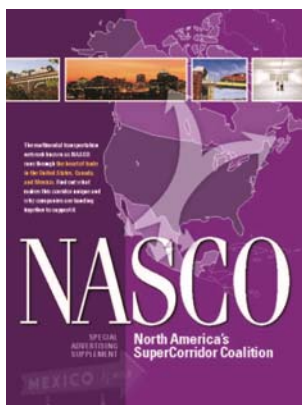
I-15 Express Lanes Project Website: Riverside County, CA



Article on I-11 Corridor in MAG's Quarterly Newsletter



Interstate signage



Special Advertising Supplement: NASCO Corridor



- **Project website:** ADOT and NDOT could set up a joint website for the I-11 and Intermountain West Corridor that provides all the necessary information related to project implementation along the Corridor. While a current website exists for the current study effort, the website should be focused more towards implementation of I-11 itself, oriented toward full corridor implementation, with links to specific study efforts, as necessary.
- **Web links on partner agency websites:** Partner agencies could set up I-11 information pages on their respective websites that will provide links to the ADOT/NDOT primary I-11 website. This would help in providing a wider audience for the I-11 branding and marketing effort.
- **Marketing materials of partner agencies:** Partner agencies could also prominently include information on the proposed I-11 and Intermountain West Corridor in their educational and marketing materials.
- **Video messages:** ADOT and NDOT could develop informational video messages for the I-11 and Intermountain West Corridor, which would be primarily placed on the I-11 website, as well as websites of partner agencies.
- **Interstate signage and logos:** “Future I-11” signs have been placed on the US 93 corridor near the Arizona/Nevada border. Similar branding signage could be placed along the other portions of the proposed I-11 and Intermountain West Corridor, once identified, to initiate public recognition of, and the location of the future I-11 and Intermountain West Corridor.
- Publications, media, public relations and marketing information:
 - **Mailing list:** ADOT and NDOT could designate media coordinators within their respective communications groups to develop and maintain a mailing list of interested agencies, organizations, and community members who elect to receive regular project updates throughout the implementation/construction of the future I-11 and Intermountain West Corridor.
 - **Newsletter/e-magazine:** A newsletter or an e-magazine format could also be used to distribute monthly/quarterly updates related to corridor implementation.
 - **Project factsheet/information brochures:** Project factsheets and information brochures can be published and made available at key locations along the corridor.

- **Social media:** Social media outlets such as Facebook, Twitter, and YouTube could be used to engage citizens, send out project updates and alerts, distribute marketing materials, and to solicit public input throughout the project implementation phase.
- **Mobile app:** A smartphone app could be developed with interactive features to announce road closures/diversions, project updates, construction schedule and maps, throughout the construction phase of the project.
- **Traveling displays:** Traveling or mobile displays could be set up in high foot traffic areas of DOTs/state capitols/state economic development agencies to highlight the benefits of the I-11 and Intermountain West Corridor to the state's transportation infrastructure and economy.





5. Critical Next Steps

Based on the next steps in the project development process, the individual technical projects identified to achieve the interim corridor condition, and applicable public policy and marketing/branding actions, **Table 5-1** presents the critical actions that should be *initiated* within the next two years, or as soon as practical, to maintain the momentum of implementing the I-11 and Intermountain West Corridor. For the technical actions, actions labeled in **bold** are the ultimate outcome of the action; the steps to get there—and the actions to be initiated in the near-term—are bulleted below.

Table 5-1 outlines what these actions are, the SIU(s) they relate to, the lead agency responsible for the action, and the primary project partners. It is important to keep in mind that while the primary partners are identified for each action, various additional stakeholder partners will also need to be included in the process, and should be determined on a project-by-project basis at project initiation. Additionally, the lead agencies and partners listed have various boards, commissions, or councils who may have a role in approving these actions.

The lead agency should ensure that these critical technical actions are identified in transportation plans and/or programs, if not already.

To maintain momentum through the NEPA process, where required, study analyses and decisions have been documented and approved by FHWA, ADOT and NDOT in the Planning and Environmental Linkage report.

Table 5-1. Critical Next Steps

Action	SIU(s)	Lead Agency Responsible	Primary Partners
Technical Actions			
Improve SR-189 to provide free-flowing and direct access to the Mariposa LPOE. <ul style="list-style-type: none"> Complete environmental clearance and initiate design for SR-189/Mariposa Road to determine improvements from I-19 to the Mexican border. 	1	ADOT	FHWA, FRA, COGs and MPOs
Initiate environmental clearance and design process for the area between Nogales and Casa Grande to determine the I-11 Corridor alignment.	2	ADOT/PAG	FHWA, FRA, COGs and MPOs
Initiate environmental clearance and design process for the Phoenix metropolitan area to determine the I-11 Corridor alignment Casa Grande and US 93 (Wickenburg).	3-4	ADOT/MAG	FHWA, FRA, COGs and MPOs



5. CRITICAL NEXT STEPS

Table 5-1. Critical Next Steps

Action	SIU(s)	Lead Agency Responsible	Primary Partners
<p>Finish improvements to US 93 for completing a 4-lane divided highway between Wickenburg and I-40.</p> <ul style="list-style-type: none"> Complete environmental studies, design, and right-of-way acquisition, and construction where required. 	5	ADOT	FHWA
<p>Complete construction of Boulder City Bypass.</p> <ul style="list-style-type: none"> Award Design-Build contract. 	8	NDOT/RTCSNV	FHWA
<p>Determine preferred corridor and system-wide improvements in the Las Vegas metropolitan area.</p> <ul style="list-style-type: none"> Initiate Advanced Planning Study. 	9-18	NDOT/RTCSNV	FHWA and FRA
Multimodal Accommodation			
Coordinate Arizona and Nevada State Freight Plans to ascertain interest, feasibility, and market potential in implementing a continuous north-south trade corridor.	All	ADOT/NDOT (with ultimate lead to be determined)	FRA, Class I railroads, trucking industry, Arizona Commerce Authority, Nevada Governor's Office of Economic Development
Establish joint Arizona/Nevada State Infrastructure Working Group to ascertain interest and feasibility in co-locating major utility transmission with the I-11 and Intermountain West Corridor.	All	Arizona Commerce Authority, Nevada Governor's Office of Economic Development, Nevada State Energy Office	ADOT, NDOT, utility industry representatives, BLM, and other federal land agencies
Public Policy Actions			
Establish border-to-border Congressional designation of I-11 through Arizona and Nevada.	*	Private and non-governmental sector corridor champions	Members of the U.S. Congress
Update Arizona and Nevada long-range transportation plans and state rail plans.	All	ADOT/NDOT	FHWA, FRA, COGs and MPOs
Update state and regional transportation plans, resource management plans, and general/comprehensive land use plans to incorporate the I-11 and Intermountain West Corridor location, to ensure corridor preservation.	All	ADOT, NDOT, MAG, RTCSNV, as well as other regional and local agencies	ADOT/NDOT
Marketing/Branding Actions			
Develop an I-11 marketing and branding strategy.	All	To be determined	ADOT/NDOT



Table 5-1. Critical Next Steps

Action	SIU(s)	Lead Agency Responsible	Primary Partners
Place I-11 signage along the Corridor upon implementation of improvements and/or along existing corridors where co-location is anticipated.	All	ADOT/NDOT	FHWA, COGs and MPOs, DOT district engineering offices

* All undesignated SIUs.

The recommended I-11 and Intermountain West Corridor is envisioned to be a continuous high-capacity trade corridor extending from Nogales, Arizona to Las Vegas, Nevada and potentially beyond towards Canada. This trade corridor is anticipated to support the diversification of the economies of both Arizona and Nevada to include a higher proportion of large-scale manufacturing operations that will rely on dependable movements of goods and services between the two states and adjacent regions. As each state's manufacturing sector expands, the Corridor should be evaluated to determine the most appropriate mode of freight travel and facility type to provide the greatest reliability of trade movements.

To this end, it is paramount for transportation, economic development, and environmental/sustainability leaders to partner and advance along the same paths—reliant on each other for success. Delivering the project vision will depend on continued collaboration between current and new partner agencies at the federal, state, regional, and local levels, as well as in the non-governmental and private sectors. And, while anticipated to be a multimodal transportation corridor, strong partnering with the two major western Class I railroads will be critical to implement a continuous rail corridor, including potentially providing strong incentives for constructing missing links within the overall I-11 and Intermountain West Corridor.

Risk of Inaction

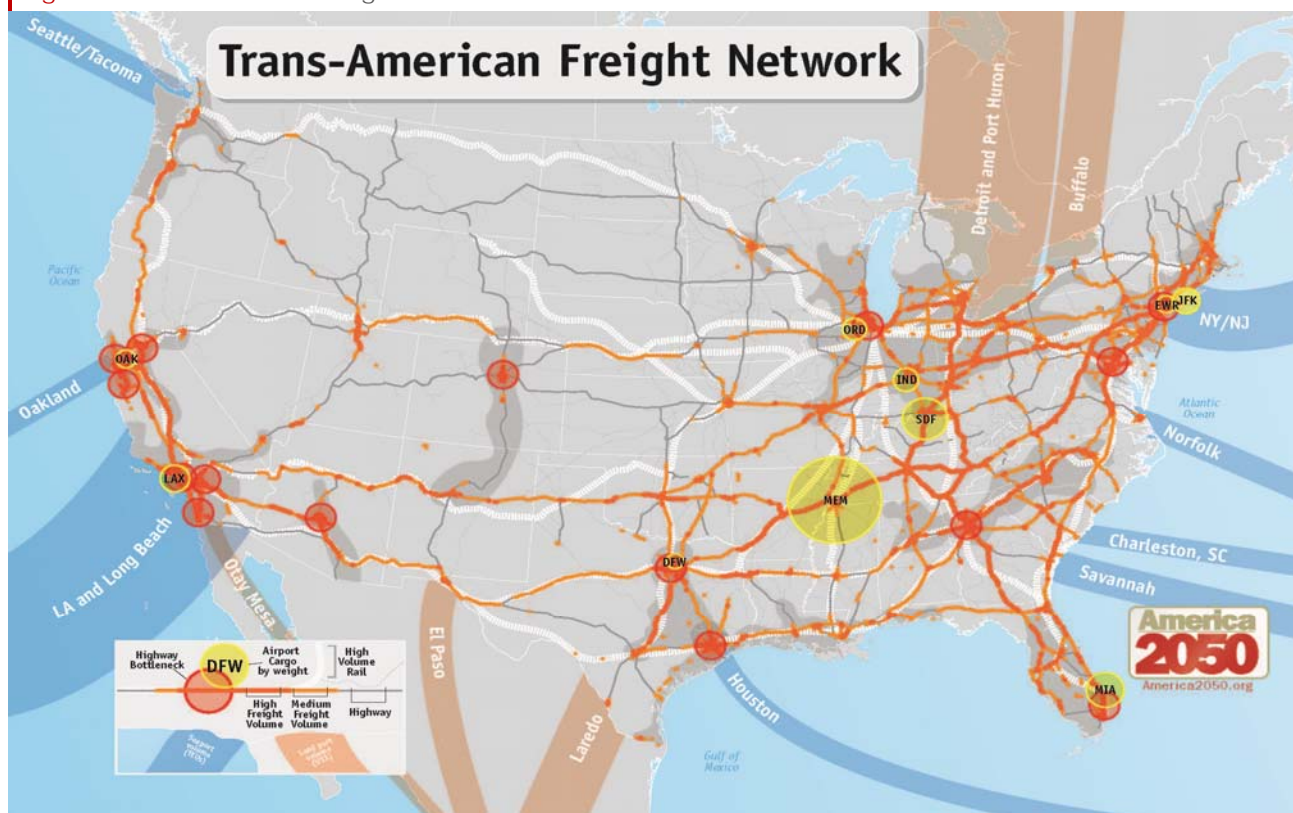
The principal risk of not carrying out the eleven technical, multimodal accommodation, public policy, and marketing/branding actions listed in Table 5-1 that will form the foundation for the Corridor between the Mexican border and Las Vegas metropolitan area would be that ***the host states of Arizona and Nevada will lose significant opportunities to grow and diversify their economies.*** With the I-5 corridor from Tijuana, Mexico to Canada along the West Coast becoming more and more congested, particularly throughout the state of California, and nearshoring of manufacturing and production sharing industries continuing to grow in the Hermosillo region of Sonora, Mexico—as well as agricultural imports through the Nogales Mariposa LPOE—the opportunity exists to establish such an Intermountain West trade corridor. In addition, continued improvements to the I-35/NASCO corridor from Laredo, Texas north through five additional states, further illustrates the benefits such a trade corridor could bring to its host states, as more than \$1 trillion in trade along NASCO already annually occurs. The large swaths coming into the U.S. on **Figure 5-1** illustrates freight movement on the aforementioned international trade corridors. While Nogales constitutes a busy LPOE for the U.S. Southwest, it doesn't even make the map in comparison to Tijuana/Otay Mesa, El Paso, or Laredo. An opportunity exists to take advantage of this heavy trade traffic entering the U.S. through California and Texas; however, this will not occur without commencement of the series of next steps listed in Table 5-1.



Corridor Champions

As listed in Table 5-1, partnerships among corridor constituents will be required to achieve successful and efficient implementation of the I-11 and Intermountain West Corridor. To date, ADOT, NDOT, FHWA, FRA, MAG, and the RTCNV have been the Corridor’s greatest champions—leading the study efforts and Congressional coordination through their partnership in the project’s oversight committee, known as the Core Agency Partners. Upon completion of this study, these partnerships should remain in place, and be expanded to include a wide range of corridor supporters.

Figure 5-1. Trans-America Freight Network



Public Sector Champions

- Federal Agencies:** FHWA and FRA have been key partners in development of the I-11 and Intermountain West Corridor Study, and their involvement should continue as the primary lead federal agencies for future study efforts. The addition of federal agencies such as the Bureau of Indian Affairs, BLM, Federal Transit Administration, U.S. Department of Homeland Security, U.S. Department of Energy, U.S. Fish and Wildlife Service, U.S. Forest Service, and others, will provide continued Corridor support through future phases.
- State and Regional Agencies:** State and regional transportation, environmental, and economic development agencies will be key for statewide implementation of the Corridor. Such agencies include state DOTs; regional COGs and MPOs; economic development organizations including the Arizona



Commerce Authority, Nevada Governor’s Office of Economic Development; and tourism and convention bureaus.

- **Local Jurisdictions and Tribal Entities:** Cities, towns, counties, and tribal communities will serve as the main regulator of development along the Corridor—including the I-11 in their General and Comprehensive Plans.

Private Sector Champions

Private sector partners will be critical in efficient implementation of the Corridor. They can expeditiously provide resources that help lay the foundation for corridor development, such as dedicating and/or preserving right-of-way, delivering financing through public-private partnerships, bringing strong support to political leaders, and construction. Examples of such partners might include property owners, developers, private businesses, and corridor users, including railroad and trucking companies.

