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Working Paper

Arizona State Freight Plan

(ADOT MPD 085-14)

Phase 10 Arizona Freight System Improvement Strategy

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Solutions for growing economies

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Working Paper

This working paper puts forth a FAST Act compliant strategy for improving Arizona's freight transportation system and builds on the previous phases of work in the development of the Arizona State Freight Plan.

Acknowledgements

The CPCS team thanks the Arizona Department of Transportation (ADOT) for its guidance and input in developing this working paper, as well as the input and comments of those consulted in its development. Further input from the Technical Advisory Committee (TAC) and Freight Advisory Committee (FAC) is welcome.

Opinions

Unless otherwise indicated, the opinions herein are those of the author and do not necessarily reflect the views of ADOT, the TAC, FAC, or the State of Arizona.

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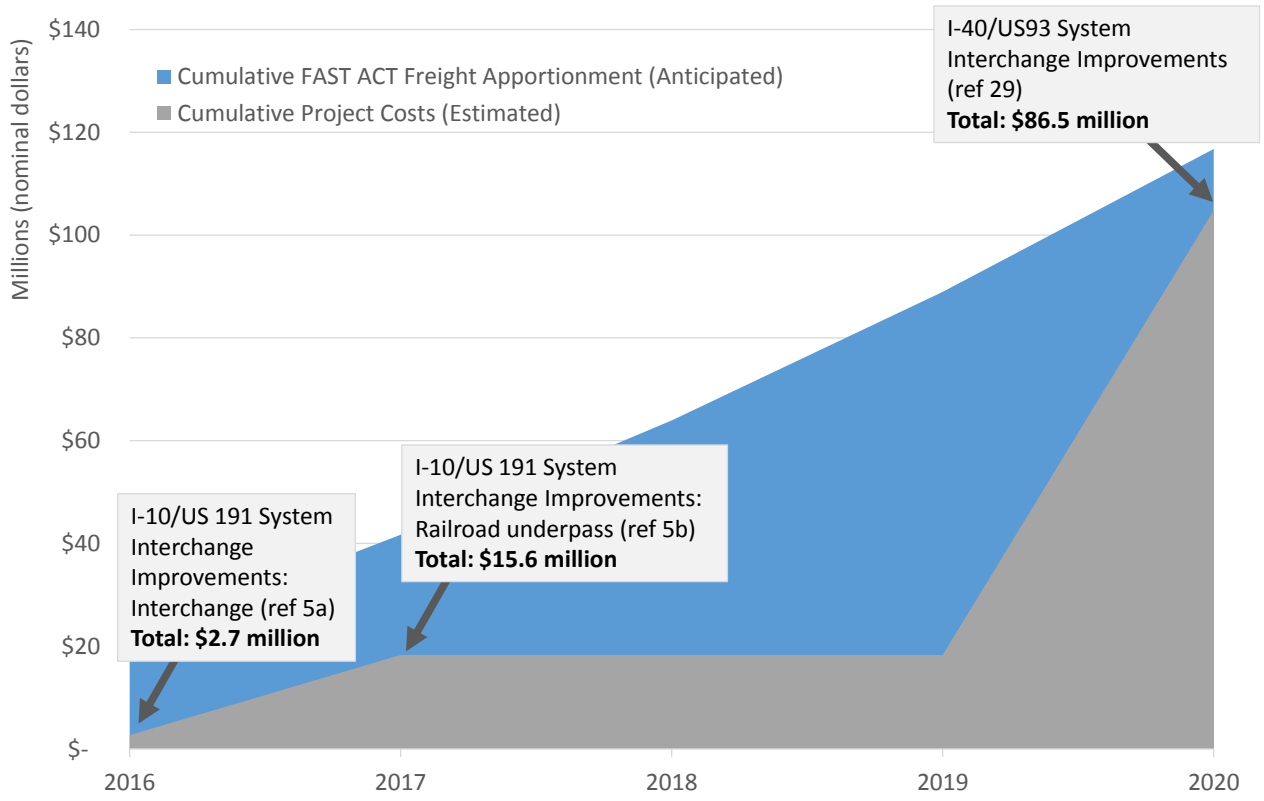
Executive Summary

In the context of the development of the Arizona State Freight Plan, 20 priority freight improvement projects were identified - pursuant to a merit-based prioritization evaluation, in line with the Freight Plan's goals and objectives. The total cost of these projects is expected to be over $3.6 billion, far exceeding the roughly $117 million (nominal dollars) in expected Arizona apportioned federal funds dedicated for freight under the FAST Act between 2016 and 2020. There are no other freight dedicated funds, meaning that identified freight investment priorities not funded with FAST Act freight dedicated funds must compete for general transportation funds. Given this context, the following freight improvement strategy is proposed for Arizona:

- **Dedicated federal (i.e. FAST Act) freight funds apportioned to Arizona could prioritize projects that disproportionately benefit freight** (i.e. relative to passenger benefits). These projects would be less likely to successfully compete for general transportation funds. Among the 20 priority freight improvement projects, three disproportionally benefit freight:
    - I-10/US 191 System Interchange Improvements: Interchange (Total: $2.7 million)
    - I-10/US 191 System Interchange Improvements: Railroad underpass (Total: $15.6 million)
    - I-40/US93 System Interchange Improvements (Total: $86.5 million)

Figure ES-1: Fiscally Constrained Freight Project Priorities to be Funded using Dedicated FAST Act Freight Funds



Source: CPCS, analysis of prioritization ranking analysis

- **Undertake smaller scale initiatives that can directly and incrementally benefit freight**. Specific examples could include improving truck signage (e.g. for truck parking facilities), improving truck parking facilities, improving road/rail crossings and undertaking further studies and data collection that would bolster ADOT freight transportation system performance monitoring and evaluation.

- **To the extent that not all remaining priority freight improvement projects can be evaluated under the Planning to Programming (P2P) Link, identified freight improvement projects that will have a significant benefit for passenger transportation (e.g. along major commuter corridors, such as the I-10) could be prioritized.** These projects would increase their likelihood of being funded from general transportation funds, under the existing P2P Link prioritization framework.

- **In the longer term, a more expansive set of freight criteria could be used within the policy evaluation criteria of the P2P Link evaluation process.** The forthcoming update to the Arizona Long Range Transportation Plan (LRTP), to which the P2P Link process is aligned, provides an opportunity to raise the prominence of freight in transportation planning and programming decisions in Arizona.

- **Freight improvement issues and projects falling within MPO jurisdiction, could be closely coordinated**. Related options for ADOT could include but are not necessarily limited to undertaking joint studies, jointly funding priorities, and working collaboratively to advocate for funding for the highest priority improvement projects.

This freight improvement strategy is consistent with and advances to the National Highway Freight Program and National Multimodal Freight Policy goals as set out in the FAST Act. The freight improvement strategy and the projects that would be funded from the implementation of the strategy were identified and prioritized using the Freight Plan's goals and objectives, which are closely aligned with national goals.

