

Working Paper

Arizona State Freight Plan

(ADOT MPD 085-14)

Phase 4 Working Paper: Policy and Strategies

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Working Paper

This Working Paper summarizes the work of Phase 4 in the development of the Arizona State Freight Plan and proposes a policy and strategies to help achieve the vision, goals and objectives of the Freight Plan.

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Opinions

Unless otherwise indicated, the opinions herein are those of the author and do not necessarily reflect the views of ADOT, the Technical Advisory Committee, the Freight Advisory Committee, or the State of Arizona.

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Executive Summary

The three overarching goals of the Arizona State Freight Plan are to 1) enhance economic competitiveness, 2) increase system performance, and 3) improve system management.

This Working Paper proposes a policy and strategies to achieve these goals and objectives. The policy and strategies were developed in alignment with relevant federal, state, and regional transportation policies and strategies, Arizona freight transportation system stakeholder interests, as well as best practices.

Common themes of federal, state and regional transportation policies and strategies which warrant appropriate consideration in the Arizona State Freight Plan include: preserving existing transportation assets in a state of good repair and corridor preservation; improving transportation system performance (reducing congestion, increasing ease of mobility) including through the introduction of innovation and new technologies; working in partnership to plan, fund and realize transportation system improvements; and, informing transportation plans and actions with research, data and performance measures –including but not necessarily limited to those prescribed by MAP-21.

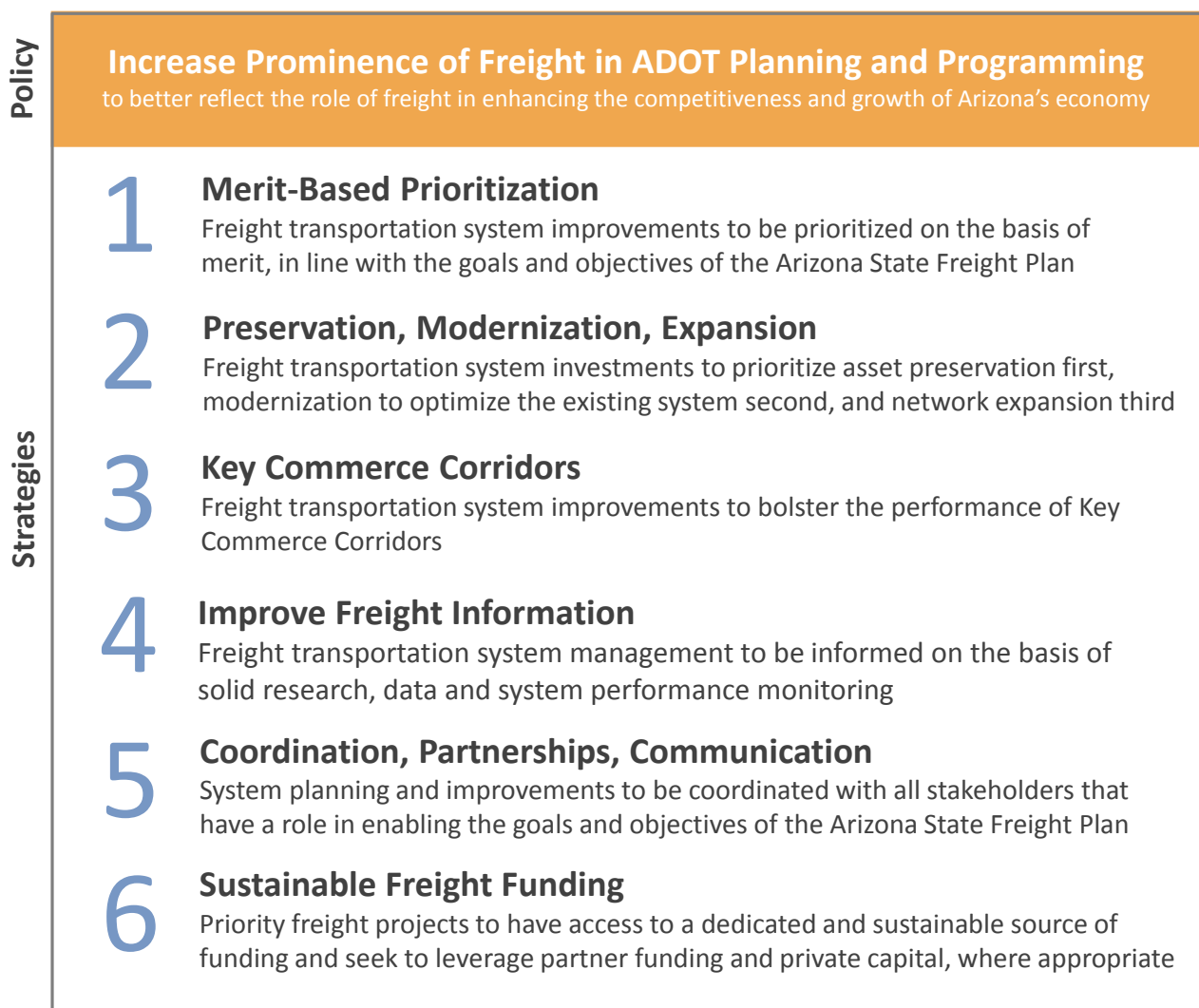
One of the fundamental and currently unresolved policy questions of the Arizona State Freight Plan pertains to the process by which identified freight transportation system improvements will be prioritized for investment. In line with the Arizona Long Range Transportation Plan (LRTP), the Arizona Department of Transportation (ADOT) currently uses its Planning to Programming (P2P) Link process for prioritizing programs and projects and tying these to the 5-Year Facilities Construction Program. However, as currently structured, the P2P Link prioritization process uses largely non-freight evaluation criteria, and would therefore supersede investment priorities identified in the Arizona State Freight Plan. This, combined with the fact that there are no dedicated sources of funding directly tied to freight in Arizona, could limit the potential efficacy of the Freight Plan.

To better reflect the role of freight in enhancing the competitiveness and growth of Arizona's economy, we propose a single, but very broad policy for the Arizona State Freight Plan:

To increase the prominence of freight in ADOT planning and programming.

In line with this policy, we have proposed six strategies to achieve the goals and objectives of the Arizona State Freight Plan. The sixth strategy, sustainable freight funding, would provide greater purpose and credibility to the Freight Plan and would go some way in increasing the prominence of freight in ADOT planning and programming.

Figure ES-1: Summary of Proposed Arizona State Freight Plan Policy and Strategies



Source: CPCS

The present working paper is provided for discussion, feedback and input from ADOT, the Technical Advisory Committee and Freight Advisory Committee. It will be revised based on this input, as appropriate.

What is important at this stage is to build consensus on the overarching policy to increase the prominence of freight in ADOT planning and programming and the strategies that will help realize the goals and objectives of the Freight Plan. These can also inform future updates to Arizona's LRTP.

With this consensus will come greater clarity on the best means of structuring and implementing the freight transportation system prioritization framework, and associated considerations, including as related to P2P Link, the related evaluation criteria, future updates to the LRTP, funding models, etc., which will be defined in a subsequent phase in the development of the Arizona State Freight Plan.

Acronyms / Abbreviations

ADOT	ARIZONA'S DEPARTMENT OF TRANSPORTATION
bqAZ	BUILDING A QUALITY ARIZONA
CBP	US CUSTOMS AND BORDER CONTROL
CMAQ	CONGESTION MITIGATION AND AIR QUALITY PROGRAM
EIB	EUROPEAN INVESTMENT BANK
EU	EUROPEAN UNION
FAHP	FEDERAL AID HIGHWAY PROGRAM
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FMSIB	FREIGHT MOBILITY STRATEGIC INVESTMENT BOARD
FRA	FEDERAL RAILROAD ADMINISTRATION
HSIP	FHWA HIGHWAY SAFETY IMPROVEMENT PROGRAM
HTF	HIGHWAY TRUST FUND
HURF	HIGHWAY USER REVENUE FUND
IRC	INTERREGIONAL CORRIDOR SYSTEM
LGTT	LOAN GUARANTEE INSTRUMENT FOR TEN-T PROJECTS
L RTP	ARIZONA'S LONG RANGE TRANSPORTATION PLAN
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS
MnDOT	MINNESOTA DOTs
MPD	ADOT'S MULTIMODAL PLANNING DIVISION
MPOs	METROPOLITAN PLANNING ORGANIZATIONS
NTSB	NATIONAL TRANSPORTATION SAFETY BOARD
P3	PUBLIC PRIVATE PARTNERSHIP
P2P	PLANNING TO PROGRAMMING
PAG	PIMA ASSOCIATION OF GOVERNMENTS
PCEs	PASSENGER CAR EQUIVALENT UNITS
PHMSA	PIPELINE AND HAZARDOUS MATERIAL SAFETY ADMINISTRATION
PL funds	FHWA METROPOLITAN PLANNING FUNDS
PPP	PUBLIC PRIVATE PARTNERSHIPS
PRNS	PROJECTS OF REGIONAL AND NATIONAL SIGNIFICANCE
RARF	REGIONAL AREA ROAD FUND
RIC	RECOMMENDED INVESTMENT CHOICE
SPR	FHWA STATE PLANNING AND RESEARCH
SSTP	STATEWIDE STRATEGIC TRANSPORTATION PLAN
STP	SURFACE TRANSPORTATION PROGRAM
TA	MAP-21 TRANSPORTATION ALTERNATIVES PROGRAM
TDM	TRANSPORTATION DEMAND MANAGEMENT
TEN-T	TRANS-EUROPEAN TRANSPORT NETWORK
TIFIA	TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT
TIGER	TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY
TTCA	ARIZONA TRANSPORTATION AND TRADE CORRIDOR ALLIANCE

1

Introduction

Key Messages

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

Phase 1 in the Freight Plan's development established a vision and associated goals and objectives for the Plan, focused on enhancing Arizona's economic competitiveness and quality growth through effective system performance and management.

This Working Paper, the output of Phase 4, proposes a policy and strategies that will help realize the Plan's goals and objectives.

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, which in turn contribute to their own competitiveness and growth, and 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 strategic guidance to achieve its vision, goals and objectives.

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

Figure 1-1: Arizona State Freight Plan Goals and Objectives



Source: CPCS

1.2 Project Objectives

The Freight Plan will define immediate and long-range freight 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 MAP-21. 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.

The 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 Freight Plan's vision, goals, and objectives, and notably, promote regional economic competitiveness and growth.

It should also inform broader transportation system planning in Arizona, including as related to future updates to the Long Range Transportation Plan (LRTP).

1.3 Purpose of this Working Paper

This Working Paper is the output of Phase 4 in the development of the Arizona State Freight Plan. Its aim is to define the policy and strategies that should guide the Freight Plan. Specifically, Phase 4 addresses the following key questions:

Which policy and strategies will enable ADOT planning and programming to enhance the competitiveness and quality growth of the Arizona's economy?