Non-Profit and Non-Governmental Organizations

Non-profit and non-governmental organizations generally are comprised of wide networks of supporters that can be garnered to assist in research, fundraising, political support, and other tasks. Forming partnerships with a wide range of organizations—transportation (AAA, trucking associations, and transit organizations), environmental (Sonoran Institute, The Nature Conservancy, and Sierra Club), economic development (Greater Phoenix Economic Council and Las Vegas Global Economic Alliance)—can help build support for corridor development.

Cross-Collaborative Partnerships

Ideally, partnerships of corridor champions can be made that cross disciplines and political affiliations. The I-11 Coalition is one such example of a successful non-profit corporation that is made up of a series of local and regional public sector organizations, private sector interests, and other non-governmental organizations across both Arizona and Nevada. This group was organized to promote the vision of the I-11 and Intermountain West Corridor between Arizona and Nevada, and has been a key player in achieving the Congressional designation, as well as building corridor support.

Implementation Program Update

While this document has listed the critical actions and estimated timeframes for activities that are required to implement the I-11 and Intermountain West Corridor through Arizona and Nevada, it will be important for key Corridor Champions to come together on an annual basis to revisit the Implementation Program, taking into account changes in policy, changes in the economy, and the general evolution in transportation corridor development. Recommended key participants include ADOT, NDOT, FHWA, FRA, corridor MPOs, Arizona Commerce Authority, Nevada Governor’s Office of Economic Development, Arizona-Mexico Commission, I-11 Coalition, and other determined stakeholders.

The I-11 Coalition, as a multi-state non-profit corporation organized to garner support for the Corridor, could be elected to facilitate this annual conference. A standing agenda could be presented from year to year, including such topics as:

- Status update on I-11 and Intermountain West Corridor implementation activities
- Strength-weakness-opportunity-threat (SWOT) analysis:



5. CRITICAL NEXT STEPS

- Changes in the Mexican and Canadian economies, including the status of nearshoring and manufacturing patterns
- Changes in state economic development plans and primary sectors
- Border crossing wait times and other impediments to international trade
- Policy actions achieved and changes still required
- Update on marketing/branding activities
- Next steps, including roles and responsibilities:
 - Actions to be completed over the following 12 months
 - Actions anticipated over the next two to five years





6. Funding and Finance Options

This chapter includes a high level discussion of funding, financing, and alternative project delivery of the I-11 and Intermountain West Corridor. A more detailed review of funding, financing and alternative project delivery options is provided in **Appendix D**.

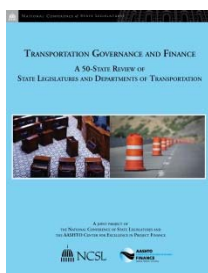
Funding in the Overall Context of Project Development

Full development of the I-11 and Intermountain West Corridor is a complex process that will span decades. Consideration of specific funding, financing, and delivery methods for individual projects within the corridor requires a significant amount of detail that will not be available until project development activities are considerably advanced for groups or individual SIUs. Therefore, detailed discussions of recommendations for funding, financing, and alternative delivery at this time are premature, as there is not sufficient detail to make good decisions in these areas. In fact, these discussions could actually become counterproductive.

Funding is a means to reach the vision and to have a reasonable discussion of funding it must be preceded by a clear articulation of the benefits and value that can be secured in return for our investments. ***The primary focus of corridor champions at this time must be to articulate and communicate the vision.*** This chapter will summarize potential options for funding, finance, and project delivery, but will not make recommendations as to what sources are most logical for each corridor segment.

Funding Sources

Primary Transportation Funding Sources



The following discussion provides a high-level summary of significant funding sources utilized or allowed at the federal, state, and regional/local levels. To obtain a comprehensive understanding transportation funding and governance used throughout the 50 states, please refer to the 2011 AASHTO publication *Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation*, available online at: http://www.transportation-finance.org/pdf/50_State_Review_State_Legislatures_Departments_Transportation.pdf

Federal

Federal transportation revenue and spending are governed by authorization bills enacted by Congress. Federal transportation funding is typically provided to each state through several conduits. Federal highway funds are directed to each state's DOT. Transit funding for the urban areas is typically sent directly to the agency responsible for the individual transit systems with some allocation to the DOTs for transit in rural areas. Federal aviation funding is likewise sent directly to the agencies responsible for the airports. For surface transportation, revenues raised through various taxes on fuel are deposited into the highway account of the trust fund (with the remainder going to the mass transit account) and allocated into different federal highway authorizations.



6. FUNDING AND FINANCE OPTIONS

In addition to the funding coming through the traditional transportation programs, the federal government has created special programs that bring additional funding for transportation to accomplish specific objectives. Recent examples include the American Recovery and Reinvestment Act (ARRA), the Transit Investments in Greenhouse Gas and Energy Reduction (TIGGER), and Transportation Investment Generating Economic Recovery (TIGER) programs. Some of these programs, such as TIGER, have developed considerable political support and have continued to be funded in successive appropriations bills. Additional new programs may be created in the future to reflect the administration’s current priorities.

State

Transportation funding at the state level comes in many varieties and variations. **Table 6-1** is a general summary of the significant funding sources allowed within these two states.

Table 6-1. State Transportation Funding Sources

Source	Arizona		Nevada	
	Highway	Transit	Highway	Transit
Federal transportation funds	X	X	X	X
Gas taxes	X		X	
Special fuel taxes	X		X	
General sales tax			X ⁽⁴⁾	
General funds			X	
Tolls	X ⁽²⁾			
Truck and commercial vehicle fees ⁽¹⁾	X			
Vehicle registration or license fees	X		X	
Motor vehicle operator license fees	X			
Lottery		X ⁽³⁾		

- (1) Includes such things as permit fees, overweight fees, safety inspections, apportioned highway use taxes, etc.
- (2) Must be in conjunction with a P3 with public input
- (3) The allocation of lottery proceeds for transportation was suspended in 2010 during the economic recession
- (4) Portion collected on vehicle sales dedicated to transportation

Regional/Local

Transportation funding from local and regional sources plays a significant role in both Arizona and Nevada. As summarized in **Table 6-2**, a wide variety of transportation funding sources are allowed for use by cities, counties, and regional authorities to support highway and transit capital and operating expenses. While the names of some of these funding sources are common across various jurisdictions, there are often significant variations in the legislative and administrative provisions for each jurisdiction.

Over the past twenty or more years, local and regional governments in both states have made tremendous strides in implementing a diverse array of new transportation funding sources. Collectively, the local and regional mechanisms now generate significant amounts of funding for both roadways and transit. In some jurisdictions, local funding is comparable to the resources provided by the state and federal partners. This is a clear indication that the communities in Arizona and Nevada understand the importance of transportation and are committed to an active role in funding and decision-making.



Based upon the current political climate, the primary source for new transportation funding in the near to mid-term will probably be from the local/regional level.

Table 6-2. Regional/Local Transportation Funding Sources

Source	Arizona		Nevada	
	Highway	Transit	Highway	Transit
Federal transportation funds	X	X	X	X
Local gas taxes			X ⁽²⁾	
Local special fuel taxes			X ⁽³⁾	
General sales tax	X	X	X	X
General funds	X	X	X	X
Tolls	X ⁽¹⁾		X ⁽⁴⁾	
Transit fares		X		X
Impact fees	X		X	
Development tax			X	
Government services tax			X	
Value capture: tax increment districts, assessments	X		X	

- (1) Must be in conjunction with a public-private partnership; requires ADOT approval
- (2) All counties have local option fuel taxes; Washoe County indexes gas taxes to capture lost purchasing power on all gas taxes (federal, state, and local)
- (3) Special fuel taxes (primarily diesel) indexed by Washoe County and Clark County (temporary) to capture lost purchasing power on all special fuel taxes (federal, state, and local)
- (4) Only pilot project for Boulder City Bypass authorized for RTC Southern Nevada

Emerging Funding Sources

Investments in the I-11 and Intermountain West Corridor will put additional stress on existing funding sources that are already inadequate to meet current needs. Should the states or local/regional entities contemplate raising additional revenue to support transportation infrastructure investment, this could be accomplished through expanding existing sources, utilizing sources similar to those being used in other jurisdictions, or breaking new ground by being the first implementers of new mechanisms. Some of the emerging funding sources that could have particular application to I-11 and the Intermountain West Corridor are listed below. See Appendix D for more details on each potential funding source.

- Dynamic tolling
- Truck only toll lanes
- Managed lanes
- Fuel tax indexing
- Traffic impact fees
- Mileage-based user fees
- Occupancy fees from road and non-road users of the corridor
- Sale taxes on motor fuels
- Area congestion charging



Financing Mechanisms

In simplest terms, funding is real money collected through taxes or fees while financing is a way of borrowing money. Borrowed money must, of course, be repaid and the source for repayment comes from funding. While financing is important, the key to financial sustainability of the I-11 and Intermountain West Corridor is having reliable, adequate funding.

Historically, the most widely used financing mechanism utilized to build transportation improvements has been through the issuance of debt instruments such as bonds. The following list provides a summary of some of the instruments that have been used in the past several decades. For more details on each of these funding mechanisms, see Table 4 in Appendix D.

- Grant Anticipation Revenue Vehicle (GARVEE)
- Build America Bonds
- Private Activity Bonds
- Transportation Infrastructure Finance and Innovation Act (TIFIA) Assistance
- State and municipal bonds
- State infrastructure banks
- Non-profit 62-20 Corporations
- Short-term bridge or “gap” financing
- Section 129 loans (federal participation in a state loan to support projects with dedicated revenue stream)

The transportation financing environment is changing rapidly. While many of the financing mechanisms listed above will probably be in use for decades to come, some may be dropped from the I-11 tool box, and new mechanisms will undoubtedly be added. The stakeholders of the I-11 and Intermountain West Corridor should not be passive bystanders in this evolution. The stakeholders can take an active role in encouraging and supporting legislation that creates new, flexible, and appropriate financing tools at all levels of government. Should there be a need for mechanisms of unique application to the development of the I-11 and Intermountain West Corridor, the opportunity exists for corridor stakeholders to take a lead role in securing legislation and regulation to create these.

Potential Alternative Delivery Methods

Options for project delivery fall along a wide spectrum (**Figure 6-1**). While various methods of delivering a project with an identified funding source exist, the key to implementation of the I-11 and Intermountain West Corridor is having reliable and adequate funding to build and maintain the Corridor.

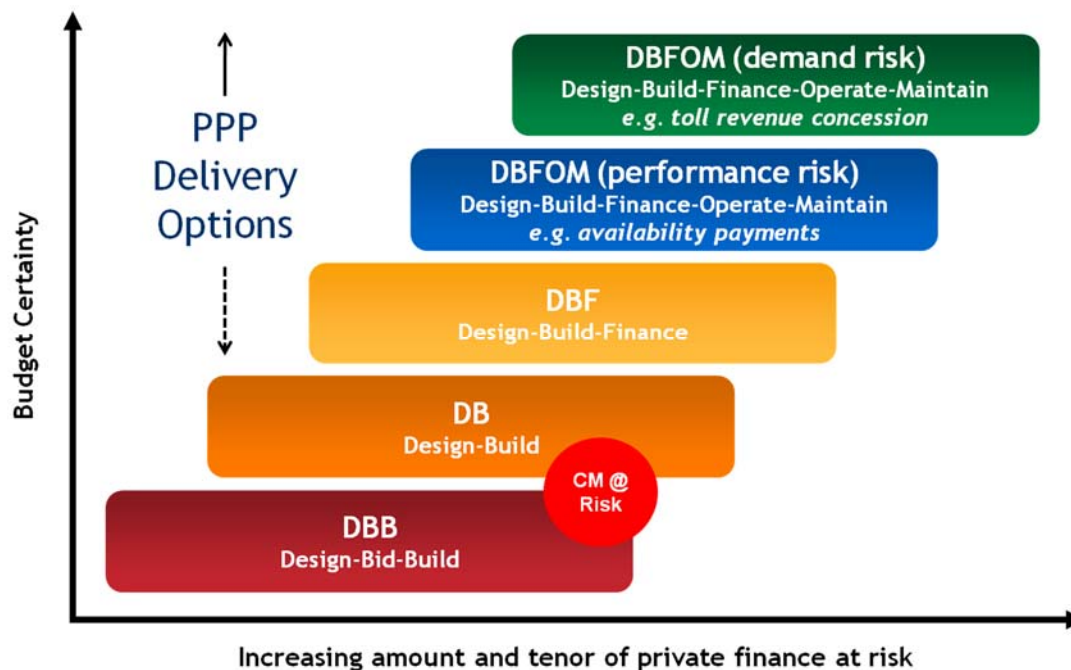
A summary of these alternative delivery options, ranging from least to most risk, is presented below. The last three delivery methodologies move into the realm that is commonly referred to as “public-private-partnerships” often denoted by the acronyms of “PPP” or “P3”.

- **DBB (design-bid-build):** Primary method of delivering public infrastructure. Also known as Construction Manager at Risk (CMAR) or Construction Manager General Contractor (CMCG) in Nevada.



- **DB (design-build):** Transfers more risk and responsibility for cost and schedule to the private sector.
- **DBF (design-build-finance):** Typically transfers all or part of the responsibility and risk for short-term financing to the private sector partner. This can be an attractive delivery method when a project is fully funded but the funding may be spread over several budget cycles.
- **DBFOM (design-build-finance-operate-maintain) (performance risk):** Typically transfers all or part of the risk and responsibility for long-term project financing to a private sector partner. In a performance based DBFOM, the private sector partner accepts the risk of operating and maintaining the project to standards for a fixed term.
- **DBFOM (design-build-finance-operate-maintain) (demand risk):** The private sector partner receives compensation based upon the revenue produced by the facility. The risk for the private sector partner is that he will not be adequately compensated if the actual demand to use the facility does not produce the revenue expected in his financial projections.