Once this freight improvement strategy has been approved, the team will develop an Implementation Plan (Phase 11 in the development of the Freight Plan).

Acronyms and Abbreviations

ADOT	Arizona Department of Transportation
AZ	Arizona
BCA	Benefit- Cost Analysis
COMPASS	US-60/Grand Avenue COMPASS Study
CPCS	CPCS Transcom Inc.
EB	Eastbound
FAC	Freight Advisory Committee
FAST Act	Fixing America's Surface Transportation Act
ITS	Intelligent Transportation System
KCC	Key Commerce Corridors
LRTP	Long Range Transportation Plan
MAG	Maricopa Association of Governments
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPD	Multimodal Planning Division
MPO	Metropolitan Planning Organization
NB	Northbound
P2P	Planning to Programming
P3	Public Private Partnership
POE	Port of Entry
RR	Railroad
SR	State Route
TAC	Technical Advisory Committee
TI	Traffic Interchange
TPTI	Truck Planning Time Index
TTTI	Truck Travel Time Index
US	United States

1 Introduction

Key Messages

The Arizona State Freight Plan will define immediate and long-range investment priorities for the State's freight transportation system.

This document puts forth a strategy for improving Arizona's freight transportation system and builds on the previous phases of work in the development of the Arizona State Freight Plan.

1.1 Introduction: Context

Arizona's economic potential is supported by the state's transportation infrastructure, which connects sources of production to markets.

When transportation infrastructure and related services are efficiently designed and competitively positioned, businesses benefit from lower transport costs, faster and better transportation services, and increased reliability. This in turn contributes to the competitiveness and growth of businesses using the transportation system, as well as that of the broader region.

Effective freight planning and programming can help achieve these ends. Yet, fiscal realities are such that Arizona's Department of Transportation (ADOT) cannot address all transportation system needs and constraints. Rather, it must be strategic in defining and prioritizing its investments and system improvements.

To this end, ADOT's Multimodal Planning Division (MPD), is developing Arizona's State Freight Plan (Freight Plan, or Plan) which will provide guidance for freight improvements in the state.

1.2 Project Objectives

The State Freight Plan will define immediate and long-range investment priorities and policies that will generate the greatest return for Arizona's economy, while also advancing other key transportation system goals, including national goals outlined in the FAST Act. It will identify freight transportation facilities in Arizona that are critical to the State's economic growth and give appropriate priority to investments in such facilities, given fiscal constraints.

The State Freight Plan will ultimately provide Arizona with a guide for assessing and making sound investment and policy decisions that will yield outcomes consistent with the State's vision, goals, and objectives, and notably, promote regional competitiveness and economic growth.

1.3 Purpose of this Working Paper

This Working Paper is the output of Phase 10 in the development of the Arizona State Freight Plan. Its aim is to define a clear, actionable, and effective freight transportation improvement strategy for Arizona that is FAST Act compliant.

2 Strategic Considerations

Key Messages

Key strategic considerations in defining Arizona's freight improvement strategy include:

- The estimated cost of identified freight improvement projects ($3.6 billion, excluding MAG and illustrative projects) are far greater than dedicated freight funds expected to be apportioned to Arizona under the FAST Act ($117 million through 2021).
- The goals and objectives of the Freight Plan, which are aligned with national goals, were used as the basis for prioritizing freight improvements and are implicit in the identified priority improvement projects.
- Most freight improvement projects would benefit passenger transportation disproportionately relative to freight, particularly on major commuter corridors, such as the I-10.
- Priority projects in metropolitan regions, and in particular in Maricopa County, are currently being studied and should be collaboratively advanced with the MPO in question (i.e. MAG).

2.1 Freight Improvement Strategy to Align with Goals and Objectives and Associated Freight Plan Policy and Strategies

Arizona's freight improvement strategy should be guided by the Arizona State Freight Plan vision, goals and objectives (as articulated in the *Phase 1 Working Paper: Freight Vision Statement, and Associated Goals and Objectives*) and associated policy and strategies (as articulated in the *Phase 4 Working Paper: Suggested Policies and Strategies for Arizona*). These have been previously vetted and agreed by ADOT, as well as with the Freight Plan Technical Advisory Committee (TAC) and Freight Advisory Committee (TAC).

Vision: Arizona's freight transportation system enhances economic competitiveness and quality growth through effective system performance and management.

The goals of the Freight Plan are summarized below:

Goal 1 - Enhance Economic Competitiveness: Arizona's freight transportation system to enhance economic competitiveness and quality growth of Arizona's key goods movement sectors, leading to an increase in the State's economic activity and outputs.

Goal 2 - Increase System Performance: To reduce freight transportation cost, travel time and improve system reliability from the perspective of shippers and carriers, while minimizing negative externalities, such as emissions, congestion, and noise relating to freight transportation in the State.

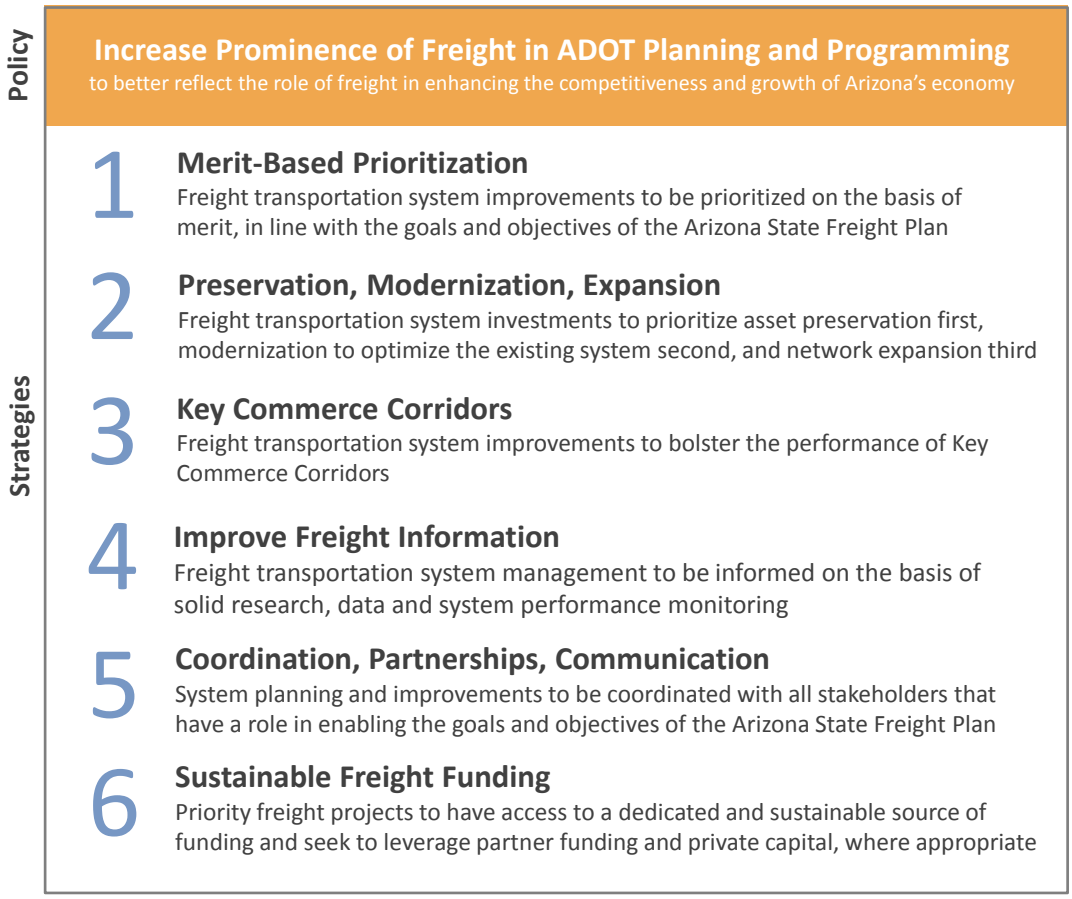
Goal 3 - Improve System Management: To increase the effectiveness of system planning, investment and management, including through the use of innovative technologies.