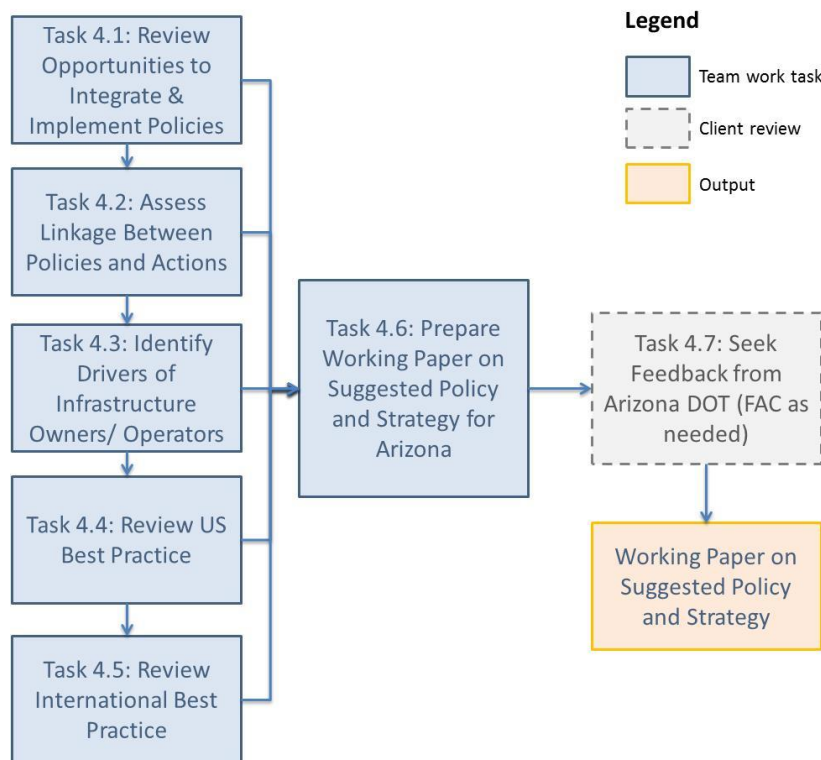
- How should recently developed freight policies and strategies—established at the federal, state, regional, and municipal level be integrated into the State Freight Plan?
- How should existing and proposed policies guide ADOT's current investment decision framework and operational improvement strategy, including by leveraging "Linking Planning to Programming (P2P) Process"?
- What are the roles and interests of relevant freight institutions in Arizona and the surrounding region—including nearby Mexican states—including public and private infrastructure owners and operators? How do these entities influence freight transportation policy, strategy and investment decisions in Arizona?
- What are best practices in freight transportation policies and strategies elsewhere in the US and internationally?
- How should the Freight Plan goals and objectives inform the prioritization of freight transportation system investments in Arizona?
- How do existing Arizona funding programs support freight related transportation activities and which best practices from other jurisdictions could be applied in Arizona?

1.4 Methodology

This Working Paper is informed by a combination of desk research and consultations with ADOT, and other Arizona freight transportation system stakeholders.

The figure below summarizes the key Phase 4 tasks, which follow from the above noted key questions.

Figure 1-2: Phase 4 Task Organization



2

Policy and Strategic Context for the Arizona State Freight Plan

Key Messages

While Federal, state, regional and municipal governments have different roles and responsibilities over the transportation system, their respective transportation policies and strategies share many common themes, which include for example, preserving existing transportation assets in a state of good repair and corridor preservation. These themes are largely in line with the goals and objectives of the Arizona State Freight Plan.

One of the fundamental and currently unresolved policy questions for the Arizona State Freight Plan pertains to the process by which identified freight transportation system improvements will be prioritized for investment. The Arizona Department of Transportation (ADOT) is beginning to use its Planning to Programming (P2P) Link process for prioritizing programs and projects and tying these to the 5-Year Facilities Construction Program. However, as currently structured, the P2P Link prioritization process uses largely non-freight evaluation criteria, and would therefore supersede investment priorities identified in the Arizona State Freight Plan. This, combined with the fact that there are no dedicated sources of funding directly tied to freight in Arizona, could limit the potential efficacy of the Freight Plan.

2.1 Federal, State, Regional and Municipal Policy and Strategic Context

The vision, goals and objectives of the Arizona State Freight Plan recognize and are in line with relevant federal, state, regional and municipal transportation goals and objectives, including those outlined in MAP-21, the Guiding Principles of Building a Quality Arizona (bqAZ), the goals set out in Arizona's Long Range Transportation Plan (LRTP), as well as goals and objectives outlined in other regional transportation plans.¹

The policies and strategies of the Arizona State Freight Plan – intended to help achieve the Plan's vision, goals and objectives – should likewise recognize and seek to be in line with relevant transportation policies and strategies at the federal, state and regional levels. As was done in developing the Plan's vision, goals and objectives, the team reviewed the same federal, state, regional and municipal policy documents and strategic plans² to ensure that these are appropriately reflected in the development of the policy and strategies of the Arizona State Freight Plan.

2.1.1 Federal Policies and Strategies

At the federal level, the US DOT's Strategic Business Plan for fiscal year (FY) 2014-2018 and MAP-21 focus on maintaining highway assets in a state of good repair, reducing congestion on the National Highway System (NHS), improving the reliability of surface transportation, increasing the efficiency and competitiveness of freight movements particularly as related to exports, safety, environmental sustainability and improving the delivery of infrastructure projects. Research and innovation and measuring and tracking performance are also central to federal policies and strategies relating to freight and transportation more broadly. Of particular note with respect to freight, MAP-21 calls for the designation of a primary freight network, which is now established,³ and the development of a National Freight Strategic Plan, which has not yet been finalized.

¹ A discussion of federal, state and regional goals and objectives, and how these related to the goals and objectives of the Arizona State Freight Plan, is documented in the Phase 1 Working Paper: [http://www.azdot.gov/docs/default-source/planning/State-Freight-Plan/14325-arizona-state-freight-plan-draft-working-paper-1-freight-vision-statement-goals-and-objectives-\(adot-mpd-085-14\)_4-17-15.pdf?sfvrsn=2](http://www.azdot.gov/docs/default-source/planning/State-Freight-Plan/14325-arizona-state-freight-plan-draft-working-paper-1-freight-vision-statement-goals-and-objectives-(adot-mpd-085-14)_4-17-15.pdf?sfvrsn=2)

² Transportation for a New Generations, U.S. DOT Strategic Plan for Fiscal Years 2014-2018; MAP-21; Arizona DOT's Strategic Plan; Building a Quality Arizona (bqAZ); What Moves You Arizona: Long-Range Transportation Plan (2010-2035), Arizona's Key Commerce Corridors (2014), Arizona State Rail Plan (2011), Arizona Multimodal Freight Analysis Study (2009), Maricopa Association of Governments (MAG) 2035 Regional Transportation Plan (2014), PIMA Association of Governments - Mobility matters throughout our lives: 2040 Regional Transportation Plan Update (2012), The TTCA Roadmap (2014)

³ Congressional Research Service, Surface Transportation Funding and Programs Under MAP-21: Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), <https://www.fas.org/sgp/crs/misc/R42762.pdf>

Federal Funding and Programs for Freight

In total, 44% of ADOT's program funding, or approximately \$697 million in 2014, comes from federal sources.⁴ The majority of these federal funds is allocated from the Federal Aid Highway Program (FAHP) which is funded through the Highway Trust Fund (HTF). The FAHP is composed of a variety of programs that have spending limitations by infrastructure system or project type. Of the federal funding received by Arizona, \$152 million was apportioned to Metropolitan Planning Organizations (MPOs) and Councils of Governments (COGs).

There is no freight specific funding provided through the FAHP. Freight projects compete with other highway infrastructure investment projects when states select project funding priorities. And while MAP 21 authorizes a higher Federal match (up to 95 percent) for freight improvement projects listed in a state freight plan (as described in section 1118 of MAP-21), this additional match does not provide significant new funding to Arizona because the state already receives an allocation of nearly 95 percent on FAHP projects.⁵

The federal Transportation Investment Generating Economic Recovery (TIGER) grant program and the Projects of Regional and National Significance (PRNS) program can also be applied to freight projects, though neither program has a freight-specific mandate. The TIGER program allows for funding of highway, port, and rail multimodal infrastructure that is difficult to fund through traditional funding sources. The PRNS program focuses funds on nationally significant freight corridors projects that improve the national economy. These programs enable freight investment by focusing on allowing the funding of all surface modes and assessing national economic impacts.

Other federal funding programs for which freight projects are eligible include the Transportation Infrastructure Finance and Innovation Act (TIFIA).⁶

2.1.2 Arizona Policies and Strategies

At the departmental level, ADOT's Strategic Plan⁷ focuses on ensuring the health of state transportation infrastructure, improving safety, leveraging innovation, and identifying sustainable funding sources, among other institutional priorities.

ADOT's LRTP, which seeks to guide investment choices in Arizona over the next 25 years, defines three investments categories: preservation, modernization and expansion, and provides strategic guidance by including a fiscally-constrained "Recommended Investment Choice" (RIC), defined at base line revenue. The RIC seeks to⁸:

⁴ ADOT 2014 Annual Report, http://azdot.gov/docs/default-source/businesslibraries/fms-annual-report-fy-2014_final.pdf?sfvrsn=4, p. 4

⁵ MAP 21 Fact Sheet, <http://www.fhwa.dot.gov/map21/factsheets/freight.cfm>

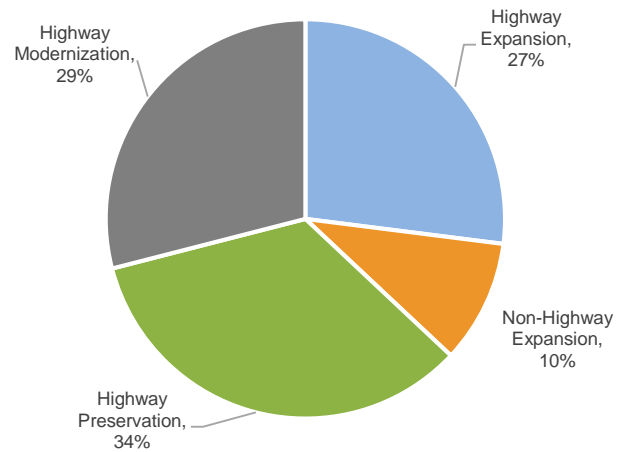
⁶ NCRP Report 1: http://onlinepubs.trb.org/onlinepubs/ncrrp/ncrrp_rpt_001.pdf

⁷ Arizona DOT Strategic Plan, <http://azdot.gov/docs/default-source/about/strategic-plan.pdf?sfvrsn=2>

⁸ What Moves You Arizona: Long-Range Transportation Plan (2010-2035), p. 8

- Preserve the State Highway System with few unmet highway preservation and rural transit needs;
- Improve mobility and accessibility through modest State Highway System expansion and funding support for mode choice, non-highway modes, and intermodal connectivity;
- Support economic development via rail and transit investment; and
- Increase safety and efficiency via system modernization.