Figure 6-1. Spectrum of Alternative Delivery Methods

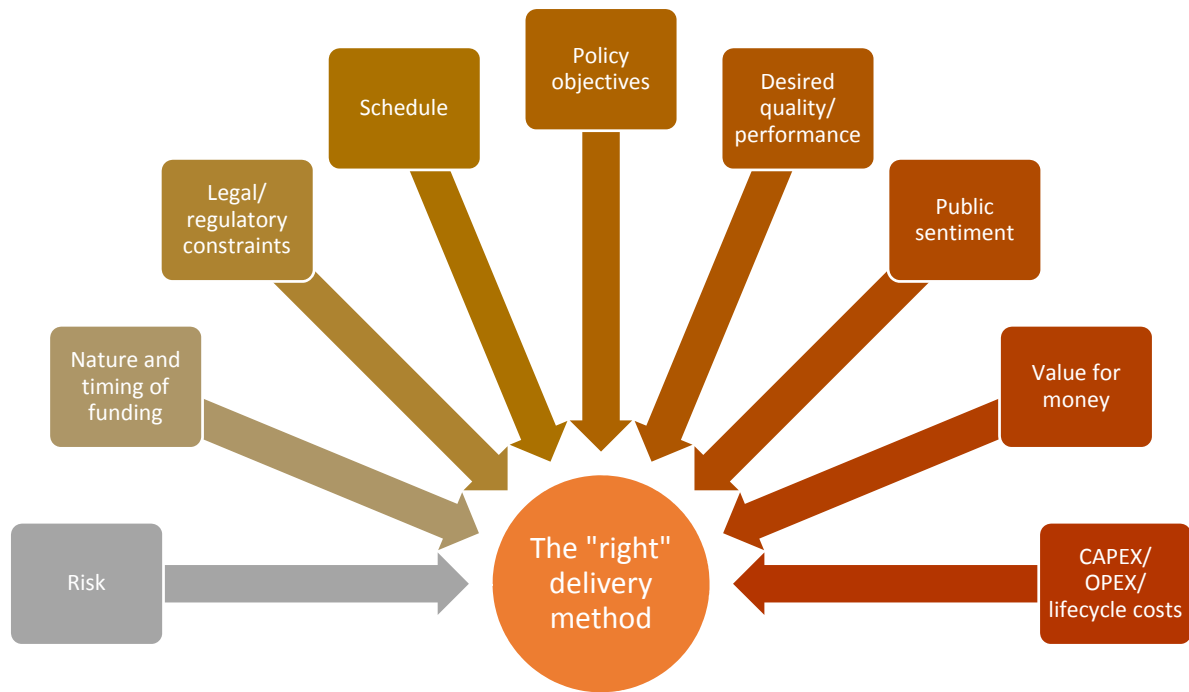


Selection of the “Right” Delivery Method

Figure 6-2 illustrates that the selection of the “right” delivery method for a project is dependent upon multiple factors. The factors that are relevant to the selection of the “right” delivery method are unique to each project. This means that there is no universal “right” delivery method; the “right” delivery method is dependent upon the project. These factors will change over time. Public sentiment can evolve, new legislation/regulation can be promulgated, policy objectives can shift, etc. Given this, detailed consideration of delivery methodology for any single project is best undertaken when sufficient data is available for meaningful analysis. **At the current point in time, there simply is not enough information available to determine the “right” delivery methods for the vast majority of the improvements envisioned for the I-11**

and Intermountain West Corridor. The corridor will likely use several of these delivery methods on various SIUs, depending on the factors shown on Figure 6-2.

Figure 6-2. Selecting an Alternative Delivery Method



The “right” delivery method will be unique to each project





7. Acronyms and Abbreviations

AASHTO	American Association of State Highway and Transportation Officials
ADOT	Arizona Department of Transportation
ARRA	American Recovery and Reinvestment Act
BLM	Bureau of Land Management
CA	California
CAG	Central Arizona Governments
CATX/CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CMAR	Construction Manager at Risk
CMCG	Construction Manager General Contractor
COG	council of government
CSS	Context-Sensitive Solutions
DB	Design Build
DBB	Design, Bid, Build
DBF	Design, Build, Finance
DBFOM	Design, Build, Finance, Operate, and Maintain
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
FCC	Federal Corporation Commission
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FRA	Federal Railroad Administration
GARVEE	Grant Anticipation Revenue Vehicle
GPEC	Greater Phoenix Economic Council
I	Interstate
ID	Idaho
ITS	intelligent transportation systems
LMNRA	Lake Mead National Recreation Area
LPOE	land port of entry
MAG	Maricopa Association of Governments
MAP-21	Moving Ahead for Progress in the 21st Century
MPO	metropolitan planning organization
MT	Montana



7. ACRONYMS AND ABBREVIATIONS

NACOG	Northern Arizona Council of Governments
NDOT	Nevada Department of Transportation
NEPA	National Environmental Policy Act
NGO	non-governmental organizations
OR	Oregon
P3/PPP	Public- Private Partnership
PAG	Pima Association of Governments
PEL	Planning and Environmental Linkages
ROD	Record of Decision
RTCSNV	Regional Transportation Commission of Southern Nevada
RTP	Regional Transportation Plan
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCT	Secretaria de Comunicaciones y Transportes
SIDUR	Secretaria de Infraestructura y Desarrollo Urbano
SEAGO	SouthEastern Arizona Governments Organization
SIU	Segment of Independent Utility
SR	State Route
STIP	Statewide Transportation Improvement Program
TIFIA	Transportation Innovation Finance Investment Act
TIGGER	Transit Investments in Greenhouse Gas and Energy Reduction
TIGER	Transportation Investment Generating Economic Recovery
TIP	Transportation Improvement Program
TREO	Tucson Regional Economic Opportunities
UPRR	Union Pacific Railroad
U.S.	United States
USFWS	United States Fish and Wildlife Service
WA	Washington
WACOG	Western Arizona Council of Governments



Appendix A
Renewable Energy Development in the
Southwest



I-11 and Intermountain West Corridor Study



Renewable Energy Development in the Southwest Technical Memorandum

Prepared for



and



June 2014

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Introduction

The I-11 and Intermountain West Corridor will serve the nation and the Southwest by carrying vehicles, but it can also house non-vehicular facilities (conduits) to transport vital commodities, such as information and energy in the form of electricity. These added functions will reinforce the Corridor's contribution to regional competitiveness, prosperity, and economic diversity. As a predominantly new facility, the Corridor would offer a "testing laboratory" for a broader and more comprehensive Interstate system that goes beyond moving vehicles. The Corridor could be planned, designed, and built to support an expanded vision of what the Interstate system can do. The experience could then be applied to transform the existing Interstate Highway System into a true multipurpose network wherever practical.

America's vast rural areas can produce huge amounts of energy from renewable resources, as well as from new sources of oil and natural gas. Much of this would be green energy, defined as energy from sources that have minimal negative impacts on the environment—especially those such as solar and wind power that renew themselves in the short term. (Renewable energy sources are often called "alternative" because they can replace traditional fossil fuels.) Technologies for extracting these resources are already available; the major challenge is to transmit them over long distances to population centers (or "load centers") where the energy is needed.

The National and Regional Context

The National Renewable Energy Laboratory's *Renewable Electricity Futures Study (RE Futures)* (Mai and Wiser, 2012) recently investigated the extent to which renewable sources could meet the electricity demands of the 48 contiguous states over the next several decades. The study explores the implications and challenges of achieving a renewable generation rate of 80 percent by 2050—in contrast to the 2010 national rate of approximately 10 percent, consisting mostly of hydropower and wind. Renewable electricity generation from technologies in use today, combined with a more flexible electric distribution system, could achieve this goal while meeting hourly electricity demand in every region of the country. The enhanced flexibility needed to balance supply and demand in a regime of high renewable use could come from more flexible conventional generation, grid storage, new transmission facilities, more responsive load capabilities, and changes in power system operations. As a result, many feasible combinations of renewable technologies would deeply reduce greenhouse gas emissions and water use.

RE Futures concludes that “[d]emands for new transmission capacity are much greater in...high renewable [electricity] generation scenarios than in lower renewable generation scenarios” (Mai and Wiser, 2012). That is, increasing the supply of electricity through renewables will keep prices down, thereby stimulating demand and raising disposable consumer income. Achieving ambitious goals for renewable electricity generation will, therefore, require substantial new transmission infrastructure. This will be needed to deliver electricity from remote renewable resources to load centers, enable sharing of reserves over longer distances, and balance output profiles of variable resources by enabling greater geospatial diversity. A key characteristic of renewable electricity is that both the supply and the demand, particularly at any one load center, can vary unpredictably over short periods. Long-term growth in demand for renewable electricity is also hard to predict, as is the future demand for electricity in general. In the transportation sector, for example, *RE Futures* points out that some long-term substitution of electricity for petroleum is likely, but the extent of the shift will depend on resource prices, federal and local policies in response to climate change, and other variables. According to the authors, the need for new transmission infrastructure in the high renewable electricity scenarios is “concentrated in the middle and southwestern regions of the United States, mainly to access the high-quality wind and solar resources in those regions and to deliver generation from those resources to load centers.” [Emphasis added.] (Mai and Wiser, 2012)

However, *RE Futures* points out institutional obstacles that impede transmission expansion, such as constraints in siting new transmission lines, cost allocation concerns, and coordination between multiple governing entities. Although the study does not explore mechanisms to overcome these obstacles, using pre-established transportation corridors may mitigate them.

Renewable Resources and State Objectives

The sources of renewable energy for achieving the 80 percent goal by 2050 would vary by region of the country. In the five inland Southwestern states (Arizona, Nevada, Colorado, New Mexico, and Utah), the predominant sources are expected to be onshore wind and concentrating solar power, with nuclear, photovoltaic, and other sources contributing smaller shares. Other regions show different profiles: for example, heavy use of hydropower in the Northwest, biomass in the Great Plains, and offshore wind in some coastal states.

At least thirty states have established “Renewable Portfolio Standards” (RPS) mandating a minimum contribution from renewable sources to the amount of electricity sold in the future. Table 1 shows these future requirements and the recent (2009) share of renewables in Arizona, California, and Nevada. California is included because of its huge energy needs and the likelihood of growing reliance on electricity imported from neighboring states, especially Nevada. It also has the most ambitious RPS. All three states must make substantial progress in a few years to meet their goals.

Table 1. Renewable Electricity as Percent of Total Usage: 2009 Data and Renewable Portfolio Standards

State	Actual Percent Renewables (2009)	Renewable Portfolio Standards	
		Percent	Target Year
Arizona	6	15	2025
California	26	33	2020
Nevada	11	25	2025

Sources: Database of State Incentives for Renewables and Efficiency; www.climatecentral.org

Opportunities along the I-11 and Intermountain West Corridor for Transmission and Generation of Renewable Energy

An obvious approach to renewable energy transmission is to share transportation corridors for which a public agency or development consortium has already purchased right-of-way. This approach has the potential to benefit many stakeholders: energy resource extractors, utility companies, ratepayers, taxpayers (by charging fees for private use of public right-of-way), and all who enjoy the high quality of life in the Southwestern U.S.

The Corridor and its vicinity represent promising territory for the production and transmission of renewable energy, especially solar. With respect to generation, most of the corridor traverses the Sonoran and Mojave deserts, which have more sunny days per year than nearly anywhere else in the U.S. (Figure 1). (Arizona and Nevada are the sunniest states, with Phoenix and Las Vegas each averaging 85 percent sunshine, or 310 days per year.) The greatest need, however, is for corridors where new transmission lines between population centers can be sited with minimal institutional and environmental constraints.

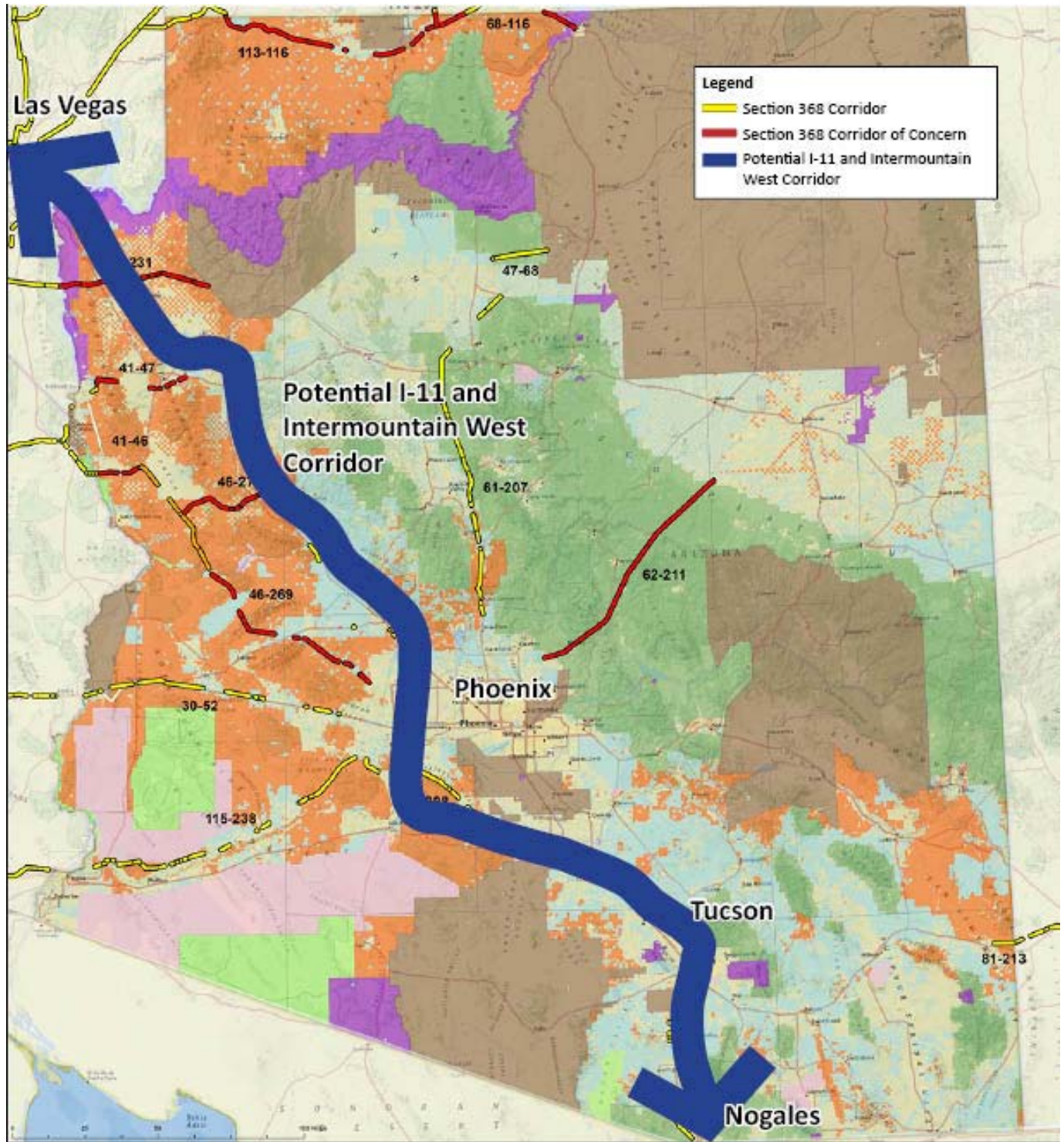
To this end, the U.S. Department of Energy and Bureau of Land Management (BLM) recently completed the *West-Wide Energy Corridor Programmatic EIS (PEIS)* (DOE, 2008), which designates a series of corridors in eleven western U.S. states as suitable for energy transmission (known as the West-Wide Energy Corridors [WWECs]). In addition, the Arizona Solar Working Group, composed of environmental and wildlife advocates, utility companies, and solar energy developers, has been working to evaluate possible corridors for renewable energy transmission throughout Arizona. Despite the completion of the *WWEC PEIS*, several corridors designated in Arizona are seen to be in potential conflict with the environment.