The first goal – to enable economic competitiveness – is an output of the two other overarching goals – system performance and system management – which serve as a necessary foundation to increase the economic competitiveness of the state's freight sectors. Each of the three overarching goals is complemented by supporting objectives, which are aligned with national and regional freight goals.

Figure 2-1: Arizona State Freight Plan Goals (Orange) and Related Objectives (Blue)

The associated policy and strategies of the Freight Plan – to achieve the Plan's goals and objectives, are summarized below and should likewise guide Arizona's freight improvement strategy.

Figure 2-2: Summary of Arizona State Freight Plan Policy and Strategies



Source: CPCS

The Freight Plan's goals, objectives and associated policies and strategies were used in informing the merit-based prioritization of freight issues and improvement projects in Arizona (as articulated in the *Phase 9 Working Paper: Prioritization of Arizona Freight Transportation Issues and Projects*). Specifically:

The criteria used for prioritizing freight issues and projects were explicitly linked to the goals, objectives and strategies of the Plan, which are in turn aligned with national goals under the FAST Act.

In this respect, the goals, objectives and strategies of the Plan are already implicit in the identified priority issues and improvement projects, and consistent with national goals.

Figure 2-3: Top 20 Identified Freight Improvement Projects (Excluding MAG Projects and Ilustrative Projects)

Prioritization Rank	Ref	Route (Area)	Issue Segment	Project Option(s)	Planning Level Project Cost $ million
1	7	I-10	I-10 between SR 85 and L303	I-10 West of Phoenix General Purpose Lane	$61.3
2	81	I-10	From SR 202L to East of SR 387	I-10 Gila River Indian Community Area Widening	$189.0
3	1	I-10	I-10 at I-19 Traffic System Interchange	I-10/I-19 System Interchange Improvements	$83.0
4	6	I-10	I-10 east of I-19	Tucson Area I-10 Widening Project	$1,860.0
5	5a	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements (interim)	$1.5
6	9*	I-10	I-10 east of Phoenix	I-10 Picacho Area Roadway Widening	$85.0
7	8*	I-10	I-10 Mainline and Traffic Interchange at I-8	Earley Road to I-8 Widening and TI Improvements on I-10	$40.0
8	25	I-19	I-19 between I-10 and Valencia Road (south of Tucson)	I-19 Tucson Area Widening and TI Improvements	$625.0
9	67	US 89	US 89 Within Flagstaff, north of I-40	SR 89/I-40 System Interchange Improvements	$29.0
10	39	SR 69	SR 69, East of Prescott area	SR 69 East of Prescott ITS Improvements	$3.3
11	29	I-40	I-40 at US 93 Junction within Kingman area	I-40/US93 System Interchange Improvements	$86.5
12	5b	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements (interchange and RR underpass)	$15.0
13	26	I-40	I-40 (EB to NB system ramp at I-40/I-17/SR 89 interchange)	I-40/I-17 System Interchange Improvements	$82.0
14	62	US 60	US 60 within Globe area	Globe Area Freight Improvements	$6.8
15	33a	SR 189	SR-189 between Mariposa POE and I-19	SR 189 Traffic Flow Improvements (interim)	$70.0
16	33b	SR 189	SR-189 between Mariposa POE and I-19	SR 189 Traffic Flow Improvements (ultimate)	$161.0
17	18	I-17	I-17 between AZ 179 to Stoneman Lake Road	I-17 Stoneman Lake Area Climbing Lane and ITS Improvements	$23.1
18	35	SR 260	SR 260, West of Show Low to East of SR 73	SR 260 Show Low Area Intersection Improvements	$8.0
19	61	US 60	US 60 between SR 88 and SR 79	US 60 Access Controlled Freeway Extension	$245.0
20	63	US 60	US 60 Passing Lane: Westbound	US 60 Passing Lane	$5.1

Source: Results of prioritization process

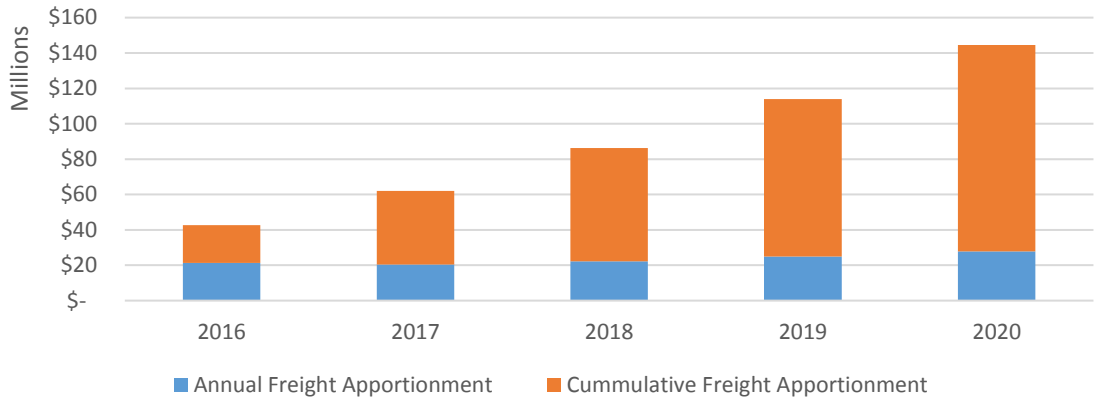
*Projects have recently received funding under FASTLANE Grant ($54 million). Another intelligent transportation system (ITS) project for early dust storm warning, was also included in this grant.

2.2 Freight Improvement Strategy to Recognize Fiscal Reality

The identified top 20 Arizona freight improvement projects are estimated to cost over $3.6 billion. This excludes projects currently being studied in more detail by MAG within the Maricopa region, and also excluding illustrative projects such as the Sonoran Freeway and the I-11 Intermountain West Corridor.