Figure 2-1: LRTP Recommended Investment Choice – Funding Distribution



Source: LRTP, p. 7

The LRTP also defines more specific strategic priorities, many of which can be characterized as tactical in nature, including access management requirements for new developments, environmental considerations, Transportation Demand Management (TDM) to reduce congestion and enhance mobility⁹, and leveraging technology to improve transportation system management and operations. The strategies and policies in the LRTP are not freight specific, though many do implicitly apply to freight (for example, attaining a state of good repair for freight rail assets) or address passenger and freight transportation jointly (for example, “optimize mobility and reliability in the transportation of passengers and freight”¹⁰).

Freight specific strategies at the State level include those outlined in the 2009 Arizona Multimodal Freight Analysis Study (see adjacent box)¹¹, the Arizona State Rail Plan (2011) which includes freight and passenger rail strategies relating to safety, efficiency, economic

Strategic Responses Identified in 2009 Multimodal Freight Analysis Study

- 1: Coordinate Freight and Local Land Use Planning
- 2: Link Freight Planning to Economic Development
- 3: Preserve and Prioritize Key Freight Infrastructure
- 4: Seek Opportunities to Improve Freight Operations
- 5: Enhance Freight System Safety and Security
- 6: Environmental Preservation and Energy Efficiency

⁹ Mobility can be described as ease of movement throughout the transportation system

¹⁰ What Moves You Arizona: Long-Range Transportation Plan (2010-2035), p. 26

¹¹ Arizona Multimodal Freight Analysis Study (2009),

[http://wwwa.azdot.gov/ADOTLibrary/Multimodal Planning Division/Studies/Multimodal Freight Analysis-FR-0900.pdf](http://wwwa.azdot.gov/ADOTLibrary/Multimodal%20Planning%20Division/Studies/Multimodal%20Freight%20Analysis-FR-0900.pdf)

competitiveness among other aims¹², and the Key Commerce Corridors (2014) initiative, which in particular seeks to improve economic competitiveness and trade by improving mobility and transportation efficiency on key trade corridors.¹³ The implementation of these freight-related plans is however challenged by a lack of funding. It has been noted, for instance, that progress on the Key Commerce Corridors is unlikely to happen without a reliable and sustainable funding source.¹⁴

ADOT does not currently have a dedicated or sustainable funding mechanism for freight projects. Rather, identified freight priorities are evaluated against all other State transportation priorities in the allocation of funding pursuant to the Programming to Planning (P2P) Link prioritization process (discussed further in section 2.2.1).

ADOT Funding and Programs for Freight

ADOT's three main funding sources are the Highway User Revenue Fund (HURF), generated through fuel taxes and fees, the Regional Area Road Fund (RARF), generated from a ½ cent sales tax on business activities in Maricopa County, and Arizona's federal aid apportionment of the Highway Trust Fund. In 2014, these funding sources contributed approximately \$1.2 billion, \$360 million, and \$700 million¹⁵, respectively. Aviation and other sources also contribute to ADOT funding, albeit at more modest levels. Beyond funding, bonds are also used as a means of raising financing.¹⁶

ADOT's planning efforts include developing a Five-Year Transportation Facilities Construction Program, which is revised annually. This Program covers capital costs for highways, transit, airports and highway-support facilities.¹⁷ The program focuses on multimodal forms of transportation, though there are no dedicated funds for freight projects. ADOT is also prohibited from making contributions to freight railroad projects. Beyond the planning process, the Five-Year Construction Program, related construction contracts and funding is ultimately approved by the Governor-appointed, senate-confirmed State Transportation Board.¹⁸

¹² Arizona State Rail Plan (2011), <http://azdot.gov/docs/planning/state-rail-plan.pdf?sfvrsn=0>

¹³ Arizona's Key Commerce Corridors (2014), <http://azdot.gov/docs/default-source/planning/arizona-key-commerce-corridors-final-report.pdf?sfvrsn=0>

¹⁴ Roadmap Action Plans, http://www.azttca.org/Roadmap_Action_Plan.aspx

¹⁵ The future of funding from the Highway Trust Fund remains unclear given the Fund's fiscal challenges.

¹⁶ ADOT 2014 Annual Report, http://azdot.gov/docs/default-source/businesslibraries/fms-annual-report-fy-2014_final.pdf?sfvrsn=4

¹⁷ ADOT Transportation Programming summary, <http://azdot.gov/planning/transportation-programming>

¹⁸ Arizona State Transportation Board, <http://aztransportationboard.gov/about.asp>

2.1.3 Regional Policies and Strategies

At the regional level, federally-mandated MPOs play an important role in transportation planning. There are eight MPOs in Arizona; the two largest are the Maricopa Association of Governments (MAG) and Pima Association of Governments (PAG).

The strategic transportation priorities of MAG and PAG, as outlined in their Regional Transportation Plans, are not surprisingly much more focused on municipal and regional issues than federal and state priorities. They include defining priority corridors, consideration of social and community impacts, public and private funding participation, a performance based process for assessing alternative investments, and making use of state-of-the-art, cost-effective delivery of transportation services and facilities.¹⁹

Regional Funding and Programs for Freight

MAG and PAG receive the majority (75% or more) of their funding from federal sources, with remaining revenues from the State and local sources revenues.²⁰ The largest pool of federal funding for MPOs comes from FHWA Metropolitan Planning funds (PL funds)²¹ and FTA Metropolitan Transportation Planning (Section 5303)²² funds. Both types of funding are distributed to MPOs via the State DOT (typically they are combined into one transportation planning funding stream). Some MPOs also use flexible funding from the federal Surface Transportation Program (STP) – Urban Allocation²³, and Congestion Mitigation and Air Quality program (CMAQ).²⁴ Again, these are channeled through the State DOT.

None of these sources of federal funding is dedicated to freight, though freight-related activities can be supported through the programs. In particular, PL funds and Section 5303 funds can support projects and strategies that “Increase the accessibility and mobility of people and for freight” and “Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight”²⁵ (among other scope areas).

Of note, MAP-21 left metropolitan transportation planning requirements much as they were before MAP-21. The biggest change in metropolitan planning from MAP-21 is a

¹⁹ MAG and PAG Regional Transportation Plans (RTPs)

²⁰ MAG Programs in Brief (<https://www.azmag.gov/Projects/Project.asp?CMSID=3558>) and PAG Annual Reports (<http://www.pagregion.com/AboutPAG/AnnualReports/tabid/150/Default.aspx>)

²¹ Title 23 U.S.C. Section 134

²² Title 49, U.S.C. Section 5303

²³ Surface Transportation Program (STP) funds can be used on any federal-aid highway, on bridge projects on any public roads, on transit capital projects, on non-motorized paths, and on bridge and tunnel inspector training. <http://www.fhwa.dot.gov/map21/factsheets/stp.cfm>

²⁴ Federal Highway Administration “Staffing and Administrative Capacity of Metropolitan Planning Organizations”, May 2010. http://www.planning.dot.gov/documents/Staffing_Administrative_Capacity_MPOs.pdf

²⁵ Statutory Reference: Title 49 U.S.C. Section 5303-Metropolitan Planning ((h)(1)(D) and (F)), and Title 23 U.S.C. Section 134-Metropolitan Transportation Planning ((h)(1)(D) and (F)). See also: FTA Metropolitan & Statewide Planning Program Overview. http://www.fta.dot.gov/grants/13093_3563.html

requirement for MPO plans to use a performance-based approach and include performance targets to measure performance in support of national goals.²⁶

In addition to funding provided by federal law to the greater Phoenix and Tucson areas, ADOT also provides federal funds on a discretionary basis to Arizona's 12 COGs and MPOs.²⁷ For example, in addition to the PL, STP and CMAQ funds noted above, MAG and PAG receive federal funds via ADOT from the FHWA Highway Safety Improvement Program (HSIP), FHWA State Planning and Research (SPR), and the MAP-21 Transportation Alternatives Program (TA)²⁸. None of these funding streams are dedicated to freight transportation activities.

2.1.4 Municipal Policies and Strategies

At the municipal level, transportation strategies largely relate to the movement of people, including a major focus on transit. Strategies also extend to airports, which in many cases are owned and operated by municipalities, including most notably Arizona's largest airport, Sky Harbor, which is owned and operated by the City of Phoenix, and the Tucson International Airport, which is owned by the City of Tucson.

Beyond general city planning strategies, key themes in infrastructure strategies at the municipal level include, for the City of Phoenix, for example, maintaining existing infrastructure in a state of good repair, maintaining local access to city owned and operated aviation facilities enhancing or expanding internal airport transportation systems, and, more specific to freight, coordinating and participating in planning efforts relating to expansion plans of freight corridors and the development of heavy rail links to and from state destinations.²⁹

²⁶ Congressional Research Service, "Surface Transportation Funding and Programs Under MAP-21: Moving Ahead for Progress in the 21st Century Act (P.S. 112-141), September 27, 2012. <https://www.fas.org/sgp/crs/misc/R42762.pdf>. See also, US DOT FTA "MAP-21 Fact Sheet: Metropolitan & Statewide and Nonmetropolitan Transportation Planning Section 5303, Section 5305, Section 5305". http://www.fta.dot.gov/documents/MAP-21_Fact_Sheet_-_Metropolitan_and_Statewide_and_Nonmetropolitan_Transportation_Planning.pdf

²⁷ See ADOT Financial Management Services, Transportation Funding information. <http://www.azdot.gov/about/FinancialManagementServices/transportation-funding/federal-aid-highway-program>

²⁸ The Technical Alternatives Program provides funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways. <http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm>

²⁹ City of Phoenix, Infrastructure Strategic Plan, <https://www.phoenix.gov/citymanager/strategicplan/study-areas/infrastructure>

Municipal Funding

Municipal funding is largely derived from taxes (excise, property), operating and capital grants and contributions from the State and federal government, and charges for services. Bonding is also used to raise financing. Generally, transportation is funded from the General fund, along with other municipal functions.

In 2014, the City of Phoenix made capital grants and contributions for transportation and aviation totaling over \$140 million and close to \$110 million, respectively, accounting for the largest share of City contributions in that year. In Tucson, total capital grants and contributions for transportation in 2014 totaled over \$100 million³⁰.

There are no freight specific funding programs at the municipal level, though it is rare that municipalities fund freight programs in the US, beyond exceptions in some of the largest cities (for example, the CREATE program in Chicago).

2.1.5 Other Relevant Policies and Strategies

The Arizona Transportation and Trade Corridor Alliance (TTCA), which comprises state and local governments, planning organizations, and transportation and logistics companies, among others, has developed a strategic framework for increasing statewide collaboration and awareness of issues and opportunities to bolster trade, transportation, logistics and supply chain performance.

The TTCA's "Roadmap" outlines a number of strategies to bolster Arizona's economic competitiveness and trade by improving system integration and key commerce corridors. TTCA strategies also focus on specific initiatives, such as developing multimodal logistics hubs, and developing an air cargo strategy. The Roadmap also stresses the importance of collecting and maintaining data and performance measures, particularly in terms of the return on investment of system improvements.³¹

Although the strategies outlined in the TTCA's Roadmap provide a valuable framework for addressing issues and opportunities to bolster economic competitiveness and trade – and hence directly relevant to the Arizona State Freight Plan – no funding is currently in place to execute these strategies.