From the analyses already conducted, I-11 appears to have suitable characteristics not only for the production of renewable energy, but also for transmission lines to transfer electricity with low ecological impacts. The Corridor could replace one of several proposed high conflict WWECs identified as a “Corridor of Concern,” with possible significant environmental impacts (Figure 2). Under a judicial settlement reached in 2012 with the Wilderness Society and others, the BLM, U.S. Forest Service, and Department of Energy entered into a Memorandum of Understanding that will guide the review of corridors and consideration of mitigation measures.

Figure 1. I-11 and Intermountain West Corridor Location amidst Southwest Deserts



Figure 2. Sonoran Institute WVEC Corridors of Concern



In its “Priority Corridor Analysis” (Sonoran Institute, 2014) of I-11 from Phoenix to Las Vegas, the Sonoran Institute found the Corridor attractive for renewable energy purposes, in part because of the amount of nearby land suitable for solar and wind development. The BLM has designated suitable BLM lands as Renewable Energy Development Areas (REDAs) via the *Restoration Design Energy Project* (RDEP), in which the Record of Decision and Approved Resource Management Plan Amendments establishes 192,100 acres of REDAs on BLM land throughout Arizona, with the southwestern portion of the state as being the most likely solar development region due to the high quality resource and proximity to the California. The REDAs are near transmission lines or designated corridors, close to population centers or industrial areas, and in areas where impacts on water usage would be moderate. These lands also have few known resource impacts or have been previously disturbed, such as retired agriculture properties.

In addition, the BLM also identified other public and private lands (excluding military and tribal land) that have REDA-like qualities. More than 700,000 acres suitable for renewable energy development exist within 20 miles of one possible I-11 highway alignment. The electricity generated here could theoretically yield approximately 75,000 megawatts, if the entire area were used for this purpose. This makes I-11 potentially one of the most important new corridors for utility infrastructure both for proximity to renewable energy generation facilities, and for its delivery endpoints near planned substations in northwestern Arizona and southern Nevada.

However, the Sonoran Institute analysis does not evaluate the transmission capacity of the proposed corridor. The report does say that “[s]ignificant renewable energy development of these lands will require additional electrical transmission lines to get power to markets, a costly but necessary measure in order to provide a more balanced and sustainable energy future” (Sonoran Institute, 2014) (for the region). Additionally, based on current technology, including large-scale energy transmission lines within highway corridors is often not feasible. For example, transmission corridors are more cost-effective in a straight line with few curves, and have no issues with varying grades—just the opposite of transportation corridors. Future exploitation of I-11 as a transmission corridor will require thorough evaluation of the construction, operation, and network connection costs, together with related elements such as security and visual mitigation.

Potential Environmental Benefits

Using the Corridor right-of-way could reduce the number of property owners impacted by public or private entities building transmission lines. *RE Futures* points to the I-11 and Intermountain West Corridor as a corridor of opportunity and need. According to the Sonoran Institute, locating multiple modes and uses in the same alignment can lower environmental analysis and planning costs, reduce community and ecological impacts, and cause fewer cumulative environmental impacts. The Institute sees the I-11 and Intermountain West Corridor as a new type of “Smart Corridor,” with a reduced footprint compared with conventional designs. Universities in Arizona and Nevada have embarked on an effort to develop context-sensitive solutions that can accommodate multiple modes and uses within a minimal right-of-way envelope.



References

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Sonoran Institute, *Interstate 11 Priority Corridor Analysis – Phoenix to Las Vegas*, 2014.



Appendix B
Trend, Interim and Full Build Projects

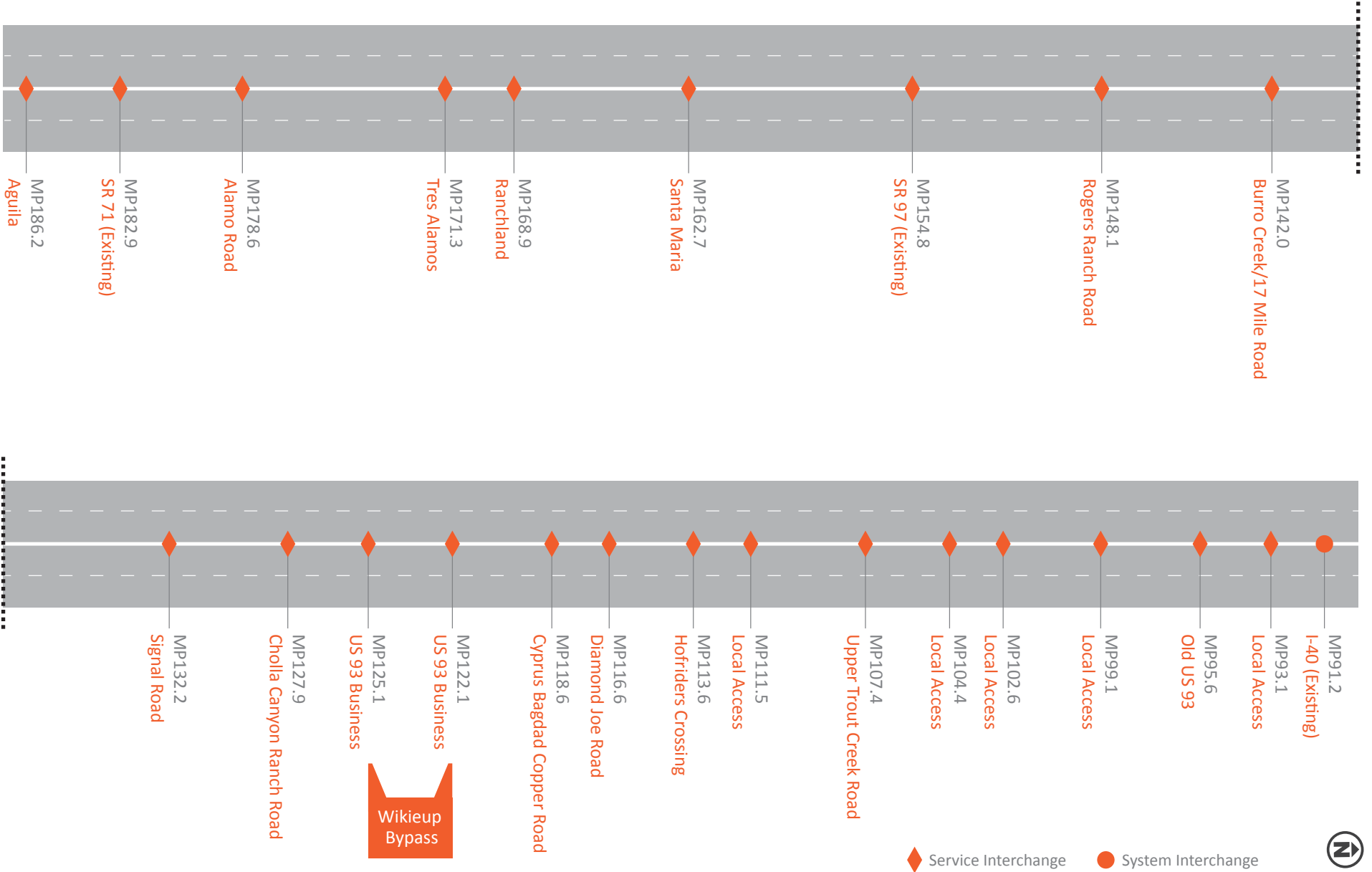
SIU	Trend (Baseline) Description	Interim Description	Full Description
1 Arizona-Sonora Border to I-19		<ul style="list-style-type: none"> • Increase capacity on SR 189/Mariposa Road, I-19 to International Border (and potentially reserve right-of-way for new rail corridor to connect to Mariposa LPOE) 	<ul style="list-style-type: none"> • Major multimodal transportation enhancements that could include LPOE improvements, improvements to existing rail or highway corridors, developing new rail or highway corridors, or other improvements recommended in the Arizona-Sonora Border Master Plan
2 I-19 to I-10/I-8 (Casa Grande)	<ul style="list-style-type: none"> • Widen portions of I-19 to 6-lanes (Continental Rd to El Toro Road, El Toro Road to Valencia Road, San Xavier to Ajo Way) • Construct frontage road • Reconstruct six interchanges and bridge over Santa Cruz River • Widen I-10 to 8-lanes (Prince Road to Pima County Line), • Construct 11 traffic interchanges, railroad grade separation at two locations 	<ul style="list-style-type: none"> • Widen remainder of I-19 to 6 lanes from Nogales to I-10 • Reconstruct Cortaro traffic interchange 	<ul style="list-style-type: none"> • Major transportation enhancements that could include port-of-entry improvements, improvements to existing rail or highway corridors, developing new rail or highway corridors, or other concepts to be evaluated in future study(s)
3 I-10/I-8 (Casa Grande) to, and including, I-10 (Buckeye)	<ul style="list-style-type: none"> • SR 85: Construct Warner Street Bridge • I-10: Roadway Widening • SR 30: New 4-lane Highway 	<ul style="list-style-type: none"> • SR 85: Upgrade to freeway, construct SR 85/I-10 and SR85/I-8 System Interchanges • I-8: Widen to 6-lanes, construct I-8/I-10 system interchange 	<ul style="list-style-type: none"> • New 6 lane Freeway with full interchange build-out and related features/upgrades (alignment to be determined in future study)
4 I-10 (Buckeye) to US 93 (Wickenburg)		<ul style="list-style-type: none"> • New 4-lane Parkway (alignment to be determined in future study) 	<ul style="list-style-type: none"> • New 6 lane Freeway with full interchange build-out and related features/upgrades (alignment to be determined in future study)
5 US 93 (Wickenburg) to I-40	<ul style="list-style-type: none"> • Upgrade to 4-lane divided highway 	<ul style="list-style-type: none"> • Construct Wikieup Bypass 	<ul style="list-style-type: none"> • Upgrade to 4-lane freeway, full interchange build-out, and related features/upgrades
6 US 93 co-location with I-40		<ul style="list-style-type: none"> • Construct East Kingman and Rattlesnake traffic interchanges 	<ul style="list-style-type: none"> • Widen to 6 lanes with related features/upgrades

SIU	Trend (Baseline) Description	Interim Description	Full Description
7 US 93, Kingman/I-40 to Pat Tillman/Mike O'Callaghan Bridge	<ul style="list-style-type: none"> Construct 10 miles of shoulders and rumble strips from Willow Beach Road to White Road 	<ul style="list-style-type: none"> Construct West Kingman traffic interchange 	<ul style="list-style-type: none"> Upgrade to 4-lane freeway (from SR 68 to Kingman Wash) and 6-lane freeway (SR 68 to I-40), full interchange build-out, and related features/upgrades
8 US 93/Boulder City Bypass, Pat Tillman/Mike O'Callaghan Bridge to I-515/Foothills grade separation	<ul style="list-style-type: none"> Construct new 4-lane freeway with related interchanges and features 		
9 New Eastern Corridor (Boulder City Bypass [I-515 and Foothills grade separation] to I-15)		<ul style="list-style-type: none"> Construct new 4-lane highway with 2 interchanges at the termini 	<ul style="list-style-type: none"> Construct new 4-lane freeway with 3 new interchanges
10 I-15, Eastern Corridor to CC 215/Northern Beltway		<ul style="list-style-type: none"> Widen from 4 to 6 lanes 	<ul style="list-style-type: none"> Widen from 6 to 8 lanes
11 CC 215/Northern Beltway, I-15 to US 95	<ul style="list-style-type: none"> Upgrade to 6-lane freeway Upgrade traffic interchanges to system interchanges at I-15 and at US 95 Construct 2 service interchanges 		<ul style="list-style-type: none"> Widen from 6 to 8 lanes
12 US 95, CC 215 Northern Beltway to SR 157 (Kyle Canyon)	<ul style="list-style-type: none"> Widen from 4 to 6 lanes, Durango Drive to SR 157 (Kyle Canyon) 		<ul style="list-style-type: none"> Widen to 6 to 8 lanes, CC 215 to SR 157
13 I-515/US 93, Foothills Grade Separation to I-215		<ul style="list-style-type: none"> Widen from 6 to 8 lanes 	<ul style="list-style-type: none"> Widen from 8 to 10 lanes
14 I-215, I-515 to I-15	<ul style="list-style-type: none"> Widen from 6 to 8 lanes from I-515 to Warm Springs Construct system-to-system direct connector HOV ramps at I-215 Southern Beltway Upgrade traffic interchange at Airport Connector 		<ul style="list-style-type: none"> Widen from 8 to 10 lanes
15 CC 215, I-15 to future Sheep Mountain Parkway	<ul style="list-style-type: none"> Widen from 6 to 8 lanes from I-515 to Warm Springs Construct system-to-system direct connector HOV ramps at I-215 Southern Beltway Upgrade traffic interchange at Airport Connector 	<ul style="list-style-type: none"> Widen from 6 to 8 lanes, I-15 to future Sheep Mountain Parkway 	<ul style="list-style-type: none"> Widen from 8 to 10 lanes, I-15 to future Sheep Mountain Parkway

SIU	Trend (Baseline) Description	Interim Description	Full Description
16 Future Sheep Mountain Parkway, CC 215 to US 95	<ul style="list-style-type: none"> Construct 4-lane highway with traffic interchanges (I-215 Western Beltway to SR 157 west of US 95) 	<ul style="list-style-type: none"> Widen from 4 to 6 lanes 	<ul style="list-style-type: none"> Widen from 6 to 8 lanes
17 I-515, I-215 to I-15 (including Spaghetti Bowl)	<ul style="list-style-type: none"> Widen to 10 lanes to include HOV lanes, & add new interchanges at Pecos Rd, & 'F' Street (PE, ROW, Const) (from Charleston Blvd to I-15/US 95 Interchange - Spaghetti Bowl) 	<ul style="list-style-type: none"> Widen from 6 to 8 lanes from I-215 to Charleston Construct Spaghetti Bowl improvements to accommodate 10 lanes Reconstruct pavement Reconstruct existing service interchanges at Boulder Highway and Flamingo Road 	<ul style="list-style-type: none"> Widen 8 to 10 lanes from I-215 to Charleston
18 US 95, I-15 to CC 215/Northern Beltway	<ul style="list-style-type: none"> Widen from 6 to 8 lanes, Ann Rd to Durango Drive 	<ul style="list-style-type: none"> Widen to 10 lanes, I-15 to Rancho Reconstruct MLK and Rancho traffic interchanges 	<ul style="list-style-type: none"> Widen to 10 lanes, Rainbow to I-215