Arizona's formula-driven apportionment of federal funds under the FAST Act dedicated for freight projects ranges from approximately $21 million per year in 2016, to close to $28 million per year in 2020, or close to $117 million in nominal dollars (i.e. not adjusted for inflation) over this five year period. Beyond 2020, the forecasted annual apportionment is in the order of $26 million, though the level of funding is uncertain as it extends beyond the current duration of the 5-year FAST Act. Note that Arizona's apportionment of federal funds under the FAST Act is obligation authority from FHWA and not a promise of future funding.

Figure 2-4: FAST Act Apportioned Freight Funds for Arizona (Expected) (2016-2020)



Source: CPCS analysis of FAST ACT summary of estimated apportionments

Clearly, freight dedicated funding for Arizona under the FAST Act represents a small fraction of the total funding needs to address the identified priority improvement projects. Nevertheless, these funds are dedicated for freight projects.

There are no other assured sources of dedicated freight funding for Arizona at the federal, or for that matter, state level. Short of securing other funds – i.e. general transportation and/or discretionary program funds (e.g. FAST Lane grant), are only a fraction of the identified priority freight projects that can realistically be implemented over the next five years.

The implications for the freight improvement strategy are twofold:

- Limit the number of freight projects that are prioritized for investment to those that can realistically be funded
- Identify other sources of funding that could be used to pay for the identified priority freight improvements

2.3 FAST Act Freight Apportioned Funds can be used for more than Capital Projects

As described in the text box below, FAST Act freight apportioned funds can be used for a wide range of initiatives. The implications for the freight improvement strategy is that these funds need not be used strictly for capital projects.

Uses of FAST Act Freight-Apportioned Funds (FAST ACT Section 7, (i), (5))

(5) Eligibility.-(A) In general.-Except as provided in this subsection, for a project to be eligible for funding under this section the project shall-

(i) Contribute to the efficient movement of freight on the National Highway Freight Network; and

(ii) Be identified in a freight investment plan included in a freight plan of the State that is in effect.

(B) Other projects.-For each fiscal year, a State may obligate not more than 10 percent of the total apportionment of the State under section 104(b)(5) for freight intermodal or freight rail projects, including projects-

(i) Within the boundaries of public or private freight rail or water facilities (including ports); and

(ii) That provide surface transportation infrastructure necessary to facilitate direct intermodal interchange, transfer, and access into or out of the facility.

(C) Eligible projects.-Funds apportioned to the State under section 104(b)(5) for the national highway freight program may be obligated to carry out 1 or more of the following:

(i) Development phase activities, including planning, feasibility analysis, revenue forecasting, environmental review, preliminary engineering and design work, and other preconstruction activities.

(ii) Construction, reconstruction, rehabilitation, acquisition of real property (including land relating to the project and improvements to land), construction contingencies, acquisition of equipment, and operational improvements directly relating to improving system performance.

(iii) Intelligent transportation systems and other technology to improve the flow of freight, including intelligent freight transportation systems.

(iv) Efforts to reduce the environmental impacts of freight movement.

(v) Environmental and community mitigation for freight movement.

(vi) Railway-highway grade separation.

(vii) Geometric improvements to interchanges and ramps.

(viii) Truck-only lanes.

(ix) Climbing and runaway truck lanes.

(x) Adding or widening of shoulders.

(xi) Truck parking facilities eligible for funding under section 1401 of MAP–21 (23 U.S.C. 137 note).

(xii) Real-time traffic, truck parking, roadway condition, and multimodal transportation information systems.

(xiii) Electronic screening and credentialing systems for vehicles, including weigh-in-motion truck inspection technologies.

(xiv) Traffic signal optimization, including synchronized and adaptive signals.

(xv) Work zone management and information systems.

(xvi) Highway ramp metering.

(xvii) Electronic cargo and border security technologies that improve truck freight movement.

(xviii) Intelligent transportation systems that would increase truck freight efficiencies inside the boundaries of intermodal facilities.

(xix) Additional road capacity to address highway freight bottlenecks.

(xx) Physical separation of passenger vehicles from commercial motor freight.

(xxi) Enhancement of the resiliency of critical highway infrastructure, including highway infrastructure that supports national energy security, to improve the flow of freight.

(xxii) A highway or bridge project, other than a project described in clauses (i) through (xxi), to improve the flow of freight on the National Highway Freight Network.

(xxiii) Any other surface transportation project to improve the flow of freight into and out of a facility described in subparagraph (B).

(6) Other eligible costs.-In addition to the eligible projects identified in paragraph (5), a State may use funds apportioned under section 104(b)(5) for-

(A) Carrying out diesel retrofit or alternative fuel projects under section 149 for class 8 vehicles; and

(B) The necessary costs of-

(i) Conducting analyses and data collection related to the national highway freight program;

(ii) Developing and updating performance targets to carry out this section; and

(iii) Reporting to the Administrator to comply with the freight performance target under section 150.

2.4 Recognize Benefits of Freight Projects on Passenger Traffic and Vice Versa

The majority of identified priority freight improvement projects would likely have a greater benefit for passenger traffic, in large part because they seek to address recurring congestion driven primarily by passenger vehicles. Certainly better recognizing the benefits of highway and road projects on *both* passenger and freight transportation would be expected to increase the likelihood of funding for freight priorities (i.e. from general transportation funds).

2.5 P2P as ADOT's Process for Prioritizing Transportation Funding

The Planning to Programming (P2P) Link prioritization process evaluates highway preservation, modernization and expansion investments against a set of technical and policy merits. Technical evaluation criteria focus on pavement preservation and bridge preservation, as well as modernization and expansion criteria. Policy evaluation criteria focus on economic drivers, safety and mobility. Notably, the economic drivers criteria for the most part do not relate specifically to freight.

At present, P2P is the process that the Freight Plan and the associated freight improvement strategy will need to work within to fund projects from Arizona general transportation funds.

2.6 Addressing Freight Improvement Priorities in Metropolitan Regions through Collaboration

Many of the identified priority freight improvement projects are in metropolitan regions, and in particular, within Maricopa County. Most of these projects, such as those below, would address some of the most significant impediments to freight flows in Arizona and are the subject of separate studies and planning processes, outside ADOT's immediate jurisdiction.

As shown in the figure below, related priorities are being studied by MAG as part of the Spine and COMPASS studies.

Figure 2-5: MAG Projects (all subject to separate study and planning)

Ref	Route (Area)	Project Option(s)
2	I-10	I-10 at I-17 Traffic System Interchange (The Stack)
		[MAG Spine Study defined project]
3	I-10	I-10 at SR 202L and SR 51 Traffic System Interchange (The Mini-Stack)
		[MAG Spine Study defined project]
77	I-10	From L101 to L202 (Santan Freeway) within Phoenix Metro area
		[MAG Spine Study defined project]
78	I-17	From I-10 to L101 within Phoenix Metro area
		[MAG Spine Study defined project]
79	US-60	Loop 303 to I-17 within Phoenix Metro area
		[MAG COMPASS Study defined project]

Source: CPCS, selection from prioritization ranking analysis

Though these and other metropolitan projects fall within MPO jurisdiction, ADOT should work very closely with relevant MPOs, and MAG in particular, to move identified priorities forward. This approach is consistent with Freight Plan Strategy 5 (Coordinated, partnerships, communication). Related options include but are not necessarily limited to undertaking joint studies, jointly funding priorities, and working collaboratively to advocate for funding for the highest priority improvement projects.