2.1.6 Common Themes in Federal, State and Regional Policies and Strategies

The Arizona State Freight Plan should seek to align with relevant transportation policies and strategies at the federal, state and regional levels.

³⁰ City of Tucson Annual Financial Report, 2014, http://www.tucsonaz.gov/files/finance/2014_CAFR_Book_CD.pdf

³¹ Roadmap Action Plans, http://www.azttca.org/Roadmap_Action_Plan.aspx

Based on the foregoing discussion informed through the review of the policy, strategy and planning documents, the policies and strategies of transportation agencies at the federal, state and regional level share several common themes:

- Preserving existing transportation assets in a state of good repair and corridor preservation;
- Improving transportation system performance (reducing congestion, increasing mobility) including through the introduction of innovation, new technologies;
- Linking transportation planning and investment to land use;
- Working in partnerships to plan, fund and realize transportation system improvements; and,
- Informing transportation plans and actions with research, data and performance measures.

Figure 2-2: Overview of Explicit Policies and Strategies in Selected Federal, State and Regional Transportation Policy and Planning Documents

Common Themes in Federal, State and Regional Transportation Policies and Strategies	US DOT Strategy for FY 2014-18	MAP-21	bqAZ	Arizona L RTP	Arizona KCCs	Arizona State Rail Plan	Arizona Multi-modal Freight Analysis Study	MAG RTP	PAG RTP	TTCA Roadmap
Preserving existing transportation assets in a state of good repair and corridor preservation	✓	✓		✓		✓	✓			
Improving transportation system performance including through the introduction of innovation, new technologies	✓	✓	✓	✓	✓	✓	✓		✓	✓
Linking transportation planning and investment to land use	✓		✓	✓		✓	✓	✓	✓	✓
Working in partnerships to plan, fund and realize transportation system improvements	✓	✓		✓	✓	✓	✓		✓	✓
Informing transportation plans and actions with research, data and performance measures	✓	✓	✓	✓		✓	✓		✓	✓

The Arizona State Freight Plan's policies and strategies should appropriately reflect these common themes, which are already in line with the goals and objectives of the Freight Plan.

Of note, there are no freight specific funding programs at federal, state, regional and municipal levels. Rather, programs and projects which can benefit freight are for the most part considered and funded no differently than other transportation programs and projects.

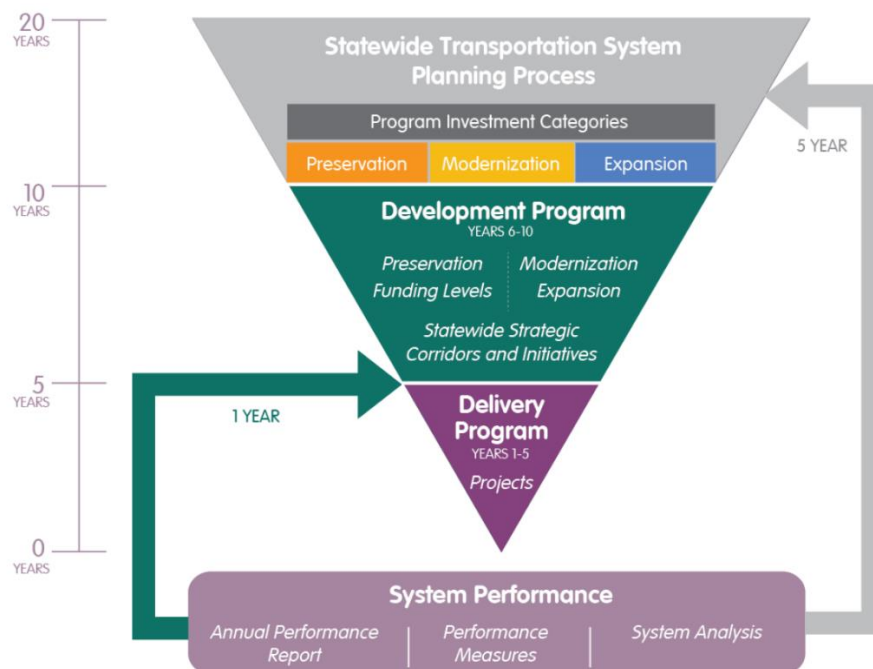
2.2 Tying the Arizona State Freight Plan to Arizona's Planning and Programming Process

2.2.1 Planning to Programing (P2P) Link

Introduced in 2014, P2P Link is Arizona's process for linking identified transportation projects identified by performance based analyses to the 5-Year Facilities Construction Program.³² Developed collaboratively by representatives of ADOT, the Federal Highway Administration (FHWA), and metropolitan planning organization (MPOs)/Council of Governments (COGs), P2P Link is a performance-based approach to prioritizing programs and projects that will deliver the greatest benefit with respect to state transportation performance objectives, given available funding.³³

P2P Link recognizes ADOT's programming process and connects the visioning in bqAZ and the goals of the Arizona LRTP in a way that is "transparent, defensible, logical, and reproducible"³⁴. The P2P Link process consists of five key components and defines three program investment categories: preservation, modernization and expansion, in line with the LRTP, as summarized in the figure below.

Figure 2-3: P2P Link Framework



Source: ADOT, P2P Link – Methodologies and Implementation Plan, June 2014

³² As a new programming framework, P2P Link is expected to be refined over the next planning and programming cycles

³³ ADOT, P2P Link – Methodologies and Implementation Plan, June 2014, p. ES 1, <http://azdot.gov/docs/default-source/planning/p2p-methodologies-implementation.pdf?sfvrsn=4>

³⁴ ADOT, P2P Link – Methodologies and Implementation Plan, June 2014, p. 5, <http://azdot.gov/docs/default-source/planning/p2p-methodologies-implementation.pdf?sfvrsn=4>

As with the LRTP, the P2P Link is largely focused on highways, bridges, and related facilities, though non-highway programs and projects are also considered in the P2P Link prioritization process.

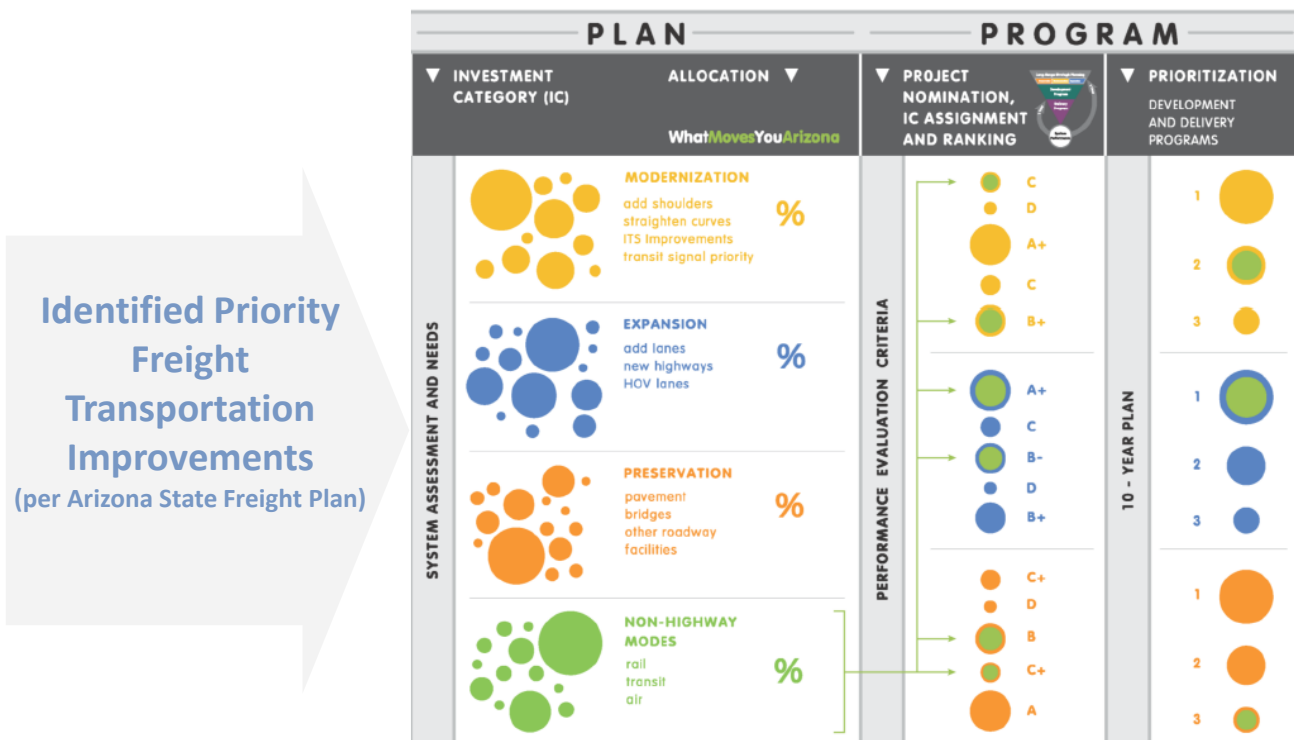
Central to the P2P Link is the commitment to measure and assess system performance on an annual basis against established targets in the LRTP. Presumably, the performance metrics set out in the Arizona State Freight Plan will likewise be used to track performance against freight targets in line with the requirements of P2P Link.

We understand from consultations with ADOT that the P2P Link process is broadly accepted and there is institutional commitment to this process as the way forward, notwithstanding potential refinements to the P2P Link process over the coming planning and programming cycles. The Arizona State Freight Plan may also inform refinements to the P2P Link and associated evaluation criteria. The update to the LRTP will provide a similar opportunity.

2.2.2 Where does the Arizona State Freight Plan Fit in with P2P Link?

The Arizona State Freight Plan will identify long term priority programs and projects that will benefit freight transportation in Arizona. These will then be screened through the P2P Link process, along with all other non-freight related projects, within the preservation, modernization and expansion program investment categories (each category will be evaluated separately), in line with the figure below.

Figure 2-4: Arizona State Freight Plan Priorities and the P2P Link Framework



Source: Adapted from P2P Link

Note: The "non-highway modes" category is no longer assessed separately, but rather within preservation, modernization and expansion categories

We understand from discussions with ADOT that the prioritization process for preservation, modernization, and expansion investment categories will be evaluated on technical and policy merits, each having equal weighting. 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.

2.2.3 Opportunities to Better Recognize the Importance of Freight to Arizona's Economy in the P2P Link and Future Updates to the LRTP

The development of the Arizona State Freight Plan provides a valuable opportunity to increase the prominence of freight in ADOT planning and programming – both in future updates of the LRTP and in refinement of the P2P Link prioritization process.

Because the implementation of the LRTP is tied to the P2P Link prioritization framework, the Freight Plan has the opportunity to help refine the P2P approach to better recognize the importance of freight transportation to Arizona's economy as well as how freight relates to modal trade-offs (e.g. freight vs. transit) of system needs within the LRTP. The sequence of the Freight Plan (ahead of the next update of the LRTP) also presents an opportunity to define and introduce methods to assess freight impacts and system performance within the P2P Link evaluation framework to better define freight project priorities in the context of overall statewide needs.