Appendix C
US 93 Improvements

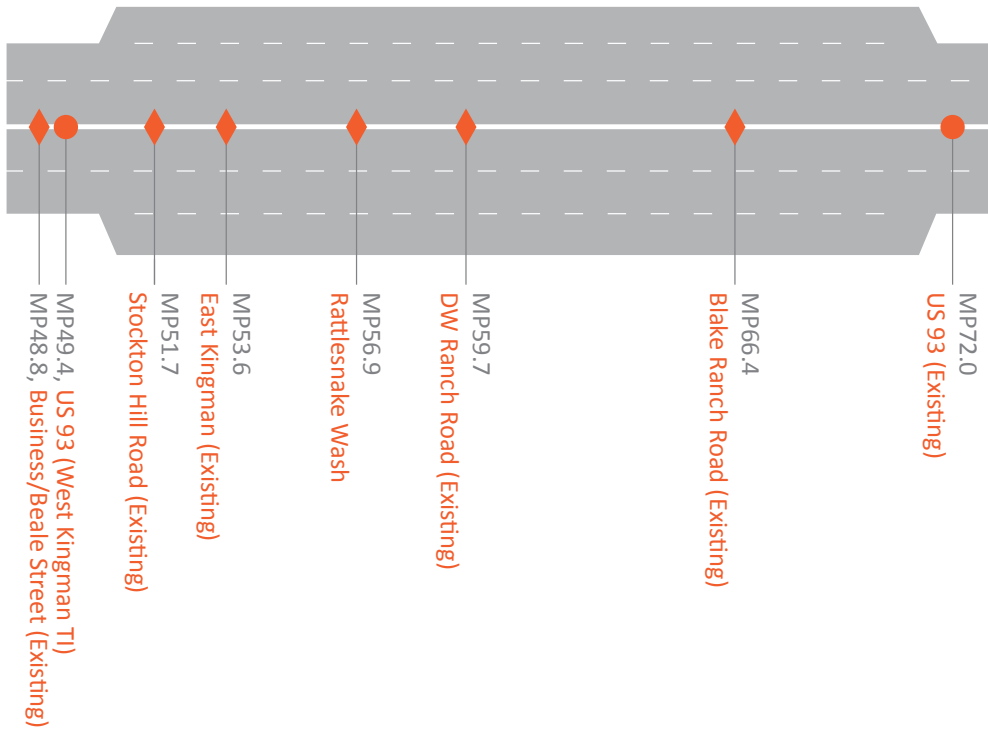
PROPOSED INTERCHANGE LOCATIONS ON FUTURE I-11 · US 93: WICKENBURG TO I-40



◆ Service Interchange ● System Interchange



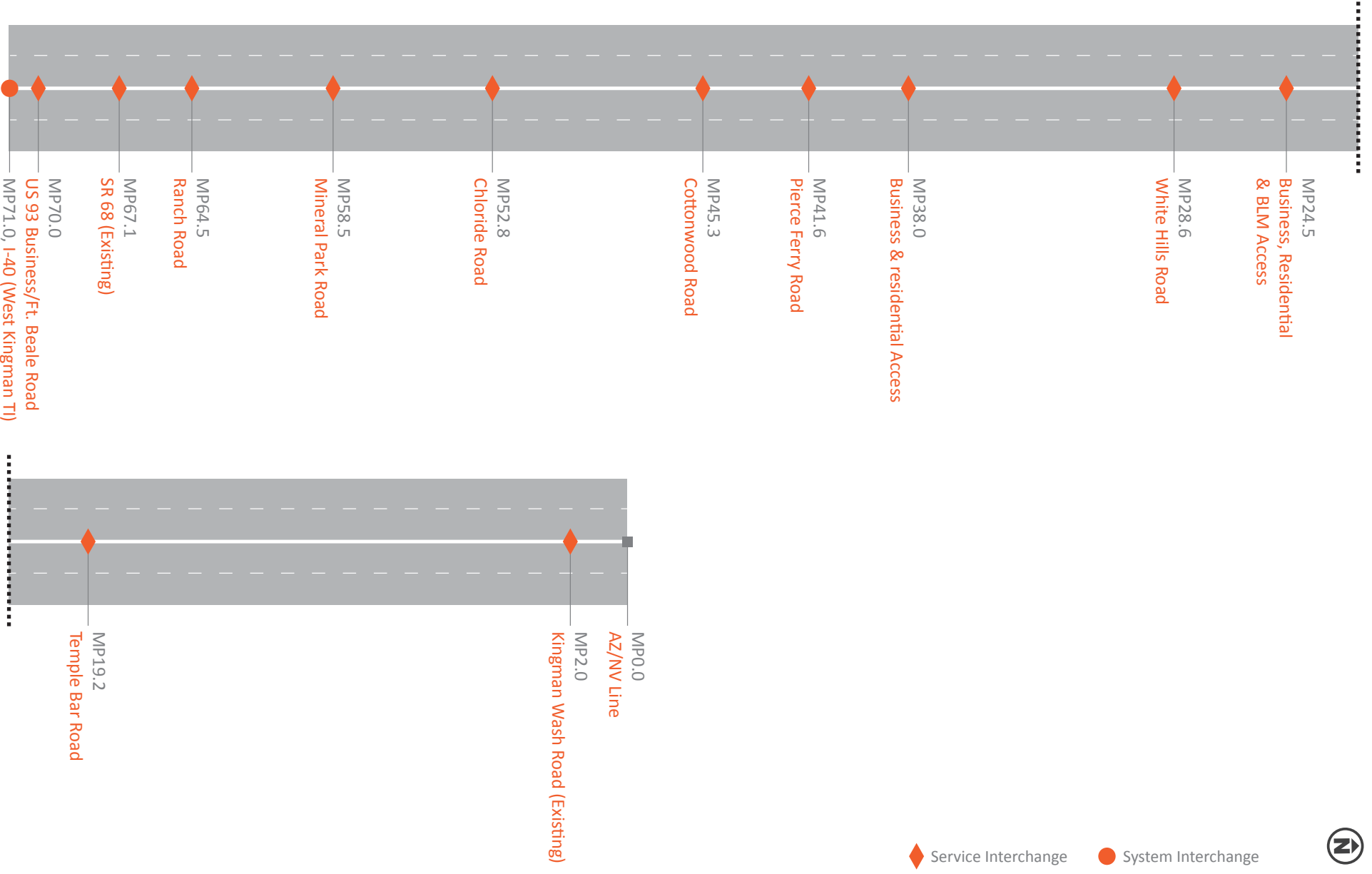
PROPOSED INTERCHANGE LOCATIONS ON FUTURE I-11 • US 93: CO-LOCATION WITH I-40



◆ Service Interchange ● System Interchange

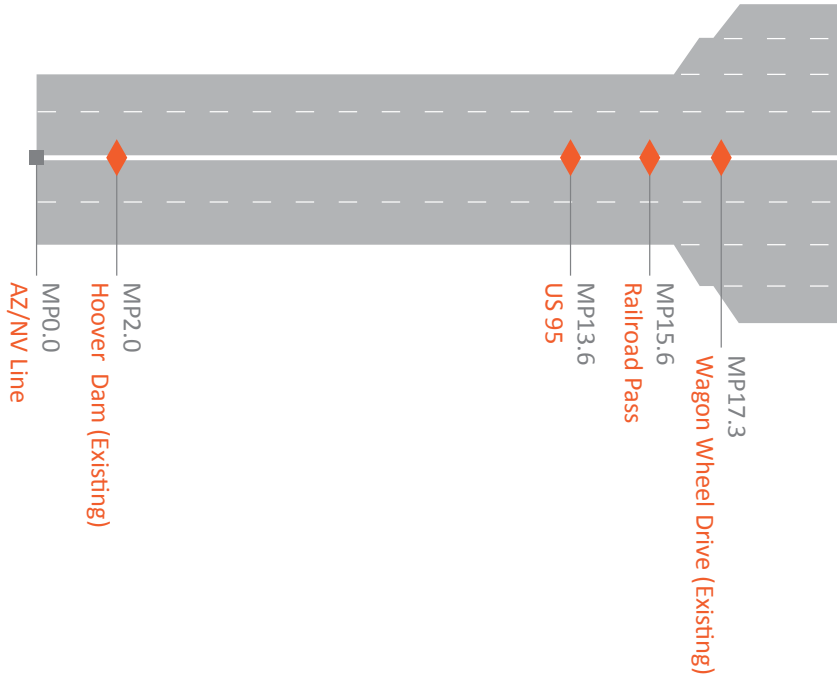


PROPOSED INTERCHANGE LOCATIONS ON FUTURE I-11 · US 93: I-40 TO NEVADA BORDER



◆ Service Interchange ● System Interchange

PROPOSED INTERCHANGE LOCATIONS ON FUTURE I-11 · BOULDER CITY BYPASS



NOTE: Mileposts are based on new alignment, beginning at 0.00 at the NV/AZ line.

◆ Service Interchange ● System Interchange



Appendix D
Funding, Finance and Alternative
Delivery Options



I-11 and Intermountain West Corridor Study



Funding and Finance Options Technical Memorandum

Prepared for



and



June 2014

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Challenges of the I-11 and Intermountain West Corridor

The I-11 and Intermountain West Corridor faces a number of significant, interrelated challenges that affect funding, financing, and the potential for using alternative delivery methods including:

Size of the undertaking: The bold vision of the I-11 and Intermountain West Corridor is breathtaking due to its sheer size. At over 1,000 miles in length, border to border, this corridor is possibly the largest addition to the nation's highway network undertaken in decades. Due to this size, the corridor will be delivered through dozens, if not hundreds, of investments in individual projects. The full value of many of these investments will not be realized until the entire system is complete and this, in some instances, could take decades. Making sure that the vision is not lost, and that social, political, and financial support does waiver over the decades will perhaps be the greatest challenge to the realization of the I-11 and Intermountain West Corridor.

Few urban areas and a lot of wide-open spaces: As currently envisioned, the I-11 and Intermountain West Corridor will connect Nogales, Arizona with Las Vegas, Nevada. The remainder of the corridor alignment, however, is not defined. It could potentially connect north to Reno. North of Reno, it is possible that it will bypass Portland and Seattle, with spur connections to serve these metro areas, and then eventually terminate in Vancouver, B.C. Under the most likely imaginable scenarios, the corridor will run across hundreds of miles of sparsely populated areas that do not presently generate significant amounts of economic activity.

Large differential in volume and type of traffic (trucks and automobiles): Around the large to mid-sized metropolitan areas such as Phoenix, Las Vegas, Tucson, and Reno, traffic volumes, particularly during peak travel times, are likely to be heavy due to large numbers of commuters in automobiles. Truck volumes in these urban areas are likely to be high in absolute numbers although low as a percentage of total traffic. In the wide open spaces between metropolitan areas, truck volumes as a percentage of total traffic will become more significant, reaching 40-50 percent. The various segments of the corridor will need to be appropriately designed to meet the needs of the users. Support for investing in the I-11 and other sections of the I-11 and Intermountain Corridor will be substantially dependent upon the ability of the corridor to meet the needs of the various user groups that dominate the individual segments.

Ultimate cost will be tens of billions of dollars: With cost effective planning and design, the realization of the I-11 and Intermountain West Corridor will cost tens of billions of dollars. With currently available funding already oversubscribed, this new corridor will need to have clearly demonstrable benefits to compete for existing funds and to garner support for implementing new sources of funding to support corridor investments.

Multiple jurisdictions: The more than 1,000 miles of the I-11 and Intermountain West Corridor will traverse the U.S. and reach into Canada and Mexico. Within the U.S., the corridor can cross portions of five or more states, and dozens of counties, cities, towns, and regional political subdivisions. Every one of these entities will have an interest in the corridor and want a seat at the table as decisions about corridor investments are made. Each of the entities will have its own political and social dynamics that will influence how they participate in this process. Many are likely to be asked to provide financial support for these investments.

Each of the above challenges will impact the ability to assemble the funding for corridor investments. Each will also have a direct influence on the means and methods of project finance, including the opportunities to use public private partnerships, and other innovative financing tools. Because this corridor considers all modes of surface transportation, this chapter includes brief references to transit revenue as well.

Funding Sources

Primary Transportation Funding Sources

Federal

Federal transportation revenue and spending are governed by authorization bills enacted by Congress. Federal transportation funding is typically provided to each state through several conduits. Federal highway funds are directed to each state's Department of Transportation (DOT). Transit funding for the urban areas is typically sent directly to the agency responsible for the individual transit systems with some allocation to the DOTs for transit in rural areas. Federal aviation funding is likewise sent directly to the agencies responsible for the airports.

The federal government collects taxes on gasoline, diesel fuel, and five forms of alternative fuels. The federal government also collects taxes on the sale of tires used for vehicles with a gross vehicle weight in excess of 3,500 pounds; on the sale of trucks and trailers in excess of 55,000 pounds and 26,000 pounds (respectively); and (annually) on trucks over 55,000 pounds.

Depending on the type of fuel, 80 percent to 88 percent of the motor fuel tax revenue is deposited in the highway account of the trust fund (with the remainder going to the mass transit account). All of the truck-related taxes are deposited into this account. Revenue in the highway account is allocated among a number of programs. Four programs account for 55 percent of federal highway authorizations: Interstate Maintenance, National Highway System, Bridge, and Surface Transportation. These four, plus the Equity Bonus Program (provided to ensure a minimum rate of return to each state from its federal highway contributions), account for 76 percent of the authorizations.

In addition to the funding coming through the traditional highway, transit, and rail transportation programs, the federal government has recently created special programs that bring additional funding for transportation to accomplish specific objectives. Recent examples include the American Recovery and Reinvestment Act (ARRA), the Transit Investments in Greenhouse Gas and Energy Reduction (TIGGER), and Transportation Investment Generating Economic Recovery (TIGER) programs. Some of these programs, such as TIGER, have developed considerable political support and have continued to be funded in successive appropriations bills. Additional new programs can be expected to be created in the future to reflect the administration's current priorities. **Table 1** is a summary of federal funding programs that have implications to surface transportation.