3 Freight Improvement Strategy

Key Messages

The key components of the freight improvement strategy include:

- Limited funds dedicated for freight (e.g. FAST Act funds for freight projects), should prioritize projects that disproportionately benefit freight.
- Undertake smaller scale initiatives that directly and visibly benefit freight.
- When competing for general transportation funds, identified freight improvement projects that will have a significant benefit for passenger transportation should be prioritized, as this would increase their likelihood of being funded.
- A more expansive set of freight criteria should be used within the policy evaluation criteria of the P2P Link evaluation process. The update of the LRTP provides a good opportunity to increase the prominence of freight considerations in Arizona planning and programming.

3.1 Use Dedicated Freight Funding for Projects that Disproportionally Benefit Freight

The identified priority freight improvement projects (Figure 2-3) are all highway or road-interchange related projects. In the majority of cases, the underlying issues are re-occurring congestion driven primarily by passenger vehicles during peak commuting periods. Where this is the case, the freight improvement project would likely create a disproportionately high benefit to passenger vehicles (as opposed to benefits largely to freight). There are nevertheless identified priority freight improvement projects that would disproportionately benefit freight.

The figure below takes the same identified freight investment priorities as presented in Figure 2-3 and ranks the top 10 projects in order of greatest relative benefit for truck traffic, specifically. This is done by assessing the total share of travel times savings and crash cost savings accruing to trucks relative to total truck and passenger benefits (as used in the benefit cost analysis component of the prioritization framework).

Figure 3-1: Identified Freight Improvement Priority Projects with a Disproportionate Benefit to Freight

Prioritization Rank by Freight Benefit	Ref	Route (Area)	Issue Segment	Project Option(s)	Planning Level Project Cost $ million*	Freight Benefits Share
1	29	I-40	I-40 at US 93 Junction within Kingman area	I-40/US93 System Interchange Improvements	$86.50	55.00%
2	5a	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements	$2.7	54.00%
3	5b	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements (RR underpass)	$15.6	52.20%
4	26	I-40	I-40 (EB to NB system ramp at I-40/I-17/SR 89 interchange)	I-40/I-17 System Interchange Improvements	$82.00	34.90%
5	9	I-10	I-10 east of Phoenix	I-10 Picacho Area Roadway Widening	$85.00	29.50%
6	7	I-10	I-10 between SR 85 and L303	I-10 West of Phoenix General Purpose Lane	$61.30	28.20%
7	6	I-10	I-10 east of I-19	Tucson Area I-10 Widening Project	$1,860	22.40%
8	81	I-10	From SR 202L to East of SR 387	I-10 Gila River Indian Community Area Widening	$189.00	21.60%
9	8	I-10	I-10 Mainline and Traffic Interchange at I-8	Earley Road to I-8 Widening and TI Improvements on I-10	$40.00	21.30%
10	1	I-10	I-10 at I-19 Traffic System Interchange	I-10/I-19 System Interchange Improvements	$83	20.40%

* Planning level project cost is estimated by reviewing the concurrent studies and/or from similar regional projects
Source: HDR, analysis of prioritization ranking analysis

Given the very limited pool of dedicated freight funding available, it would be most appropriate to use funds dedicated for freight projects (i.e. formula driven apportionment of federal funds under the FAST Act dedicated for freight projects) for qualifying projects that disproportionately benefit freight. These projects would otherwise be less likely to be funded since they would be competing for general transportation funding under the P2P Link process.

Use of dedicated FAST Act freight funds for projects that disproportionately benefit freight.

Given the funding constraints of available FAST Act freight funds (as presented in section 2.2), only a selection of the top freight projects can be funded using this funding stream. The top three freight projects could be funded with dedicated FAST Act funding during the five-year period of the FAST Act (through year 2020).

Figure 3-2: Identified Freight Improvement Priority Projects with a Disproportionate Benefit to Freight

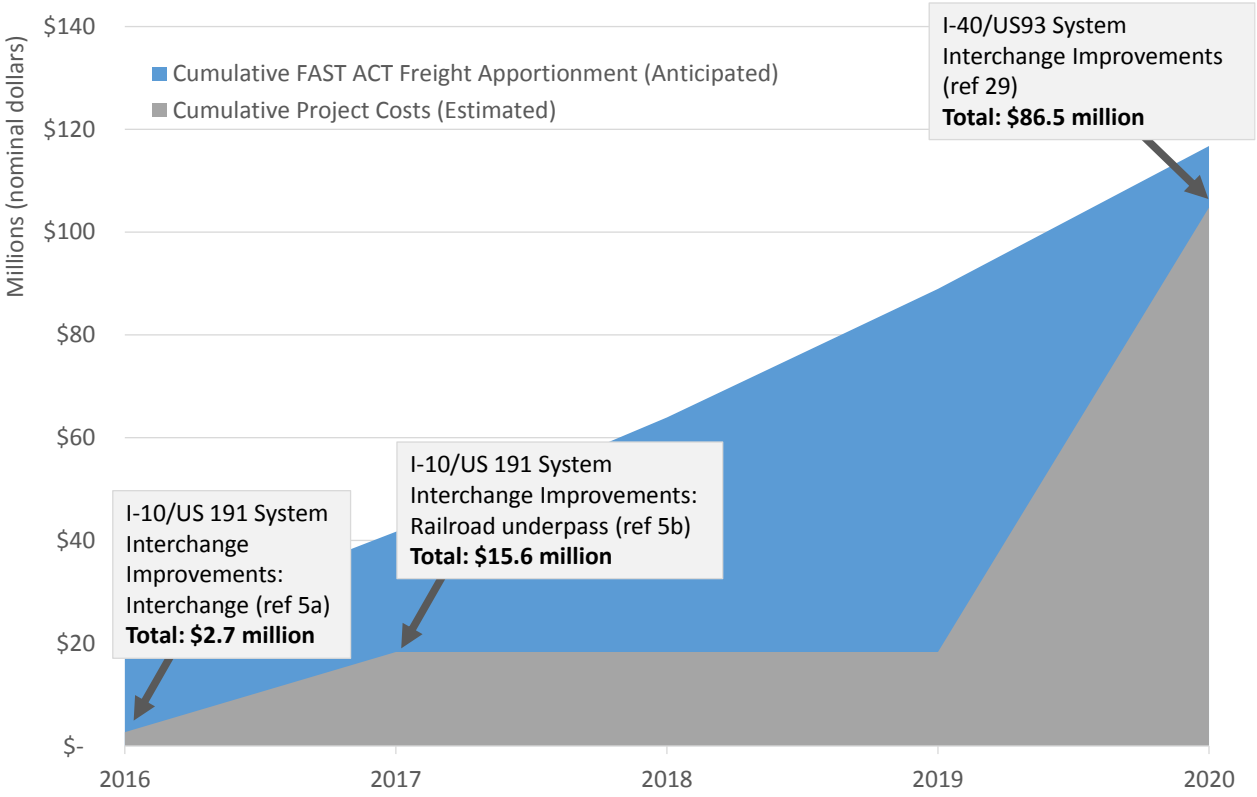
Prioritization Rank by Freight Benefit	Ref	Route (Area)	Issue Segment	Project Option(s)	Planning Level Project Cost $ million	Freight Benefits Share
1	29	I-40	I-40 at US 93 Junction within Kingman area	I-40/US93 System Interchange Improvements	$86.50	55.00%
2	5a	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements	$2.7	54.00%
3	5b	I-10	I-10 at US 191 (Cochise TI)	I-10/US 191 System Interchange Improvements (RR underpass)	$15.6	52.20%