Consideration to revising the P2P Link prioritization process and related evaluation criteria may be appropriate if the Arizona State Freight Plan is to be an effective guiding document for prioritizing freight transportation system investments. Other options for prioritizing freight transportation system improvements, potentially including a separate evaluation process from the P2P Link specific to freight and tied to freight funding, could also be considered.

3

Stakeholder Interests and the Arizona State Freight Plan

Key Messages

Notwithstanding general agreement on the visions, goals and objectives of the Arizona State Freight Plan, the interests, resources and constraints that influence freight transportation system decisions vary greatly by stakeholder. To be effective, the policies and strategies of the Arizona State Freight Plan must recognize, appropriately reflect and where possible leverage these differences. This can be done by:

1. Regular and sustained engagement with freight transportation system stakeholders throughout the development and implementation of the Freight Plan to recognize their interests and to ensure their buy-in. This will take regular communication and outreach.
2. Aligning the policies, strategies and associated priorities of the Freight Plan with the interests of the stakeholders that will be charged with, or otherwise have a role in, its implementation.

3.1 Key Drivers Influencing Freight System Planning

3.1.1 Motivations and Interests Are Different Among Stakeholders

The many stakeholders of Arizona's freight transportation system would likely agree that the pursuit of enhanced economic competitiveness, increased system performance and increased system management are laudable goals. Where stakeholders may differ, is in the means of achieving these goals.

Indeed, the needs, interests, motivations, powers and constraints of different stakeholder groups differ greatly. For instance, while Arizona based shippers seek faster, lower cost and more reliable transportation service, carriers, including railroads for instance, generally seek to optimize the utilization of their assets to drive their own profitability. Public sector entities typically exist to protect and promote the interests of the public, with a defined set of priorities to be achieved within a limited budget, though different levels of government have different roles and responsibilities over the freight transportation system, not to mention different internal drivers at bureaucratic and political levels.

Multiple Stakeholder Interests

Freight Shippers: Faster, cheaper, more reliable

Consumers: Right price, right place, right time

Carriers: Maximize utilization of assets, profits

Society: Maximize benefits, minimize impacts

Government: Enable all of the above

(With limited resources, differing priorities)

Nevertheless, the actions of these stakeholders reflect their driving interests, whether established through constitution, legislation, by-laws, and shareholder agreements or otherwise. To be effective, the policies and strategies of the Arizona State Freight Plan must recognize, appropriately reflect, and where possible leverage these differences. This can be accomplished by:

1. **Regular and sustained engagement with freight transportation system stakeholders** throughout the development and implementation of the Freight Plan to recognize their interests and to ensure their agreement and commitment. This will take regular communication and outreach.
2. **Aligning the policies, strategies and associated priorities of the Freight Plan with the interests of the stakeholders that will be charged with, or otherwise have a role in, its implementation.** This will facilitate coordination and partnerships in planning and realizing freight transportation system preservation projects and other improvements identified by the Freight Plan, and potentially also facilitate joint funding and financing, where interests are in line. A road/rail crossing is an example of a project that can align the interests of the public sector (reduced congestion, increased safety) and those of the private railroads (increased fluidity). Conversely, the Freight Plan should avoid advancing projects which ignore or fundamentally contradict the interests of a key stakeholder. A new rail served multimodal logistics facility, for instance will not succeed unless in line with railroad commercial interests.

The following figure summarizes the major stakeholder groups involved with or impacted by the freight transportation system in Arizona, as well as their primary motivations and the means and extent of their influence on freight transportation system planning in Arizona.

Figure 3-1: Key Decision Makers and Stakeholders of Arizona's Freight Transportation System and they Driving Interests

Key Decision-Makers / Stakeholders	Driving Motivations/Interests vis-à-vis Transportation System	Means and Extent of Influence over Freight Transportation System
Private Sector		
Freight shippers , including: <ul style="list-style-type: none"> • Retailers/ wholesalers • Manufacturers • Mining and energy companies • Agriculture producers 	<ul style="list-style-type: none"> • Faster, cheaper, and/or more reliable transportation service to source inputs/reach markets • Transportation to enable competitiveness, which in turn can drive profitability for owner / shareholders 	<ul style="list-style-type: none"> • Decisions to locate/invest in Arizona, including extent to which location decisions are tied to sector-specific clusters, access to transportation system • Moderate influence through lobbying strength, which likely is a function of economic importance.
Carriers, other service providers , including: <ul style="list-style-type: none"> • Railroads (e.g. BNSF, Union Pacific, short lines) • Trucking companies (local, national, international) • Airlines • Pipeline companies • Freight forwarders / logistics companies 	<ul style="list-style-type: none"> • Competitiveness and market share growth • Maximizing the utilization of their assets • Profitability for owner / shareholders • Other strategic interests (network / market expansion) 	<ul style="list-style-type: none"> • Service levels to Arizona shippers • Decisions to invest and operate in Arizona and linkages to other transportation facilities. Investment/expansion decisions based on commercial factors • Moderate influence through lobbying strength and importance of efficient and safe transportation to Arizona's economy
Government / Public Infrastructure Owners		
Federal agencies , including: <ul style="list-style-type: none"> • Federal Highway Administration (FHWA) • US Department of Transportation (DOT) • Federal Railroad Administration (FRA) • Federal Motor Carrier Safety Administration (FMCSA) • Pipeline and Hazardous Material Safety Administration (PHMSA) • Federal Aviation Administration (FAA) • National Transportation Safety Board (NTSB) • US Customs and Border Patrol (CBP) • US Environmental Protection Agency (EPA) 	<ul style="list-style-type: none"> • Preserving existing assets in a state of good repair and preserving key future corridors • Maximize public benefits including economic competitiveness • Minimize negative externalities (e.g. congestion, emissions, accidents, unanticipated consequences to other sectors of society) • Political considerations (e.g. balance of national vs. regional interests, votes) 	<ul style="list-style-type: none"> • High influence through federal policy, funding allocations, federal laws, and regulations (within scope of constitutional / legal purpose of agency) • MAP-21 freight plan guidance
State agencies and functions , including <ul style="list-style-type: none"> • Arizona Department of Transportation (ADOT) • Arizona State Transportation Board • Arizona Department of Public Safety • Arizona Department of Environmental Quality • Governor's Office • Legislature 	<ul style="list-style-type: none"> • As above, but with particular focus at the state level • Coordination of transportation system with economic development plans 	<ul style="list-style-type: none"> • High influence through state policy, funding allocations, state laws and regulations (within scope of constitutional / legal purpose of agency)

Regional/Municipal <ul style="list-style-type: none"> Metropolitan Planning Organizations Cities (e.g. Phoenix, Tucson, Yuma, Kingman) 	<ul style="list-style-type: none"> As above, but will additional focus on municipal / regional levels Coordination with local economic development plans 	<ul style="list-style-type: none"> High influence, particularly as related to land use planning, investment and maintenance of local roads and urban freight flows (first and last mile) Planning and investment in airports (e.g. Sky Harbor, Tucson International Airport)
Mexican transportation, road, rail and border authorities	<ul style="list-style-type: none"> Increased trade National economy / jobs National security 	<ul style="list-style-type: none"> Low direct influence, but they are very important partners, given need for synergies in cross-border freight planning (e.g. border patrols, harmonized regulations for truck dimensions/weights, etc.)
General Public		
Consumers <ul style="list-style-type: none"> Companies purchasing cargo / produce Wholesalers / Hardware / Retail companies Manufacturing companies purchasing inputs 	<ul style="list-style-type: none"> Receiving cargo at right price, right place, right time 	<ul style="list-style-type: none"> Population influences consumption patterns which drive freight Limited influence – these end users depend on carriers to make efforts to be competitive and win their business (cost, transit time, reliability)
Society <ul style="list-style-type: none"> Citizens Taxpayers 	<ul style="list-style-type: none"> Maximize benefits and minimize impacts from traffic, noise, safety, pollution Public concerns regarding additional freight flows and investments in new infrastructure / encroachment Understanding and appropriately reflecting tribal interests and concerns Desire for equity in public spending (e.g. transport vs. education vs. health vs. job creation) 	<ul style="list-style-type: none"> Varied: Limited influence on federal policy, strategy and investment decisions, but influence increases as decisions affect areas “closer to home” (e.g. vocal citizens can typically have greater influence on municipal road investment decisions vs. federal highway planning).

4

National and International Best Practices in Freight Policies and Strategies

Key Messages

US and international best practices in freight transportation policies and strategies include:

- Increasing the profile of freight in long range transportation planning
- Strategic focus on multimodal freight corridors
- Merit-based approach to prioritizing freight transportation system improvements
- Engagement and partnerships to define and realize improvements
- Dedicated funding for freight improvement projects

These best practices will be reflected in the policy and strategies of the Arizona State Freight Plan, as appropriate.

4.1 Best Practices in State Freight Plans

The freight plans of several states as well as two best practices synthesis studies were reviewed to identify best practice in freight policies and strategies, and related lessons for the Arizona State Freight Plan. The most relevant findings are summarized below.³⁵

Integration of Freight in broader state transportation planning: To establish lasting impact, the Freight Plan should outline strategies and activities to promote freight within and external to the DOT. For example, involving freight staff in projects beyond those traditionally considered freight focused or in the case of Louisiana the creation of an Office of Multimodal Commerce created in 2014 and charged with administering planning on strategic and intermodal issues including aviation, commercial trucking, mass transit, port and water transportation systems.³⁶

Develop a freight champion: This person is a key high-level official to advocate freight projects and policies. This person understands the importance of freight and has access to the venues to convey its importance to other executive level decision makers. Examples include the Secretary involvement in the Freight Advisory Committee in Virginia and regular reports to the DOT Commissioner on freight in Indiana.

Freight outreach document: As an outreach and communication document, the Freight Plan should include an easy to read and visually appealing executive summary. The executive summary makes a case for why freight matters to a state along with the issues and needs. For example, Georgia articulates a succinct executive summary overviewing the importance, needs and projects developed in the freight plan.

Elevated to long-range planning process: Elevate freight projects to reflect their economic importance by defining the process, challenges and opportunities to getting freight projects into and appropriately ranked in Statewide Transportation Investment Plans. For example, Kentucky gives additional points in project prioritization to projects that fall on freight corridors or have a freight focus.

Focus on economic competitiveness: Relating the state's economy to the transportation system develops the link between economic development and freight transportation investment. An effective means of doing this is through an assessment of the needs and issues of freight transportation system users. For example, case studies provide an opportunity to understand the decisions of users of transportation infrastructure and to display the systems impact on their operations.

Stakeholder engagement: Engage freight stakeholders in both public and private sectors to ensure project development meets local, regional, state and private sector needs. These

³⁵ A more expansive summary of this review is included in Appendix A.