Table 1. Federal Surface Transportation Funding Sources

Funding Program	Description	Trends and Issues
<p>Federal Surface Transportation Program (MAP-21)</p>	<p><i>Program Description:</i> MAP-21 is the current funding and authorization bill that governs federal surface transportation spending. It was signed into law on July 6, 2012, providing \$105 billion in total program allocations, and expires on September 30, 2014.</p> <p><i>Revenue Sources:</i> Primary federal revenue sources are motor fuel taxes (+/- 68%); various taxes and fees on trucks, etc (+/-12%); and contributions from the General Fund (+/- 20%)</p>	<p><i>Reauthorization Status:</i> Reauthorization discussions appear to be on-hold pending resolution of larger budget and sequestration issues.</p> <p><i>Potential Issues:</i></p> <ul style="list-style-type: none"> • The purchasing power of federal funding, supported by constrained motor fuel tax receipts, continues to be undermined by the rising costs of construction and inflation, and increasing fleet fuel economy. • Existing federal revenues are inadequate to sustain MAP-21 funding levels into the future. Without increase to the revenue coming into the highway trust fund, projected funding for the next authorization could be reduced significantly. Without supplemental funding from outside the highway trust fund, this could result in funding reductions of approximately 40 percent below MAP-21 levels. • Programs and allocation methods contained in MAP-21 will be reviewed with the next reauthorization bill. This could result in new competitive selection criteria for projects seeking discretionary funding.
<p>American Recovery and Reinvestment Act (ARRA)</p>	<p><i>Description:</i> On Feb. 17, 2009, Congress passed the American Recovery and Reinvestment Act of 2009. A direct response to the economic crisis, the Recovery Act has three immediate goals:</p> <ul style="list-style-type: none"> • Create new jobs and save existing ones • Spur economic activity and invest in long-term growth • Foster unprecedented levels of accountability and transparency in government spending <p>Of the total ARRA \$787 billion, about \$46 billion was targeted to infrastructure investment including highways, airports, and high-speed rail. A portion of these funds were disbursed through two new grant programs:</p> <ul style="list-style-type: none"> • Transportation Investment Generating Economic Recovery (TIGER I) • Transit Investments in Greenhouse Gas and Energy Reduction (TIGGER I) 	<ul style="list-style-type: none"> • A one-time appropriation was made for ARRA that is not sustainable. • Only a small fraction of ARRA funding went towards transportation infrastructure. • While there have been recent proposals from the administration for another “recovery” type bill, this is unlikely to happen unless current impasses over larger budget and sequestration issues can be resolved.
<p>Transportation Investment Generating Economic Recovery (TIGER II-IV)</p>	<p><i>Description:</i> Similar to the TIGER program, funds (approximately \$600 million) for the TIGER II program are to be awarded on a competitive basis for projects that will have a significant impact on the Nation, a metropolitan area or a region. The FY 2011 budget extension to cover the remainder of the fiscal year included an additional \$528 million in funding for TIGER II. A third round of TIGER grants (TIGER III) totaling \$511 million was awarded in December 2011 followed by a fourth round (TIGER IV) of almost \$500 million in grants awarded in June 2012.</p>	<ul style="list-style-type: none"> • This program has now received appropriations in every FFY beyond its original funding in ARRA indicating that there is some degree of political support. Unfortunately, these appropriations were not “new” money for transportation but reallocations under the extended SAFETEA-LU funding and MAP-21. • The successive TIGER grant programs have introduced competitive evaluation factors without establishing a uniform methodology for developing data. This increased the subjectivity of the evaluation process and created an uneven playing field for applicants.



State

Transportation funding at the state level comes in many varieties and variations. Since the most active project development and construction activity within the corridor is taking place on the segment designated as I-11 between Phoenix and Las Vegas, the following discussion focuses on transportation funding at the state level in Arizona and Nevada.

Table 2 is a general summary of the significant funding sources allowed within these two states.

Table 2. State Transportation Funding Sources

Source	Arizona		Nevada	
	Highway	Transit	Highway	Transit
Federal transportation funds	X	X	X	X
Gas taxes	X		X	
Special fuel taxes	X		X	
General sales tax			X ⁽⁴⁾	
General funds			X	
Tolls	X ⁽²⁾			
Truck and commercial vehicle fees ⁽¹⁾	X			
Vehicle registration or license fees	X		X	
Motor vehicle operator license fees	X			
Lottery		X ⁽³⁾		

(1) Includes such things as permit fees, overweight fees, safety inspections, apportioned highway use taxes, etc.

(2) Must be in conjunction with a P3 with public input

(3) The allocation of lottery proceeds for transportation was suspended in 2010

(4) Portion collected on vehicle sales dedicated to transportation

Each of these funding sources has its own unique political history, distinctive legislative requirements, and restrictions that are too numerous to detail. However, these details need to be understood as one entertains the idea of considering implementation in another jurisdiction.

The primary sources of transportation funding at the state level in both Arizona and Nevada are state and federal fuel taxes. It should be noted that the last significant increase in federal fuel taxes was in 1993. Similarly, the last increases in state fuel taxes in Arizona and Nevada were in the 1990 and 1992, respectively. While the fuel tax mechanism as the primary source of highway funding has served us well for decades, there is now widespread understanding that this mechanism is becoming less and less appropriate due to:

- Unwillingness to increase tax rates
- Erosion of purchasing power due to inflation
- Decline in per mile fuel consumption due to increasing vehicle fuel efficiency
- Introduction of electric vehicles

The combined and cumulative impacts of these factors means that the amount of money collected through fuel taxes in real dollar terms for each mile driven on the road system by a light duty vehicle has declined by approximately 60 percent since 1993. Without changes, this dramatic decline in the revenue collected through the current fuel tax system can be expected to continue at an accelerating rate. Despite the awareness of this



problem, there appears to be little indication that in the foreseeable future significant steps will be taken at either the federal level or the state level in Arizona and Nevada to address this problem.

Regional/Local

Transportation funding from local and regional sources plays a significant role in both Arizona and Nevada. As summarized in **Table 3**, a wide variety of transportation funding sources are allowed for use by cities, counties, and regional authorities to support highway and transit capital and operating expenses. While the names of some of these funding sources are common across various jurisdictions, there are often significant variations in the legislative and administrative provisions for each jurisdiction.

Table 3. Regional/Local Transportation Funding Sources

Source	Arizona		Nevada	
	Highway	Transit	Highway	Transit
Federal transportation funds	X	X	X	X
Local gas taxes			X ⁽²⁾	
Local special fuel taxes			X ⁽³⁾	
General sales tax	X	X	X	X
General funds	X	X	X	X
Tolls	X ⁽¹⁾		X ⁽⁴⁾	
Transit fares		X		X
Impact fees			X	
Development tax			X	
Government services tax			X	
Value capture: tax increment districts, assessments	X		X	

- (1) Must be in conjunction with a public-private partnership (PPP); requires ADOT approval
- (2) All counties have local option fuel taxes; Washoe County indexes gas taxes to capture lost purchasing power on all gas taxes (federal, state, and local)
- (3) (3) Special fuel taxes (primarily diesel) indexed by Washoe County and Clark County (temporary) to capture lost purchasing power on all special fuel taxes (federal , state, and local)
- (4) Only pilot project for Boulder City Bypass authorized for RTC Southern Nevada

Sales taxes are a major source of transportation revenue in many states where local sales taxes are levied in addition to a state rate. Local general sales taxes are levied against all taxable sales, typically as a percent of the purchase price, and are usually deposited in the general fund. Some local governments allocate a portion of their general fund revenue to transportation. The total local sales tax rate is not prescribed by state law, but may be limited by municipal charter. Some local governments levy transportation sales taxes on all taxable sales, with all of the proceeds dedicated to transportation. This revenue is typically deposited in special accounts and tracked separately from other government accounts. In Arizona, governments have used both regional transportation sales taxes levied countywide, and local transportation sales taxes levied by cities and towns. In many cases, voters are asked to approve a sales tax for specific projects, such as the roadway and transit improvements in the adopted MAG and PAG RTPs.

In addition to general sales tax, some municipalities levy incremental sales taxes on certain construction-related activities. (Counties cannot impose this type of sales tax.) This revenue, which is statutorily based on 65 percent of the sale or contract price, is then earmarked for transportation. The tax is collected on new homes and other

activities that involve a construction contract, such as installing a swimming pool, re-roofing, or recurring structural maintenance. Activities subject to the tax are defined by local policy or adopted ordinance.

Over the past twenty or more years, local and regional governments in both states have made tremendous strides in implementing a diverse array of new transportation funding sources. Collectively, the local and regional mechanisms now generate significant amounts of funding for both roadways and transit. In some jurisdictions, local funding is comparable to the resources provided by the state and federal partners. This is a clear indication that the communities in Arizona and Nevada understand the importance of transportation and are committed to an active role in funding and decision making. Based upon the current political climate, the primary source for new transportation funding in the near to mid-term will probably be from the local/regional level.

Emerging Funding Sources

Investments in the I-11 and Intermountain West Corridor will put additional stress on existing funding sources that are already inadequate to meet current needs. Should the states or local/regional entities contemplate raising additional revenue to support transportation infrastructure investment, this could be accomplished through expanding existing sources, utilizing sources similar to those being used in other jurisdictions, or breaking new ground by being the first implementers of new mechanisms. Some of the emerging funding sources that could have particular application to I-11 and the Intermountain West Corridor are:

- **Dynamic tolling:** Dynamic tolling, sometime referred to as “value pricing”, charges users a toll that changes by time of day to match increased traffic volumes. In urbanized areas, this can help manage congestion by incentivizing drivers with time-of-travel flexibility to use the toll facility during less congested periods.
- **Truck only toll lanes:** As suggested by the name, truck only toll lanes are for exclusive use by trucks. These facilities can be attractive to trucks by reducing delay through congested areas, improving travel time reliability, and increasing safety by separating light duty vehicles from heavy truck traffic.
- **Managed lanes:** Managed lanes are typically a set of lanes within a highway facility in which traffic flow is proactively maintained at optimum conditions (usually free-flow) by some combination of pricing, vehicle eligibility, and access control. Managed lanes in or around urban areas having high levels of congestion can, using pricing mechanisms, generate a significant amount of revenue.
- **Fuel tax indexing:** As previously discussed, the amount of money collected by fuel taxes for each mile driven has declined significantly over the last several decades due to multiple factors. One of the most significant of these factors is the erosion of the purchasing power of these revenues due to inflation. Indexing is simply an annual adjustment to the fuel tax rates to recapture the purchasing power lost through inflation. If there is no inflation, no purchasing power is lost and there is no adjustment to the rates. In 2008, voters in Washoe County, Nevada approved indexing of fuel taxes at all levels (federal, state, and local) on all types of motor fuel (gas and diesel) to recover the lost purchasing power due to inflation in the cost of street and highway construction. In 2013, a similar initiative was passed by voters in Clark County, Nevada.
- **Traffic impact fees:** Traffic impact fees are one time charges collected from new development to recover the impacts of traffic generated by the new development to the street and highway infrastructure. Generally, traffic impact fee mechanisms define a system of roads upon which the impacts are assessed and upon which the fees collected can be spent. This system can be defined to include freeways and major arterials.
- **Mileage based user fees:** Mileage-based user fees, also known as Vehicle Miles Traveled (VMT) fees, are charges to users based upon the miles they drive. These charges can either be a flat fee (e.g., a fixed number of cents per mile, regardless of where or when the travel occurred), a variable fee based on user



choice considerations such as time of travel, congestion levels on a facility, type of road traveled on, type and weight of the vehicle, and vehicle emission levels, or a combination of these factors.

- Oregon instituted a pilot program that charged a fee by measuring odometer changes through additional onboard equipment and that collected fees through gas stations (in lieu of charging the fuel tax). Oregon is currently considering a state-wide VMT fee system that would apply to electric and hybrid vehicles. Germany has a system of charging trucks tolls for miles traveled, exhaust emissions, and number of axles. The charges are calculated using on-board global positioning satellite system equipment and wireless communication devices. A related method, used in Israel, the Netherlands, and the United Kingdom, is pay-as-you-drive insurance. The fee is collected monthly based on odometer readings transmitted by a wireless device. Research into various aspects of VMT fees is being conducted around the country including a current study by the Nevada Department of Transportation.
- **Occupancy fees from road and non-road users of the corridor:** In addition to automobiles and trucks, it is envisioned that the I-11 and Intermountain West Corridor will host a number of other users including: transit, rail, telecommunications, pipelines, and power transmission and generation. Auto/truck plazas, rest areas, and other traveler services within the corridor have the potential to generate rents and fees to fund transportation investments. In addition, occupancy fees might entail such options as, among others, “encroachment franchise fees” for utility/commodity transmission, as well as “air rights” or development rights above and/or below highway facilities in the I-11 and Intermountain West Corridor right-of-way. Overall, corridor occupancy by non-road users could have considerable value and offers the potential to charge fees commensurate with this value.
- **Sale taxes on motor fuels:** Sales taxes on motor fuel purchases have the potential for raising considerable transportation revenue. This mechanism also has the ability, albeit less precise, to address the erosion of purchasing power of fuel tax revenues due to inflation. Sales taxes can be an attractive option because there is wide familiarity with and acceptance of the mechanism, and the marginal cost of collection is typically quite low.
- **Area congestion charging:** With area congestion charging drivers are charged for accessing a specific geographic area through tolls or through the sale of passes. This is also sometimes referred to as “cordon pricing” or “congestion districts”. While the principal function of area congestion charging is to manage demand and reduce congestion during peak hours, it also generates revenues. These fees have typically been applied to central business districts. While area congestion charging has not been used in the United States, they have been successful in Rome, Milan, Santiago, Brussels, and Singapore in reducing downtown congestion. A proposal to institute a congestion district in Manhattan failed to be implemented in 2008 because it did not gain the approval of the State Legislature.

The above list of emerging funding sources is certainly not exhaustive. Given the significant shortfall of transportation funding, there is ongoing consideration at all levels of government on how to address this crisis.



Financing Mechanisms

In its simplest terms, funding is real money collected through taxes or fees while financing is a way of borrowing money. Borrowed money must, of course, be repaid and the source for repayment comes from funding. While financing is important, the key to financial sustainability of the I-11 and Intermountain West Corridor is having reliable, adequate funding.

Historically, the most widely used financing mechanism used to build transportation improvements has been through the issuance of debt instruments such as bonds. These debt instruments come in a wide variety differentiated by such things as tax treatment of the interest earnings, back stop provisions, subordination terms, etc. **Table 4** provides a summary of some of the instruments that have been used in the past several decades.

The transportation financing environment is changing rapidly. While many of the financing mechanisms cited in Table 4 will probably be in use for decades to come, some may be dropped from the I-11 tool box, and new mechanisms will undoubtedly be added. The stakeholders of the I-11 and Intermountain West Corridor should not be passive bystanders in this evolution. The stakeholders can take an active role in encouraging and supporting legislation that creates new, flexible, and appropriate financing tools at all levels of government. Should there be a need for mechanisms of unique application to the development of the I-11 and Intermountain West Corridor, the opportunity exists for corridor stakeholders to take a lead role in securing legislation and regulation to create these.