Source: HDR, analysis of prioritization ranking analysis

The figure below presents how these projects could be funded within the fiscal constraints of five-year dedicated freight funding under the FAST Act.

Of note, projects are put forward for when there is sufficient cumulative FAST Act funding available to demonstrate fiscal constraint. However, in reality, projects such as I-40 at US 93 Junction within Kingman area could be undertaken sooner using financing (e.g. using debt) against anticipated FAST Act funding in later years.

Figure 3-3: Fiscally Constrained Freight Project Priorities to be Funded using Dedicated Fast Act Freight Funds



Source: CPCS, analysis of prioritization ranking analysis

3.2 Undertake Smaller Scale Initiatives that Directly Benefit Freight

It may be appropriate to undertake smaller scale initiatives that can directly and visibly benefit freight. The text box below provides examples of other jurisdictions that use such an approach.

Use of Dedicated Freight Funds in other Jurisdictions

Minnesota worked with industry to identify a number of "operational" type improvements that could be funded with a dedicated freight fund, such as better signage of truck routes, advanced warning signs for stoplights on high speed corridors, turning lanes, etc.

Ohio used a similar fund for small quick response freight projects that target emerging issues that need to be dealt with in the short-term. For example, a new business requiring a turning lane because of an increased number of trucks.

The benefit of this approach would be three fold:

- Advance beneficial but smaller scale freight initiatives that would not otherwise be funded

- Increase visibility of freight-specific initiatives to Arizona's freight community
- Leverage these smaller initiative to help build momentum around freight policy and increase prominence of freight within ADOT planning and programming

Specific examples of initiatives that Arizona could undertake could include, but would not be limited to:

- Improving truck signage (e.g. for truck parking facilities, to warn of dust storms, etc.)
- Improving truck parking facilities
- Improving road/rail crossings
- Truck-specific ITS / improvements
- Undertaking studies and data collection that would bolster freight transportation system performance monitoring and evaluation
- Leveraging these initiative and funding to bolster commitment to Arizona's Transportation and Trade Corridor Alliance

3.3 Further Prioritize Freight Projects that Have a Significant Benefit for Passenger Transportation to Increase Likelihood of Funding

To the extent that not all remaining priority freight improvement projects can be evaluated under the Planning to Programming (P2P) Link, identified freight improvement projects can be positioned to better compete for general transportation funds.

Specifically, when evaluating funding priorities from general transportation funds (e.g. in the context of –defining Arizona's 5-Year Facilities Construction Program and outside the FAST Act Freight Funds), more should be done to highlight the benefit of freight projects on passenger traffic and the benefits of passenger projects on freight traffic.

Better recognition of the benefits of highway and road projects on both passenger and freight transportation would be expected to increase the likelihood of funding (i.e. from general transportation funds, as opposed to dedicated freight funds).

Though perhaps counterintuitive in the context of the Freight Plan, to the extent that not all remaining priority freight improvement projects can evaluated under the P2P Link, it would likely make sense to further prioritize freight improvement projects on the merits of their benefits for passenger vehicles (i.e. beyond freight) as this would increase the likelihood of funding for identified priority freight improvement projects.

Freight improvement projects that will have a significant benefit for passenger transportation should be prioritized, as this would increase their likelihood of being funded from general transportation funds.

3.4 Improve Consideration of Freight Benefits in P2P Link Prioritization Process

The development of the Arizona State Freight Plan and this freight improvement strategy provides a valuable opportunity to increase the prominence of freight in ADOT planning and programming.

Increasing Prominence of Freight in LRTP Update

The ongoing update of the Arizona LRTP provides a practical opportunity to increase the prominence of freight in planning and programming. The rationale to do this is twofold:

- Efficient freight transportation is critical to the competitiveness and growth of Arizona's economy (as underscored in the Phase 5 Report on the Economic Context of Freight in Arizona)
- Freight moves on the same roads that are used by passenger vehicles and vice versa (as noted in section 2.4)

A more expansive set of freight criteria should be used within the policy evaluation criteria of the P2P Link evaluation process.

The forthcoming update to the Arizona Long Range Transportation Plan (LRTP), to which the P2P Link process is aligned, provides an opportunity to better recognize the importance of freight for Arizona's transportation system and to better reflect the prominence on freight in the P2P Link process.

4 Freight Improvement Strategy Advances FAST Act Goals

Key Messages

The development of the Arizona State Freight Plan follows a vision and corresponding goals that informed the identification and prioritization of projects and strategies. The vision and goals for the Arizona Freight Plan are closely aligned with the National Highway Freight Program goals and the National Multimodal Freight Policy goals listed in the FAST Act. This chapter substantiates how the Arizona freight improvement strategy and the broader Freight Plan is consistent with requirements under the FAST Act.

4.1 Introduction

The FAST Act requires state DOTs to develop a state freight plan in order to access freight dedicated funding apportioned through the National Highway Freight Program. Relevant to the identification of Arizona's Freight Improvement Strategy is the FAST Act requirement that state freight plans include the following:

- A description how freight policies and strategies will guide freight-related investment decisions.
- A description of how the plan will improve the ability of the State to meet the National Multimodal Freight Policy goals and the National Highway Freight Program goals.

4.2 Advancing the National Highway Freight Policy Goals

The process the Freight Plan is used to identify and prioritize freight projects, which formed the basis for the freight improvement strategy and directly addresses the themes of the National Highway Freight Policy goals as shown in Figure 4-1.

Project Identification: The Freight Plan used performance measures to identify transportation performance issues within Arizona:

- Truck planning time index (TPTI)
- Truck travel time index (TTTI)
- Accident rates
- Annual hours of delay (Delay)
- Industry outreach

Prioritization Process: The Freight Plan prioritization process used the following criterion, among others to prioritize projects:

- Relationship to Arizona's Key Commerce Corridors (KCC)[1]
- TPTI performance (TPTI)
- TTTI performance (TTTI)
- Accident rates
- Annual hours of delay (Delay)
- Conditions that contribute to emissions (Emissions)
- Significance in future freight scenarios (Scenarios)

[1] The prioritization process focuses on Arizona's KCCs, which closely align with the National Highway Freight Network.