³⁶ The role of the Office of Multimodal Commerce being defined through legislation in Louisiana, but it represents a state effort to create an office dedicated to freight issues with a direct connection to industry and input on planning.

activities encompass formal freight advisory committees as well as informal outreach to the transportation industry and

Freight funding opportunities: The funding of freight priorities on roadways as well as those that enhance rail, water and air freight are important to the implementation of a freight plan. As such, freight plans should explore traditional and non-traditional sources to fund freight projects. For example, Washington created the Freight Mobility Strategic Investment Board (FMSIB) to dedicate freight specific funding to projects that are on a strategic freight corridor and reduce barriers, increase capacity or mitigate freight's impact on communities.³⁷ Other states such as Michigan and Pennsylvania, have rail specific programs that provide grants or loans to freight projects facilitating the movement of freight from specific businesses.

4.2 International Best Practices in Freight Transportation Policies and Strategies

The research team also undertook a global scan of policies, strategies and related investment programs specific to strategic freight plans and programs in Canada, Australia, the European Union and Mexico. Identified best practices and related lessons for the policies and strategies of the Arizona State Freight Plan include those presented below.³⁸

Clear, broadly communicated, and widely accepted guiding policies and strategies: A well-defined policy for investments in freight transportation and broad understanding of how this fits into an overarching freight plan can help coalesce stakeholder support and facilitate the identification of common priorities. The policies and strategies of the Canadian Gateways and Corridors program, for example, established a set of policy lenses that helped provide a baseline to identify key corridors of strategic importance. Likewise in the Auslink program in Australia was established through a high profile policy and accompanying long-term transport plan focused on corridor development. The policies and strategies of the Arizona State Freight Plan should likewise be clear in their intentions, broadly communicated and serve as focal point in discussing freight transportation investment priorities in Arizona.

Focus on multimodal freight corridors: A strategic focus on corridors helps centre improvements on the critical linkages that can best support domestic and international trade. This strategic corridors focus is central to the freight programs reviewed in Canada, Australia, the EU and Mexico. A common feature of this corridors approach is a multimodal perspective. For example, at the policy level, Canada's Gateways and Corridors program emphasized the whole transportation system, rather than focusing on any particular mode or element. By removing modal silos, Canada was able to consider broader goals such as roles of technology, environmental stewardship and security.

³⁷ Wash. Rev. Code § 47.06A 20.

³⁸ A more expansive summary of the global scan is included in Appendix B.

Partnerships with stakeholders: A key feature of successful freight programs was the establishment of partnerships between the public and private sector (industry stakeholders) in identifying issues and priorities. In some cases (e.g. Canada) this was achieved through a more formal Memorandum of Understanding, though the establishment of a Freight Advisory Committee, as is already in place in Arizona is also considered a best practice. The major value added by such partnerships has been the additional information that partners bring to the table, particularly in terms of what is practical and realistic in terms of industry and community practices. Partnerships can also facilitate buy-in and support for a freight plan, though this requires active engagement, rather than passive participation. Arizona should leverage the FAC and promote their active participation in the freight planning process.

Merit-based approach to project prioritization: A merit-based approach to project prioritization and selection can increase the likelihood of funding projects and improvements which can best advance freight goals and objectives. A merit-based approach can also help reduce the likelihood that projects will be selected on the basis of political considerations that stray outside the scope a strategic infrastructure plan. Both the Canadian Gateways and Border Crossings Program and Australian Auslink Program use a strategic merit-based test to identify the extent to which investment options advance the overarching goals, policies and strategies of these programs. As is done in the EU as part of the TEN-T program, this merit-based assessment should be underpinned by market fundamentals and analytics, including improving the quality and application of market and traffic data used in project selection. System improvements identified as part of the Arizona State Freight plan process should likewise be evaluated on a merit-based approach, grounded in objective, transparent facts and market analysis that correspond to the goals and objectives of the Freight Plan.

Funding: Although not all specific to freight, many of the international corridor programs reviewed had one or more related funding programs dedicated to corridor-level projects and improvements. The Canadian model included funds under the Gateway and Border Crossings Fund and Asia Pacific Gateway and Corridor Initiative Fund specific to freight projects, totalling over C\$3 Billion (US\$2.5 Billion). Broader corridor-level funding programs in the EU (Connecting Europe Facility), Australia (National Land Transport Plan) also provide examples of funding programs for investments that will help advance multimodal, corridor-level improvements. There are no parallel freight or corridor-focused funding programs in Arizona at the moment, meaning that freight priorities will compete for funding with all other ADOT surface transportation projects, pursuant to the P2P Link process.

The identified best practices discussed in this chapter are reflected, as appropriate, in the proposed policy and strategies of the Arizona State Freight Plan, presented in the following chapter.

5

Proposed Arizona State Freight Plan Policy and Strategies

Key Messages

To better reflect the important role of freight in enhancing the competitiveness and growth of Arizona's economy in ADOT planning and programming, we propose a single, but very broad policy for the Arizona State Freight Plan:

To increase the prominence of freight in ADOT planning and programming.

In keeping with this policy, six strategies have been proposed to achieve the goals and objectives of the Arizona State Freight Plan. These strategies are anchored and given increased prominence in ADOT planning and programming through the sixth strategy, sustainable freight funding.

5.1 Summary of Policy and Strategy Considerations

Three considerations must be reflected in the policies and strategies of the Arizona State Freight Plan.

- They should provide a clear and practical framework for achieving the Plan’s vision, goals and objectives.
- They should appropriately reflect other relevant policies and strategies at the federal, state and regional levels, including Arizona’s LRTP and the P2P Link process.
- They should recognize the roles, interests and constraints of the stakeholder that influence the freight transportation system in Arizona, including public and private sector infrastructure owners and service providers.

Best practices in freight planning policies and strategies elsewhere in the US and internationally also provide guidance in developing the policies and strategies that will guide the Arizona State Freight Plan.

5.2 Policy

ADOT’s current LRTP and P2P Link approach to prioritizing programs and projects does not lend sufficient weight to the importance of freight, and the potential for freight transportation system investments to enhance the competitiveness and growth of Arizona’s economy, as exemplified by the limited profile of freight in the P2P Link evaluation criteria.

The Arizona State Freight Plan provides an opportunity to address this limitation.

To better reflect the role of freight in enhancing the competitiveness and growth of Arizona’s economy, we have proposed a single, simple Arizona State Freight Plan policy:

To increase the prominence of freight in ADOT planning and programming.

5.3 Strategies

We have proposed six concrete strategies for achieving the goals and objectives of the Arizona State Freight Plan. These six strategies are in line with federal, state and regional strategies, reflect the roles and interest of freight transportation system stakeholders, and borrow from best practices in freight planning efforts elsewhere in the US and internationally.

Strategy 1: Merit-Based Prioritization

Freight transportation system improvements to be prioritized on the basis of merit, in line with the goals and objectives of the Arizona State Freight Plan.

Freight transportation system improvements should be evaluated and prioritized using an objective, transparent and broadly accepted set of criteria directly linked to the economic competitiveness and system performance goals and objectives of the Arizona State Freight Plan.

Figure 5-1: Performance-Based Goals and Objectives of the freight Plan Goals and Objectives



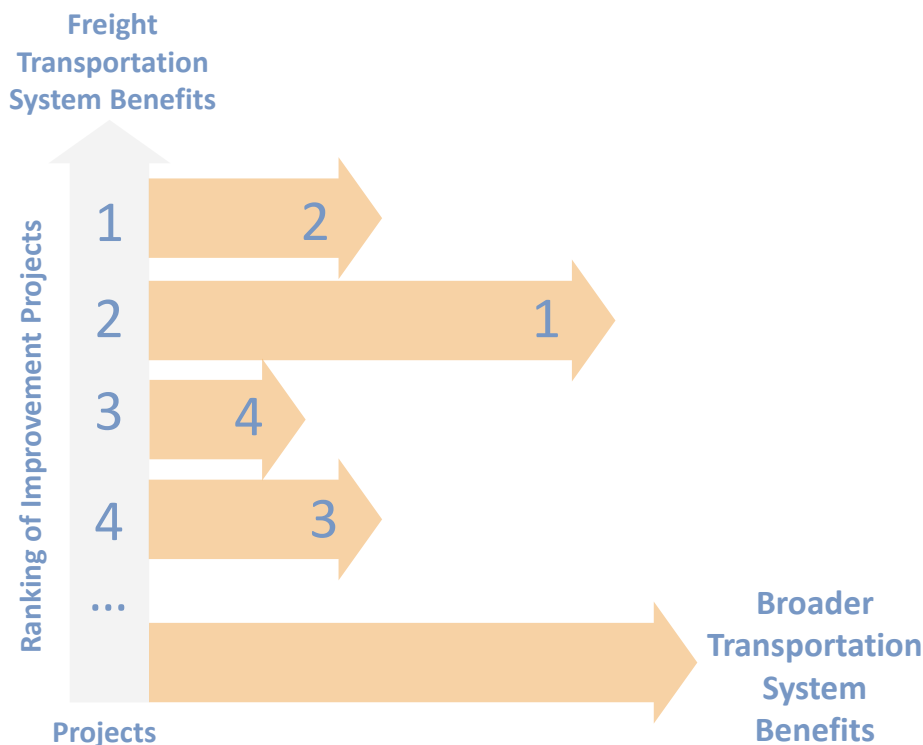
All identified freight transportation investment options should be initially screened on qualitative merits vis-vis these goals and objectives, with subsequent more detailed business case and benefit cost assessments of those projects passing this initial screening process.

Project Merits Should Look Beyond Freight Benefits

Because much of the freight transportation system is shared with passengers (notably highways), broader transportation system benefits should also be considered in prioritizing improvement projects.

The practical implication for the Freight Plan is that recognition of broader transportation system benefits may result in a different prioritization of freight improvement projects, as summarized in the conceptual graphic below.

Figure 5-2: Conceptual Comparison of Ranking of Freight Improvement Projects using Freight Specific Benefits Only (left) vs. Broader Transportation System Benefit Considerations (right)



Source: CPCS

At this stage, it is pre-mature to define how the merit-based prioritization framework will be structure and implemented, as well as the related evaluation criteria. This will be done in the context of Phase 9 (Define the Decision Making Process and Prioritization Framework). Nevertheless Section 5.4 provide merit-based considerations for evaluating potential freight transportation system improvements relative to the goals and objectives of the Freight Plan.

Strategy 2: Preservation, Modernization, Expansion:

Freight transportation system investments to prioritize asset preservation first, modernization to optimize the existing system second, and network expansion third.

The foundational goal of the Arizona State Freight Plan is improving system management. Maintaining existing assets in a state of good repair is a basic principle of good system management and can ensure the continued performance of existing facilities while minimizing the cost of these assets over their lifecycle.

Beyond preserving existing assets, the Arizona State Freight plan should prioritize system modernization investments that provide cost-effective means of optimizing the performance of existing assets. This can be done by leveraging technologies and other innovations such as Intelligent Transportation Systems, by implementing improved system management and operational strategies such as Transportation Demand Management, and by better enabling the

performance of all modes, for example by improving access to multimodal facilities or support for road/rail grade separations.