Table 4. Financing Mechanisms

Financing Mechanism	Description	Trends and Issues
Grant Anticipation Revenue Vehicle (GARVEE)	<p><i>Description:</i> GARVEEs permit states to pay debt service and other bond related expenses with future federal-aid highway apportionments, generating up front capital for major highway projects that the state may be unable to construct in the near-term using traditional methods.</p> <p><i>Benefits:</i> The GARVEE technique enables a state to accelerate construction timelines and spread the cost of the transportation facility over its useful life rather than just a construction period.</p> <p><i>Examples:</i> Since 1997, 25 states have authorized GARVEE bonding authority. Nationally, GARVEE issuances have totaled over \$15 billion.</p>	<ul style="list-style-type: none"> • GARVEEs were established under SAFETEA-LU, and were continued under MAP-21. GARVEEs would need to be reauthorized under future federal transportation bills to remain an option. • State enabling legislation is needed to allow for GARVEEs in transportation financing.
Build America Bonds (BABs)	<p><i>Description:</i> Authorized with the Recovery Act of 2009, Build America Bonds provide a direct federal payment subsidy for a portion of borrowing costs on taxable bonds, thereby making the taxable bonds nearly equivalent in cost to standard tax-exempt bonds. This attracted many investors who did not normally participate in the tax free bond market to bring capital to municipal finance.</p> <p><i>Benefits:</i> BABs have been credited with increasing the financing available for public infrastructure and lowering overall borrowing costs by increasing competition among lenders.</p> <p><i>Examples:</i> Collectively, the 50 states have utilized \$181 billion in BABs for infrastructure improvements including but not limited to highway and transit projects.</p>	<ul style="list-style-type: none"> • Authority to issue BABs began in April 2009 and expired in December 2011. • Since 2011, there have continued to be proposals to reauthorize BABs or something similar with a different name such as America Fast Forward Bonds).



Table 4. Financing Mechanisms

Financing Mechanism	Description	Trends and Issues
<p>Private Activity Bonds (PABs)</p>	<p><i>Description:</i> These bonds, issued by public entities, are used to attract private financing to projects that will be owned or used by private entities, but have significant public purpose (e.g. airports, toll roads). For qualifying projects, these bonds are exempt from federal tax making them more attractive to some investors and reducing financing costs for owners. Congress uses an annual state volume cap to limit the amount of tax-exempt PABs; USDOT has received an allocation that is separate from the individual state volume caps. Approximately \$65 billion in PABs have been issued since 2003.</p> <p><i>Benefits:</i> PABs are credited with leveraging billions of private sector investment in public infrastructure.</p> <p><i>Examples:</i> Virginia-Capitol Beltway HOT Lanes; Texas-North Tarrant Expressway; Colorado-Denver RTD Eagle Project</p>	<ul style="list-style-type: none"> • While private activity bonds have been quite successful and have a strong level of support, there are calls to restrict or eliminate this type of instrument due to the loss of federal tax revenue and perceived abuses.
<p>Transportation Infrastructure Finance and Innovation Act (TIFIA) Assistance</p>	<p><i>Description:</i> TIFIA allows USDOT to provide direct credit assistance, up to 49 percent of eligible project costs, to sponsors of major transportation projects. Credit assistance can take the form of a loan, loan guarantee, or line of credit. In general, to be eligible for TIFIA credit assistance, a project must be eligible for grant assistance from applicable Federal surface transportation funding programs.</p> <p><i>Benefits:</i> Direct loans reimburse a project sponsor’s expenditures for eligible project costs including right-of-way acquisition, design, construction, and financing costs. Loan guarantees and lines of credit provide sources of capital should project revenues fall short of amounts needed to repay commercial project investors. TIFIA credit instruments offer project sponsors a means to boost debt service coverage.</p> <p><i>Examples:</i> The North Tarrant Expressway in Texas, a \$2.0 billion project for additional tolled and non-tolled capacity in the Dallas area. Financing for this project includes a \$650 million TIFIA loan that will be repaid with project revenues, which include all income, tolls, revenues, rates, fees, charges, rentals, or other receipts derived by or related to the operation of the project.</p>	<ul style="list-style-type: none"> • TIFIA was enacted as part of TEA-21 and was renewed under SAFETEA-LU. MAP-21 renewed and expanded TIFIA authority. • Requires state enabling legislation to allow for TIFIA assistance.



Table 4. Financing Mechanisms

Financing Mechanism	Description	Trends and Issues
State and Municipal Bonds	<p><i>Description:</i> These are typically issued by non-federal governmental entities and are almost always tax exempt. Bonds are typically secured by general obligations or specific revenues. Variations include, tax credit bonds, tax increment bonds, certificates of participation, etc. Bond ratings and interest rates are tied to the creditworthiness of the governmental agency and the strength of the revenue stream used to secure the debt. Variations in this category include general obligation bonds and revenue bonds.</p> <p><i>Benefits:</i> State and municipal bonds have been the primary infrastructure financing tool for state and local governments for decades. This mechanism has allowed the public to receive almost immediate benefits from the construction of infrastructure while paying the cost of construction off in the future.</p> <p><i>Examples:</i> Used by virtually every state and municipality</p>	<ul style="list-style-type: none"> • Stable, adequate revenue streams will be required for bond repayment. Limitations on the total amount of state/local indebtedness may be an issue. • Bonds allowing for federal/state tax credits must be authorized at federal/state level.
State Infrastructure Banks (SIB)	<p><i>Description:</i> A SIB can provide many types of financial assistance, ranging from loans to credit enhancements.</p> <p><i>Benefits:</i> Establishes infrastructure revolving funds eligible to be capitalized with federal transportation funds. A SIB can offer a range of loans and credit assistance enhancement products to public and private sponsors of Title 23 highway construction projects.</p> <p><i>Examples:</i> The South Carolina Transportation Infrastructure Bank was created in 1997 to assist in financing major projects. The major sources of revenue for the SIB include \$66 million from the State General Fund as a one-time source of capitalization and state recurring monies, including a share of a one-cent per gallon gas tax (approximately \$22 million annually) and truck registration fees (approximately \$53 million annually). Other sources include contributions from the borrowers who have received SIB funding in the form of loan repayments and additional contributions from SCDOT. The South Carolina SIB has leveraged these revenue sources through the issuance of bonds. To date, the SIB has issued \$1.2 billion in revenue bonds to finance projects.</p>	<ul style="list-style-type: none"> • SIBs were established under SAFETEA-LU and have been continued with MAP-21. • Federal legislation requires that States enact enabling legislation which designates how the SIB will be funded and how it will operate if Federal funds will be used.

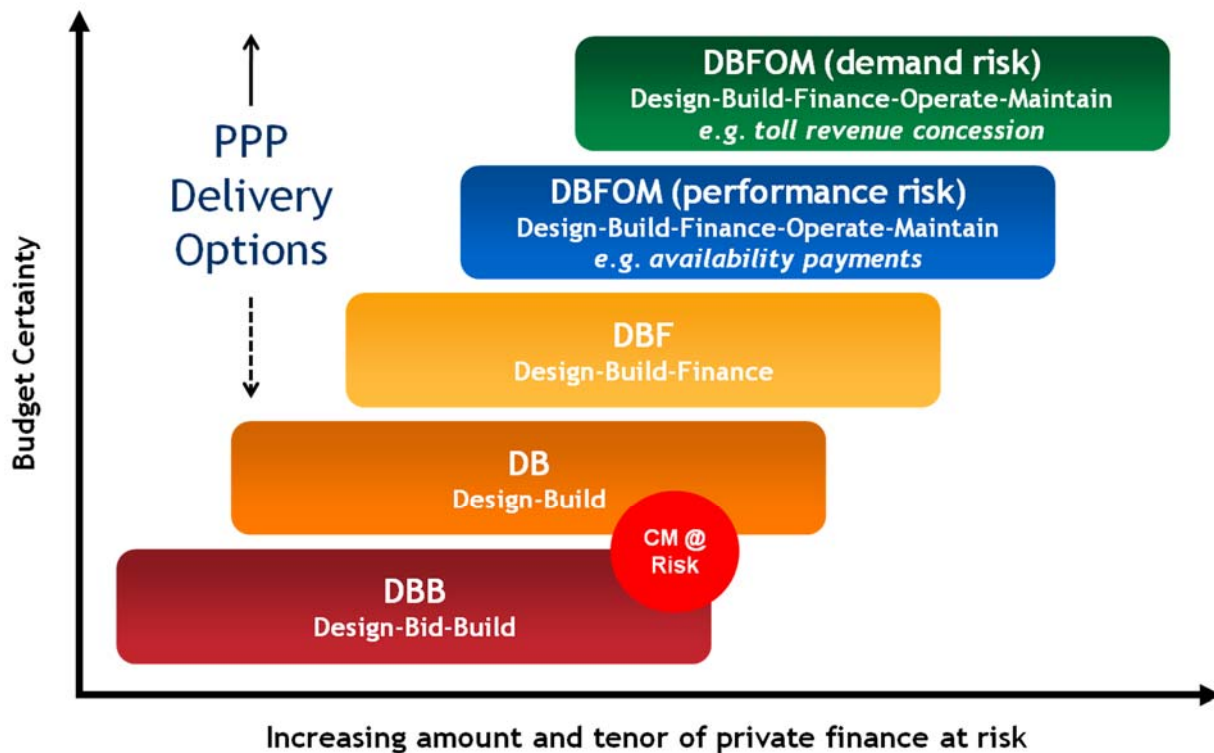
Table 4. Financing Mechanisms

Financing Mechanism	Description	Trends and Issues
Non-profit 62-20 Corporations	<p><i>Description:</i> Non-profit corporations have been used for many years to construct public buildings such as schools, courthouses, city halls, public housing, etc. More recently these corporations have been formed by private entities to construct transportation infrastructure in partnership with the public sector. Within the limitations of IRS Revenue Ruling 62-20, these corporations may issue debt that is tax-exempt.</p> <p><i>Benefits:</i> 62-20 corporations may issue debt that is tax-exempt. In addition, these vehicles can transfer risk to the private sector and shield the public partner from liability.</p> <p><i>Examples:</i> Transportation projects that have utilized 62-20 corporations include: Virginia's Pocahontas Parkway, South Carolina's Southern Connector, and the Las Vegas Monorail.</p>	<ul style="list-style-type: none"> • The relationship between the public and private participants in 62-20 corporations strikes a fine balance between the interests of both parties. Establishing governance structures that give the public sector adequate control without undermining the advantages sought by the private sector can be challenging. • Tax exempt debt issued by 62-20 corporations has been criticized for the revenue loss to the federal government. At the same time, there has been criticism that US tax policy does not do enough to exempt such debt and thus encourage private sector investment in infrastructure. A major move in either of these directions may have to wait until there is a major overhaul to the US tax code, in general.
Short-term Bridge or "Gap" Financing	<p><i>Description:</i> Some projects have adequate funding but are inhibited from efficient implementation by the timing of when the funding becomes available. Short-term bridge financing refers to financing mechanisms that deal with these problems by providing "loans" of usually not more than five years to smooth out the lumpiness of cash flows and enable more efficient and timely project execution. This could include short-term borrowings from banks, temporary loans from other governmental funds with sufficient liquidity, revolving lines of credit from private banks or SIBs, etc.</p> <p><i>Benefits:</i> Short term bridge financing can give agencies greater flexibility to bring projects to market when conditions are more favorable. In addition, this flexibility can provide a better match to available industrial capacity at any one time. Finally, this flexibility can accelerate user benefits which may substantially offset short-term financing costs.</p> <p><i>Examples:</i> Virtually all states and municipalities have used some form of formal or informal bridge financing.</p>	<ul style="list-style-type: none"> • Several factors have created significant new stresses in the area of short-term bridge loans. <ul style="list-style-type: none"> – Project size – Chaotic federal appropriations process – Out of date regulatory limits • Major projects exceeding \$1 billion in size with short-term cash flow deficits of several hundred million dollars are not uncommon. Short-term borrowing from a single lender for these higher amounts may be problematic. The recent erratic history of the federal authorization and appropriations process and sequestration has increased risk and uncertainty for short-term lenders. Some regulatory/statutory limits on short-term borrowings were set decades ago and are now inadequate the current size of programs and projects.
Section 129 Loans	<p><i>Description:</i> Section 129 of Title 23 allows Federal participation in a state loan to support projects with dedicated revenue stream including tolls, excise taxes, sales taxes, real property taxes, motor vehicle taxes, incremental property taxes, or other beneficiary fees.</p> <p><i>Benefits:</i> Federal loan participation can mitigate lender risk concerns. In addition to using the loan proceeds for project expenses, these funds can also be used for credit enhancement activities, such as the purchase of insurance or a capital reserve to improve credit market access or lower interest rate costs.</p> <p><i>Examples:</i> The first and most prominent use of Section 129 was a \$139 million loan to the eastern extension of the President George Bush Turnpike in the Dallas, Texas area. The primary source of loan repayment will be from toll revenues.</p>	<ul style="list-style-type: none"> • Section 129 loans were established under SAFETEA-LU and authority has been extended with MAP-21. • Section 129 does not require state legislation per se but state legislation may be required to provide authority for a state agency to enter into a loan agreement.

Potential Alternative Delivery Methods

As illustrated in **Figure 1**, options for project delivery fall along a wide spectrum. At one end of the spectrum is traditional DBB (design-bid-build) delivery, also known as Construction Manager at Risk (CMAR, or also Construction Manager General Contractor or CMCG in Nevada). This process has served our nation well for decades as the primary method of delivering public infrastructure. As we move further along the spectrum, we encounter DB (design-build) delivery, which transfer more risk and responsibility for cost and schedule to the private sector. The last three delivery methodologies in Figure 1 move into the realm that is commonly referred to as “public-private-partnerships” often denoted by the acronyms of “PPP” or “P3”. For the sake of simplicity, Figure 1 portrays these as DBF (design-build-finance), DBFOM (design-build finance-operate-maintain)-performance risk, and DBFOM (design-build finance-operate-maintain)-demand risk. The primary reason that the P3 delivery methods are included in a discussion of funding and financing is that these methods transfer the responsibility for all or part of the project financing to the private sector.

Figure 1. Spectrum of Alternative Delivery Methods



Design-build-finance typically transfers all or part of the responsibility and risk for short-term financing to the private sector partner. This can be an attractive delivery method when a project is fully funded but the funding may be spread over several budget cycles. If market conditions and/or the value of accelerated user benefits make accelerated project delivery desirable, this can be accomplished by short-term financing. For various reasons, the public owner may choose to place the risk and responsibility for this short-term financing with a private sector partner through DBF delivery.