- Significance of trade on the corridor (Trade)
- Benefit-cost analysis (BCA)

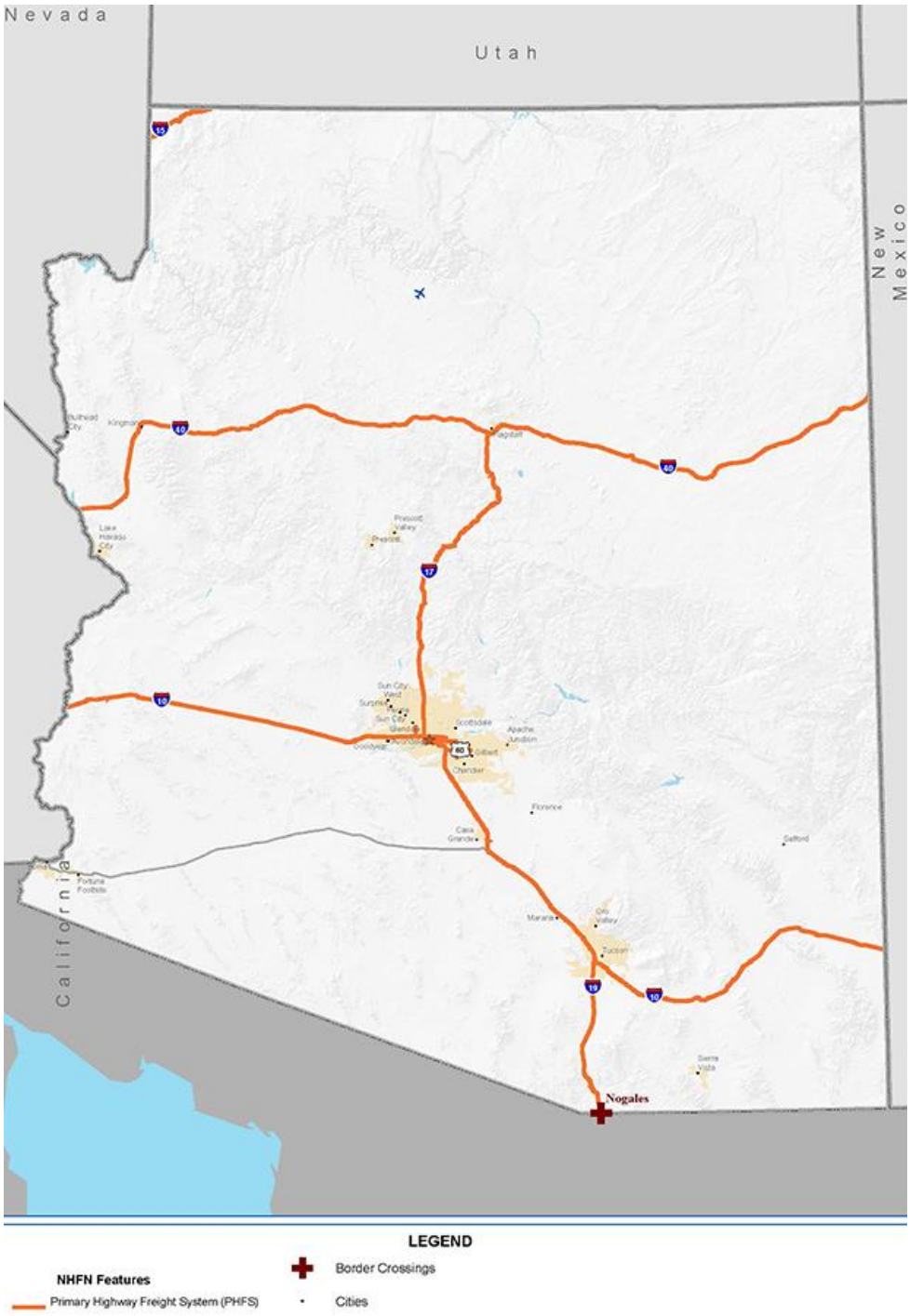
The identified freight improvement priorities that form the basis for Arizona's freight improvement strategy were defined using a merit-based prioritization process (Phase 9). This project identification and prioritization process used a criteria directly tied to the Arizona Freight Plan's goals, objectives, and strategies. The goals, objectives and strategies of the Arizona Freight Plan are in turn explicitly aligned with the National Highway Freight Policy Goals.

Figure 4-1 defines the specific metrics used as part of the project identification and prioritization process to ensure that identified priorities were in line with the National Highway Freight Goals.

Figure 4-1: Specific Measures used in Project Identification and Prioritization

National Highway Freight Policy Goals	Criteria Used in Project Identification and Prioritization	FAST Act Compliance
(1) To invest in infrastructure improvements and to implement operational improvements on the highways of the United States that—	See Specifics Below in 1(A)-1(E)	✓
(A) Strengthen the contribution of the National Highway Freight Network to the economic competitiveness of the United States	KCC, TTTI, TPTI, Delay, and Trade	✓
(B) Reduce congestion and bottlenecks on the National Highway Freight Network;	KCC, TTTI, TPTI, and Delay	✓
(C) Reduce the cost of freight transportation	TTTI, TPTI, and Delay	✓
(D) Improve the year-round reliability of freight transportation	TTTI, TPTI, and Delay	✓
(E) Increase productivity, particularly for domestic industries and businesses that create high-value jobs	Trade, TTTI, TPTI, and Delay	✓
(2) To improve the safety, security, efficiency, and resiliency of freight transportation in rural and urban areas	Accident Rate, TTTI, TPTI, and Delay	✓
(3) To improve the state of good repair of the National Highway Freight Network	Accident Rate, TTTI, TPTI, Delay, and BCA	✓
(4) To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Highway Freight Network	BCA	✓
(5) To improve the efficiency and productivity of the National Highway Freight Network	KCC, TTTI, TPTI, Delay and Accident Rate	✓
(6) To improve the flexibility of States to support multistate corridor planning and the creation of multi-State organizations to increase the ability of States to address highway freight connectivity	Scenarios and Trade	✓
(7) To reduce the environmental impacts of freight movement on the National Highway Freight Network	Emissions and BCA	✓

Figure 4-2: Arizona's National Highway Freight Network



Source: US Department of Transportation, Federal Highway Administration.

4.3 National Multimodal Freight Policy Goals

Figure 4-3 displays the close alignment between the project identification and prioritization process and the National Multimodal Freight Policy goals.