New infrastructure construction is generally the most expensive solution to addressing transportation system performance issues and should be considered as a last resort. Transportation system expansion, where required, should to the extent possible be linked to land use at the MPO, county and municipal levels.

This policy of preservation, modernization and expansion is also consistent with the LRTP and P2P Link investment categories.

Strategy 3: Key Commerce Corridors

Freight transportation system improvements to bolster the performance of Key Commerce Corridors.

The overarching goal of the Arizona State Freight Plan is to enhance Arizona's economic competitiveness and growth, including through increased trade. ADOT has already identified Key Commerce Corridors "where improvements to the transportation infrastructure supports the greatest potential commercial and economic benefits".³⁹ The Arizona State Freight Plan should prioritize system improvements, including incremental improvements that will bolster the performance of these Key Commerce Corridors and strategic linkages to key Arizona economic clusters. The scope of potential improvements to Key Commerce Corridors should be multimodal, including modal interconnection points. Related improvements should also be linked to land use, as appropriate.

Strategy 4: Improve Freight Information

Freight transportation system management to be informed on the basis of solid research, data and system performance monitoring.

To be effective, transportation policies, strategies and improvements must be well informed and supported by facts. Freight transportation policies, strategies and improvements should be underpinned by ongoing research, current data sources, and performance measures that provide sufficient insight on the performance needs of Arizona's goods movement economy. To this end, a freight data strategy should leverage existing available data, and seek to address priority data gaps based on ADOT's freight system information needs.

Although often difficult due to challenges in obtaining data, particularly where data is deemed commercially sensitive, ADOT should seek to expand performance monitoring and evaluation processes to improve its understanding of the freight transportation system's performance. This should go beyond the traditional measures of system performance (e.g. congestion, capacity, speed) to provide greater insight on the transportation performance requirements of freight

³⁹ Arizona Key Commerce Corridors, p. 1, <http://azdot.gov/docs/default-source/planning/arizona-key-commerce-corridors-final-report.pdf?sfvrsn=0>

system users (e.g. transit time, reliability, logistics cost), particularly along Key Commerce Corridors. This can be accomplished progressively over time.

Where data is unavailable, or otherwise difficult to obtain, value judgement indicators, informed by the research and consultation with freight system users can provide useful insights (as a proxy for performance indicators) into the performance of the freight transportation system.

Strategy 5: Coordination, Partnerships, Communication

System planning and improvements to be coordinated with all stakeholders that have a role in enabling the goals and objectives of the Arizona State Freight Plan.

This strategy will be accomplished through regular engagement with freight transportation system stakeholders, including but not limited to public and private organizations, tribal governments, and agencies responsible for transportation, land use, conservation and environmental planning, and freight infrastructure.

Central to this strategy is the recognition that freight transportation system improvements should be closely coordinated with land use. This is a strategy best employed at the MPO or municipal level. Expansion projects, for example, should consider connectivity to the clusters/nodes and associated land use that generate major freight flows on the key corridors as well as related first/last mile connectivity issues to Key Commerce Corridors.

The goals, objectives, policies and strategies of the Arizona State Freight Plan should also be broadly communicated to build awareness and support for the process. Consistent with best practices, ADOT should identify a freight transportation champion to lead partnerships, stakeholder engagement and communications.

Strategy 6: Sustainable Freight Funding

Priority freight projects to have access to dedicated and sustainable source of funding and seek to leverage partner funding and private capital, where appropriate.

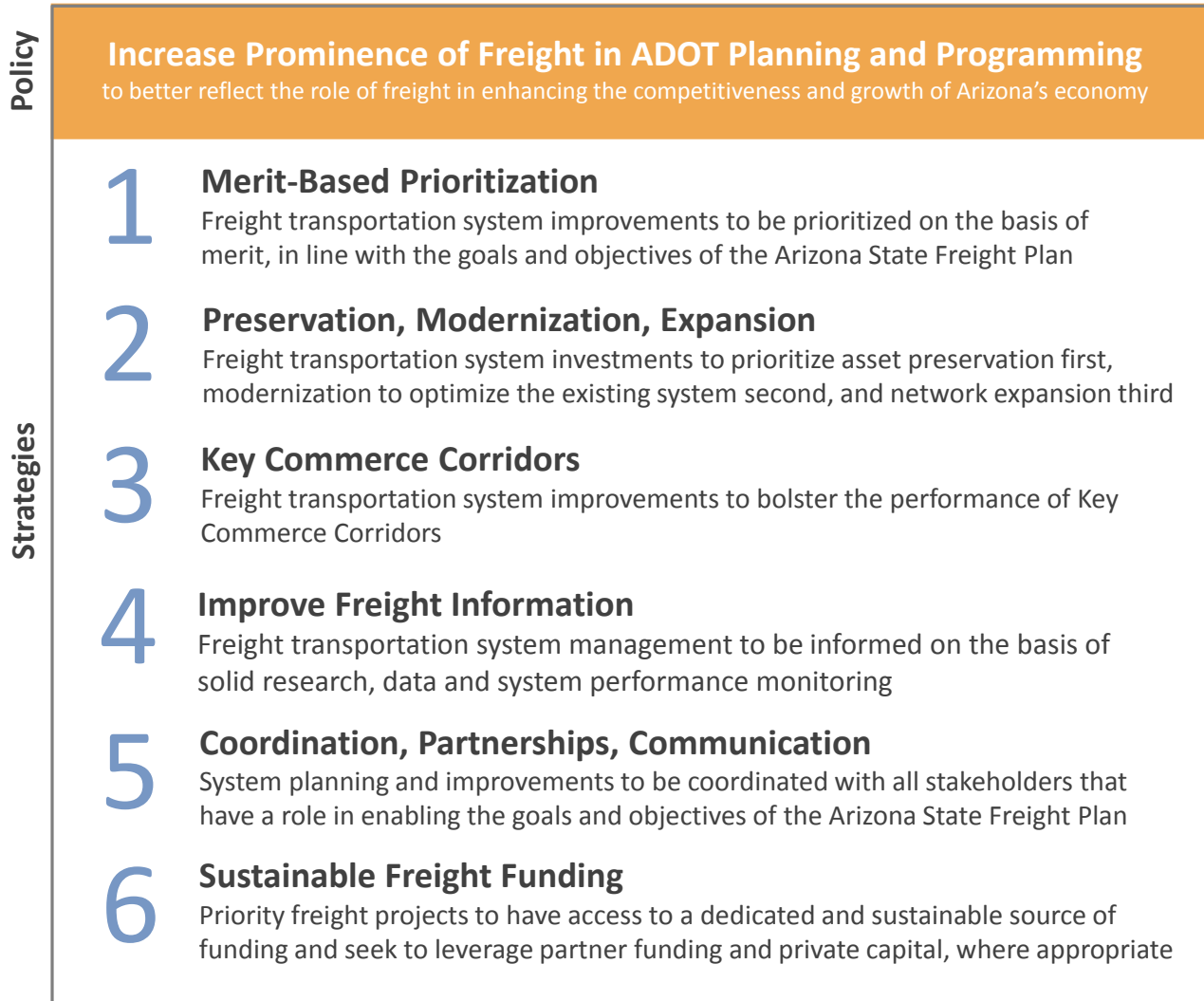
Dedicated funding for freight transportation system improvements, whether a separate freight fund, or otherwise separate funding for freight programs and projects, is generally regarded as a best practice. It also lends greater purpose and credibility to freight planning and prioritization efforts, such as this Arizona State Freight Plan, and can galvanize stakeholder participation (including that of the Freight Advisory Committee) and bolster broader interest, participation and collaboration in identifying and prioritizing freight transportation system improvements.

Equally important is that such funding be sustainable over time, as priorities evolve, and as the Arizona State Freight plan is updated. Existing and alternative funding sources and models should be considered, as well as related terms and conditions and appropriate funding levels.⁴⁰

⁴⁰ These considerations are outside the scope of the present working paper, but will be addressed in the context of Implementation Plan for the Arizona State Freight Plan, which is to consider funding models.

As appropriate, collaborative funding (and possibly financing) opportunities should also be considered where improvements are beyond the capabilities and interest of one party to fund alone. Public Private Partnership (P3) opportunities for project delivery/financing should also be considered, where P3 project delivery and financing can demonstrate good value for money.

Figure 5-3: Summary of Proposed Arizona State Freight Plan Policy and Strategies



Source: CPCS

5.4 Strategic Link to Goals and Objectives and Merit-based Prioritization Considerations

The following tables define the linkages between the Arizona State Freight Plan goals and objectives and the relevant strategies that will help achieve these goals and objectives. Where the merit-based prioritization strategy is applicable, related considerations are also provided. Please note that the Merit-Based Considerations are not necessarily comprehensive but are intended to show a linkage to the Goals and Objectives of the Freight Plan and will later inform the strategic screening process in Phase 9 (Define the Decision Making Process and Prioritization Framework).

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.

Figure 5-4: Linking Strategies and Merit-Based Consideration to Goal 1 of Arizona State Freight Plan

Objectives	Relevant Strategies	Merit-Based Considerations ⁴¹
<p>1.1 Increase Economic Activity, Investment and High Paying Jobs: Strengthen the contribution of Arizona’s state freight transportation system to the economic competitiveness of the State’s goods movement sectors leading to quality economic growth and high paying jobs in the State.</p> <p>1.2 Increase Trade: Enable Arizona’s goods movement economic sectors to increase exports to global markets, more fully participate in global trade, and become better connected to key trading partners.</p>	<p>1. Key Commerce Corridors: Freight transportation system improvements to bolster the performance of Key Commerce Corridors</p> <p>3. Merit-Based Prioritization: Freight transportation system improvements to be prioritized on the basis of merit, in line with the goals and objectives of the Arizona State Freight Plan</p>	<ul style="list-style-type: none">• Does the improvement relate to a designated Key Commerce Corridor?• Does the improvement address a significant barrier to the competitiveness of Arizona’s key economic sectors?• Does the improvement improve access to markets outside of Arizona or otherwise facilitate movement of trade?

⁴¹ It is premature to establish merit-based evaluation criteria for freight improvement priorities at this early stage, but these considerations are intended to provide linkages to the goals and objectives of the State Freight Plan, and can later inform the merit-based prioritization framework, as appropriate.

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 relating to freight transportation in the State.

Figure 5-5: Linking Strategies and Merit-Based Consideration to Goal 2 of Arizona State Freight Plan

Objectives	Relevant Strategies	Merit-Based Considerations
2.1 Improve Mobility and Multimodal Accessibility: Expand access to competitive, multimodal transportation options to improve connectivity, reliability and system resiliency, including the strategic development of highway and rail connections with regional trading partners.	3. Merit-Based Prioritization: Freight transportation system improvements to be prioritized on the basis of merit, in line with the goals and objectives of the Arizona State Freight Plan	<ul style="list-style-type: none"> Does the improvement improve access to more, competitive transportation options for shippers and/or improved system resiliency?
2.2 Increase System Efficiency: Increase freight transportation system productivity, resulting in lower transportation costs, travel times and increased system reliability.	3. Merit-Based Prioritization: As above	<ul style="list-style-type: none"> Does the improvement reduce transportation costs, transit time, or reliability of freight transportation?
2.3 Increase Safety and Security: Continue to improve transportation system safety and security to protect people, cargo, and infrastructure.	3. Merit-Based Prioritization: As above	<ul style="list-style-type: none"> Does the improvement reduce accidents and damage?
2.4 Minimize Negative Social and Environmental Impacts: Be a good steward of Arizona's natural, cultural, and environmental resources while improving and maintaining the transportation system.	3. Merit-Based Prioritization: As above	<ul style="list-style-type: none"> Does the improvement reduce emissions, noise and other negative social impacts?