Design-build-finance-operate-maintain delivery typically transfers all or part of the risk and responsibility for long-term project financing to a private sector partner. In a performance based DBFOM, the private sector partner accepts the risk of operating and maintaining the project to standards for a fixed term. Compensation to the private partner is made by the owner with availability payments that can be adjusted for lapses in meeting the maintenance and operational standards. Theoretically, the private sector partner can receive full compensation if he meets all the performance requirements, even if the facility is never used.

With a DBFOM-demand risk P3, the private sector partner receives compensation based upon the revenue produced by the facility. The risk for the private sector partner is that he will not be adequately compensated if the actual demand to use the facility does not produce the revenue expected in his financial projections. In severe cases, the private sector partner may lose his invested equity and lenders to the private sector partner may not be repaid.

P3 delivery is not appropriate for every project. Where P3 delivery is a good fit for a project, and properly executed, it may have positive impacts on funding and financing by:

- Saving costs in construction, and operation and maintenance
- Expediting construction and providing schedule certainty
- Providing pricing certainty and fewer change orders
- Placing financing and revenue risks with the party best able to manage them
- Avoiding limits on public sector debt capacity
- Giving political cover for increased revenues/fee
- Allowing some projects that wouldn't happen otherwise

P3s have been successfully used to deliver new facilities, expand capacity on existing facilities, and provide O&M on mature facilities. Essential to a P3 structure is a revenue stream to provide a reasonable return on the private investment. One common component of this revenue stream in many highway P3s are tolls although these alone are typically insufficient and are often supplemented by considerable public sector funds particularly where significant initial capital investment is required. Where the facility is not tolled or where toll revenues are not sufficiently robust or predictable, they can be supplemented or replaced by availability payments. The sale of concessions to operate existing mature facilities (e.g. Chicago Skyway, Indiana Toll Road, etc.) have received increased attention during the recent economic downturn since they may generate significant upfront cash for public agencies allowing them to shore up their weakened financial condition or to make additional needed infrastructure investments for which there is currently no funding.

The Arizona and Nevada DOTs have some authority to enter into public-private partnerships for transportation infrastructure. This authority has also been extended, with some restrictions, to local governmental entities. The Nevada legislature passed legislation that effectively authorized a public-private partnership for the Las Vegas monorail. The Regional Transportation Commission of Southern Nevada was authorized by the legislature to undertake the Boulder City Bypass, which is considered to be a portion of I-11, as a pilot toll project with the option of P3 delivery. Although never utilized in this manner, NRS 338.161-168, which deals with unsolicited proposals for transportation facilities made to local governments, would seem to authorize local governments broad authority to enter into public-private partnerships as long as tolling were not involved. **Figure 2** displays potential benefits and risks of P3 project approaches.

Figure 2. Potential Benefits and Risks of P3 Approaches

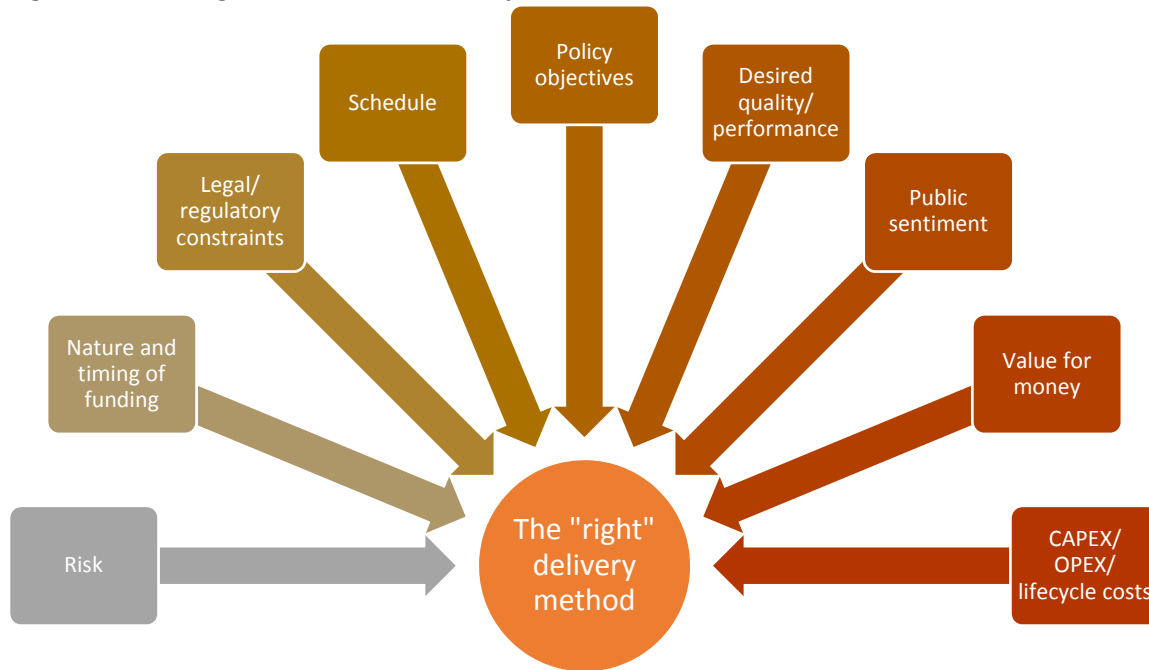
<p>Potential Benefits to Public Sponsor</p> <ul style="list-style-type: none"> • Reduced financial constraints/increased financial capacity • Expedited project initiation and faster delivery • Access to innovative techniques and specialized expertise • Integration of project development and delivery with life-cycle cost incentives • Greater choices in project approaches • Increased competition and accountability • Risk transfer to entity better able to manage 	<p>Potential Risks to Public Sponsor</p> <ul style="list-style-type: none"> • Transaction/administrative costs to procure and monitor PPPs • Taxation constraints • Moral hazard • Control over transportation assets and toll rates • Public acceptance • Compensation and termination clauses • Environmental/archeological clearance • Permitting costs • Right-of-way costs
<p>Potential Benefits to Private Sponsor</p> <ul style="list-style-type: none"> • Higher rate of return compared to conventional project delivery approach • Greater control over assets/operation/user fees • Lower life-cycle costs • Increased revenues from financial transactions • Opportunity to apply best practices and new technology to increase productivity and meet performance standards at lowest life-cycle costs • Opportunity for value capture from direct users and indirect beneficiaries 	<p>Potential Risks to Private Sponsor</p> <ul style="list-style-type: none"> • Change in law • Economic shifts • Public acceptance/protectionism • Currency/foreign exchange • Political support/stability • Moral hazard • Project development/maintenance costs • Project delivery schedule • Financial feasibility/traffic and revenue levels • Liability for latent defects • Prohibition against non-compete clauses • Compensation/termination clauses • Transparency requirements

Selection of the “Right” Delivery Method

As illustrated in **Figure 3**, selection of the “right” delivery method for a project is dependent upon multiple factors, explained as follows.

- **Risk:** Risk is inherent and unique to every project and can include such things as new technologies, unknown demand, unfamiliar or volatile operations, schedule, environmental mitigation, etc. The degree to which an owner would like to transfer all or part of these risks will have a direct impact on the selection of the delivery method.
- **Nature and timing of funding:** Project funding may become available in a single fiscal year or over several fiscal years from existing agency revenue sources. Funding can also be on a reimbursable basis from other agencies, such as the federal government, with caps on the amount that can be provided in any one fiscal year. Funding can come from facility users fees paid over decades.
- **Legal/regulatory constraints:** The delivery methods available may be explicitly authorized or restricted by legislation or regulation. Even if authorized, a certain delivery method may have threshold requirements, such as project size, that preclude its use.

- **Schedule:** The need for accelerated or time certain delivery, and the consequences of late delivery can all be factors that will influence selection of delivery methodology.
- **Policy objectives:** State or agency policy may encourage or require that certain delivery methods be given preference if they are viable, even if they are not the most appropriate method for a specific project.
- **Desired quality/performance:** Achieving desired quality and performance on projects with high degrees of complexity or new technologies may be inhibited by traditional delivery methods using low bid as the basis of award. In these cases, alternative delivery methods that consider factors other than cost and enable appropriate risk transfer to the private sector may be more beneficial in securing best value for the public.
- **Public sentiment:** Traditional DBB delivery with competitive award based upon low bid is familiar to the public as is operations and maintenance of the constructed facility by the public owner. Moving into less traditional delivery methods where price is not the only basis for award, or where operations and maintenance are no longer performed by the public owner, or where revenue collection and toll rates are the responsibility of a private sector partner can run counter to public sentiment in any particular jurisdiction. This may require an incremental approach to introducing unfamiliar delivery methods which balances selection of the “right” delivery method with delivery methods that are “acceptable” to the public.
- **Value-for-money:** Value-for-money (VfM) is a comparison of the risk adjusted costs and benefits of delivery using traditional methods versus alternative methods of delivery such as P3. VfM analysis provides a fundamental basis for making the delivery method selection.
- **CAPEX, OPEX, and life-cycle costs:** Having a reasonable understanding of project capital expenditures (CAPEX), operations and maintenance expenditures (OPEX), and life-cycle costs is essential for making decisions on delivery methodology. Without this information, the public owner cannot assess how the undertaking fits with its current resource levels and thus whether traditional funding, financing, and delivery are a viable alternative. While there is no fixed rule, in the current US market once project CAPEX exceeds \$1 billion, the pool of potential P3 partners contracts considerably. At the other end of the scale, projects of less than \$200 million do not seem to justify the greater complexity of P3 delivery.

Figure 3. Selecting an Alternative Delivery Method

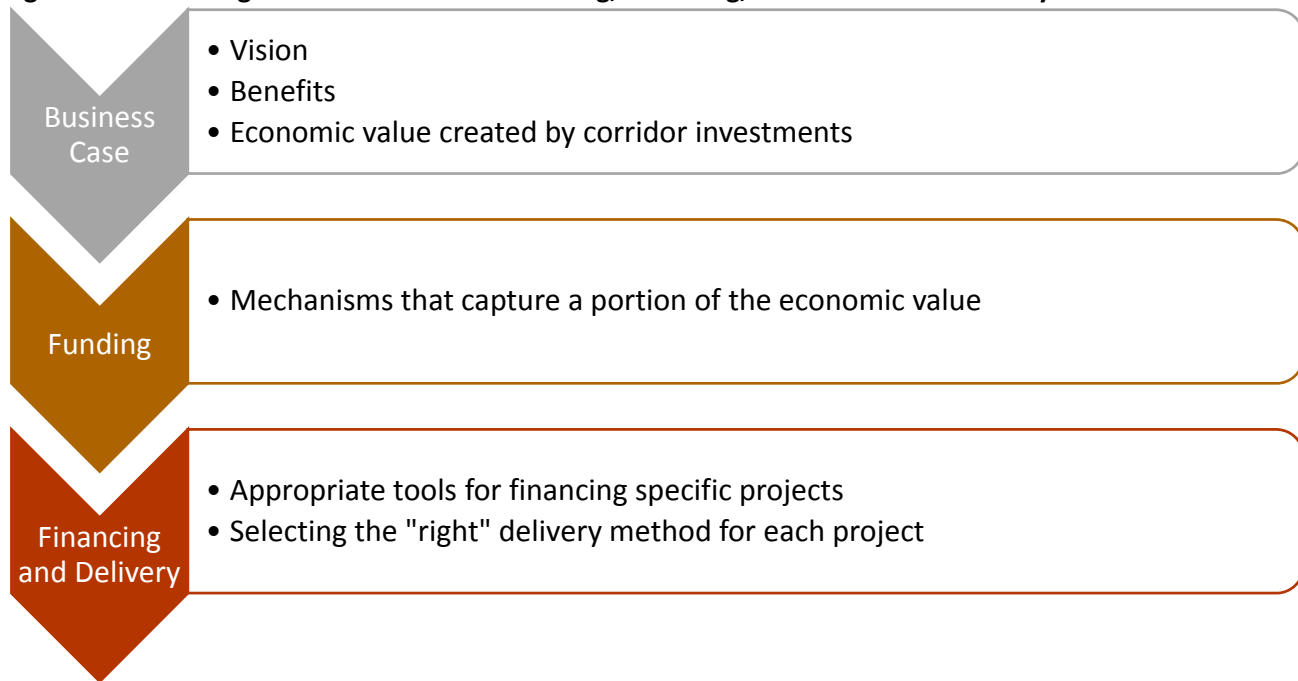
The “right” delivery method will be unique to each project

Collectively, the factors cited above that are relevant to the selection of the “right” delivery method are unique to each project. This means that there is no universal “right” delivery method; the “right” delivery method is dependent upon the project. These factors will change over time. Public sentiment can evolve, new legislation/regulation can be promulgated, policy objectives can shift, etc. Given this, detailed consideration of delivery methodology for any single project is best undertaken when sufficient data is available for meaningful analysis. At the current point in time, there is simply not enough information to determine the “right” delivery methods for the vast majority of the improvements envisioned for the I-11 and Intermountain West Corridor. The corridor will likely use several of these delivery methods on depending on the factors shown in Figure 3.

Connecting to the Business Case

Figure 4 illustrates the relationship of the I-11 and Intermountain West Corridor Business Case to considerations of funding, financing, and alternative delivery. The primary objectives of the Business Case is to articulate a compelling vision for the corridor, identify the benefits realization of this vision will provide, and define the economic value that investments in the corridor will create. Upon completion, an assessment can be made of the ability to fund corridor investments by capturing a portion of the economic value created using existing mechanisms or possibly new mechanisms. Once funding is identified, appropriate financing tools and the “right” method to deliver individual projects can be identified as individual projects are sufficiently developed.

Figure 4. Connecting the Business Case to Funding, Financing, and Alternative Delivery Methods



Discussions of Funding in the Overall Context of Project Development

Full development of the I-11 and Intermountain West Corridor is a complex process that will span decades. We are only at the very beginning of this process, as illustrated in the lower left hand corner of **Figure 5**. As previously noted, discussions of funding, financing, and alternative delivery at this time are premature. We simply do not have sufficient detail to make good decisions in these areas. In fact, these discussions could actually become counterproductive. Funding is a means to reach the vision and to have a reasonable discussion of funding it must be preceded by a clear articulation of the benefits and value that can be secured in return for our investments. The primary focus of corridor champions at this time must be to articulate and communicate the vision.

Figure 5. Funding Related to the Project Development Process

***Funding is only the means
to reach the vision...***

Secure funding to make it happen

- Polls
- Outreach and education
- Endorsements
- Ballot questions
- Implementing legislation

Create a supportive environment

- Build coalitions
- Policy alignment
- Enabling legislation
- Appropriate regulations
- Early wins
- Tell your success stories

Develop a Consensus Vision

- Public/Political/Stakeholder ownership
- Articulate goals, aspirations, needs
- Projects/Services to realize vision
- Benefits
- Public outreach and branding
- Enhanced communications

Sell the vision first!