Figure 4-3: National Multimodal Freight Policy Goals Matrix

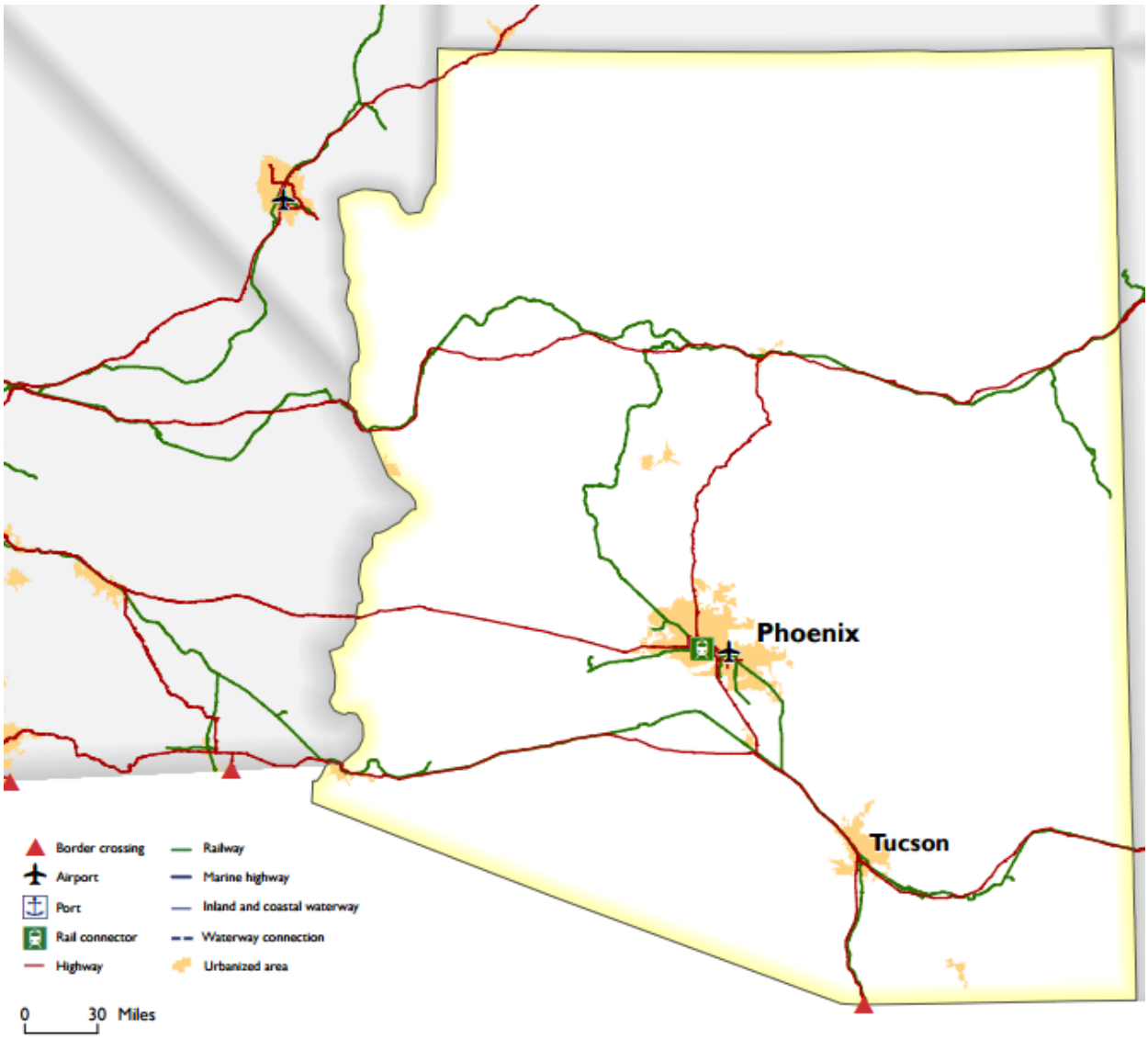
National Multimodal Freight Policy Goals	Project Identification Project Prioritization	FAST Act Compliance
(1) To identify infrastructure improvements, policies, and operational innovations that—	See Specifics Below in 1(A)-1(C)	✓
(A) Strengthen the contribution of the National Multimodal Freight Network to the economic competitiveness of the United States;	KCC, TTTI, TPTI, Delay, and Trade	✓
(B) Reduce congestion and eliminate bottlenecks on the National Multimodal Freight Network; and	KCC, TTTI, TPTI, Delay, and Trade	✓
(C) Increase productivity, particularly for domestic industries and businesses that create high-value jobs;	KCC, TTTI, TPTI, Delay, and Trade	✓
(2) To improve the safety, security, efficiency, and resiliency of multimodal freight transportation;	KCC, Accident Rate, TTTI, TPTI, and Delay	✓
(3) To achieve and maintain a state of good repair on the National Multimodal Freight Network;	Accident Rate, TTTI, TPTI, Delay, and BCA	✓
(4) To use innovation and advanced technology to improve the safety, efficiency, and reliability of the National Multimodal Freight Network;	BCA	✓
(5) To improve the economic efficiency and productivity of the National Multimodal Freight Network;	KCC, TTTI, TPTI, and Delay	✓
(6) To improve the reliability of freight transportation;	TTTI, TPTI, and Delay	✓
(7) To improve the short- and long-distance movement of goods that—	See Specifics Below in 7(A)-7(C)	✓
(A) Travel across rural areas between population centers;	KCC, TTTI, TPTI, Delay, and Trade	✓
(B) Travel between rural areas and population centers; and	KCC, TTTI, TPTI, Delay, and Trade	✓
(C) Travel from the Nation's ports, airports, and gateways to the National Multimodal Freight Network;	KCC, TTTI, TPTI, Delay, and Trade	✓
(8) To improve the flexibility of States to support multistate corridor planning and the creation of multi-State organizations to increase the ability of States to address multimodal freight connectivity;	Scenarios and Trade	✓
(9) To reduce the adverse environmental impacts of freight movement on the National Multimodal Freight Network; and	Emissions and BCA	✓
(10) To pursue the goals described in this subsection in a manner that is not burdensome to State and local governments.	Fiscally constrained priorities	✓

Figure 4-4 displays the interim National Multimodal Freight Network in Arizona. Arizona is on nationally significant rail and roadway corridors, connecting West Coast Ports to the Midwest and locations further East, as well as connecting Arizona and the US to Mexico through the state's ports of entry.

Additionally, the strategies and projects in the Arizona State Freight Plan advance both rural and urban freight projects, improving travel across and between rural areas. The Freight Plan also includes projects that connect to the Mariposa Port of Entry (Arizona's port of entry with the highest tonnage and value), which facilitates imports and exports for Arizona and the

nation. Similarly, projects and policies advancing freight on East/West corridors facilitates the movement of freight to and from the Port of Los Angeles/Long Beach. Lastly, a key strategy of the Freight Plan is work in coordination with local governments, advancing goal ten.

Figure 4-4: Interim National Multimodal Freight Network in Arizona



Source: US Department of Transportation, Federal Highway Administration.

5 Next Steps

Key Messages

Once the freight improvement strategy has been approved, an Implementation Plan will be defined.

This Implementation Plan will include more detail on investment projects, their order and related funding/financing arrangements (including project P3 potential).

This work will be undertaken in as part of Phase 11 in the development of the Freight Plan.