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

Figure 5-6: Linking Strategies and Merit-Based Consideration to Goal 3 of Arizona State Freight Plan

Objectives	Relevant Strategies	Merit-Based Considerations
3.1 Ensure System Preservation and Maintenance: Maintain, preserve, and extend the service life of existing and future State freight transportation infrastructure.	2. Preservation, Modernization, Expansion: Freight transportation system investments to prioritize asset preservation first, modernization to optimize the existing system second, and network expansion third 3. Merit-Based Prioritization: As above	<ul style="list-style-type: none"> Does the improvement prioritize the use and maintenance of existing assets, or does the improvement otherwise have a sound asset management plan?
3.2 Ensure Good Fiscal Stewardship: Provide a sound financial base for Arizona's freight transportation system through responsible and accountable management of public assets and resources and identification and implementation of funding strategies to ensure long-term balanced investment in the State's freight transportation system.	6. Sustainable Freight Funding Priority freight projects to have access to dedicated and sustainable source of funding and seek to leverage partner funding and private capital, where appropriate	N/A
3.3 Link Transportation and Land-Use: Achieve greater value from the State's freight transportation system by developing policies and partnerships that strengthen the coordination of transportation and land use planning and the implementation of associated policies and activities.	5. Coordination, Partnerships, Communication System planning and improvements to be coordinated with all stakeholders that have a role in enabling the goals and objectives of the Arizona State Freight Plan 3. Merit-Based Prioritization: As above	<ul style="list-style-type: none"> Is the improvement appropriately linked to land use and regional plans?

<p>3.4 Work in Partnership: Develop and nurture partnerships that support the coordination and integration of ADOT’s investment in the State’s transportation infrastructure with public and private organizations, tribal governments, and agencies responsible for transportation, land use, conservation and environmental planning, and freight infrastructure.</p>	<p>5. Coordination, Partnerships, Communication As above</p> <p>3. Merit-Based Prioritization: As above</p>	<ul style="list-style-type: none"> • Does the improvement have broad buy-in from freight transportation system stakeholders? • Does the improvement include the participation (funding or in kind) of partners?
<p>3.5 Increase Effective Performance Monitoring: Make informed decisions on the basis of sound performance monitoring and evaluation of the performance and needs of the freight transportation system, and in line with national freight transportation system performance measures.</p>	<p>4. Improve Freight Information Freight transportation system management to be informed on the basis of solid research, data and system performance monitoring</p> <p>3. Merit-Based Prioritization: As above</p>	<ul style="list-style-type: none"> • Are the expected benefits and costs of the improvement appropriately underpinned and justified by facts and related data?
<p>3.6 Increase Smart Network Expansion: Make investments in strategic expansion of system capacity and connectivity, where existing infrastructure cannot otherwise be optimized to meet demand.</p>	<p>2. Preservation, Modernization, Expansion: Freight transportation system investments to prioritize asset preservation first, modernization to optimize the existing system second, and network expansion third</p> <p>3. Merit-Based Prioritization: As above</p>	<ul style="list-style-type: none"> • Does the expansion-related improvement provide broader freight transportation system improvements that cannot be achieved through incremental investments in system modernization?

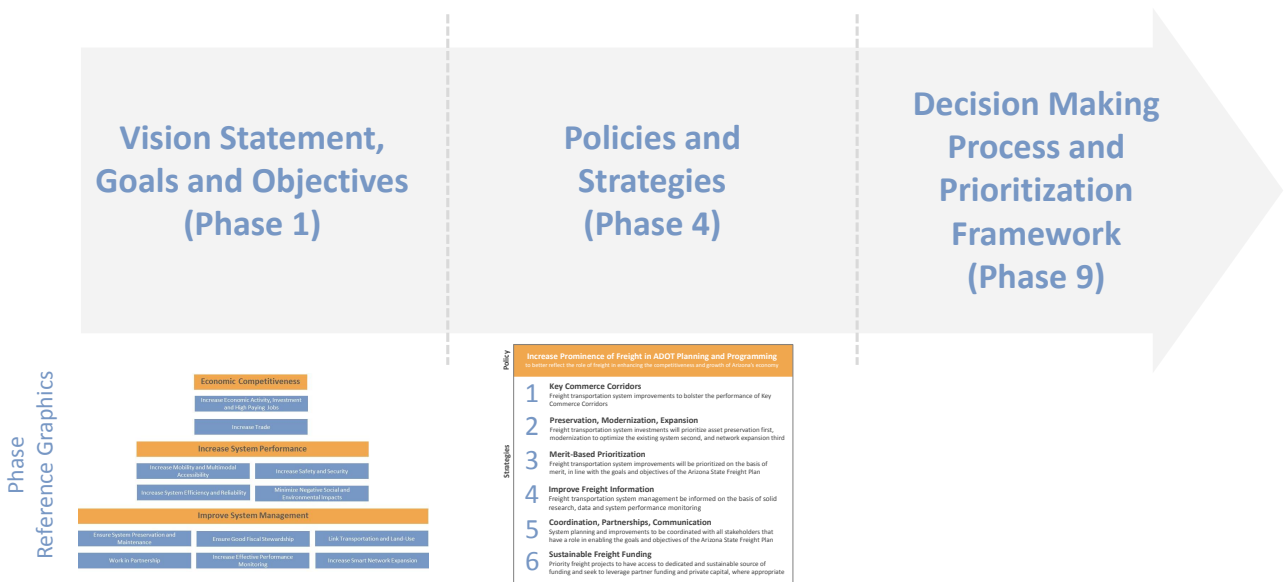
6

Next Steps

6.1 Big Picture View of How Policy and Strategies will Inform Freight Plan

The policy and strategies proposed in this Working Paper follow from the vision goals and objectives developed in Phase 1 and will inform the decision making process and prioritization framework to be developed in Phase 9.

Figure 6-1: Building the Foundation for State Freight Plan Prioritization and Action Plan



6.2 Key Considerations in Moving Forward

One of the fundamental and currently unresolved questions for the Arizona State Freight Plan pertains to the structure and implementation of the freight transportation system prioritization framework. Potential options include, but are not necessarily limited to increasing the prominence of freight considerations in the P2P Link evaluation criteria, or otherwise to create a parallel but separate prioritization process to that in P2P Link, but specific to freight, and potentially tied to a source of funds dedicated for freight projects, as is done in some other jurisdictions.

In any case, what is important at this stage is to seek consensus on the overarching policy to increase the prominence of freight in ADOT planning and programming and the related strategies that will help do this, and realize the goals and objectives of the Freight Plan.

With this consensus will come greater clarity on the best means of structuring and implementing the freight transportation system prioritization framework, and associated considerations including evaluation criteria, funding models, etc.

6.3 Immediate Next Steps

The present working paper is provided for discussion, feedback and input from ADOT, the Technical Advisory Committee and Freight Advisory Committee. It will be revised based on this input, as appropriate.

Ultimately, there must be support and buy-in to the policy and strategies of the Arizona State Freight if it is to effectively inform and guide future freight transportation system investments in Arizona. To this end, building consensus on the policy and strategies of the Freight Plan - sooner than later - will be critical to providing a solid foundation for the continued and successful development of the Freight Plan.

Appendix A: Best Practices in State Freight Plans

Freight studies, analysis and planning are not new. Congress highlighted the importance of freight planning in the Intermodal Surface Transportation Efficiency Act, enacted in 1991.⁴² Additionally, the most recent US transportation bill, MAP-21, again highlighted freight planning by encouraging states to develop a state freight plan. As such, states throughout the US have developed one or more freight plans, resulting in a number of lessons learned, which could inform the Arizona State Freight Plan and related policies and strategies.

We have reviewed the freight plans of Virginia, Georgia and Minnesota as well as compiled best practices from synthesis studies on the state freight planning process, implementation and output.

State Specific Freight Approaches

Recent freight plans and studies of Virginia, Georgia and Minnesota are overviewed and compared in this section to identify similarities and differences in the approach, presentation and conclusions of the reports. Innovative approaches will be highlighted for consideration and potential application in the Arizona Statewide Freight Plan.

Virginia

Virginia Statewide Multimodal Freight Study (Virginia Freight Study) was developed in **two phases**, with phase 1 being completed in 2007 and phase 2 in 2011.

- **Phase one** focuses on the general economic context in Virginia, key freight infrastructure identification and performance, the economic sectors that are heavy freight users, baseline forecasts and stakeholder input and interviews.
- **Phase two** focuses on infrastructure and policy needs, projects and alternatives and develops estimates of the benefits of projects and alternative approaches. Additionally, phase two develops corridor and regional profiles outlining infrastructure, economic profile, commodity flows, performance, projects and alternatives

⁴² Brogan, J and M. Fischer. *Best Practices in Statewide Freight Planning*. NCHRP Project 08-36, Task 33, National Cooperative Highway Research Program, Transportation Research Board, 2003.

Phase one of the Virginia Freight Study provides a robust overview of the economy, using multiple measures to illustrate nuanced differences in the data being analyzed. For example, both truck counts and percent truck are displayed in the same graphs to display both the absolute number of trucks as well as their portion of the traffic stream compared to other roadways. Use of both metrics allows the viewer to identify high truck counts and truck proportion, suggesting a truck focused corridor with small passenger flows relative to other segments. The use of multiple metrics provides additional insight into the data and allows for deeper analysis. Phase one effectively uses tables, graphs and maps to display freight data and convey a high level view of the data.

The sector approach in phase one uses the Bureau of Transportation Statistics Transportation Satellite Accounts and TRANSEARCH to identify heavily freight reliant industries. These industries economic and geographic characteristics are presented in greater detail including employment, business locations, freight flows and forecasts. While the economic importance of these sectors is well documented and displayed, there is a lack of information on the transportation issues these sectors face and their supply chains. Without this information, the relative importance of specific infrastructure is unknown and therefore not actionable.

Relevant to Arizona, the analysis of pass through traffic details the top origins, destinations and origin/destination pairs by tonnage and value. Also, TRANSEARCH is used to identify the infrastructure on which these flows are traveling. Coupled with the commodities that are passing through Virginia, the travel patterns of pass through traffic could provide insight to economic development agencies trying to target specific industries for relocation. Similarly, port related flows and their use of the road and rail network are displayed, providing insight into the infrastructure that facilitates these flows.

Overall, phase one of the Virginia Freight Study effectively conveys the economic context and infrastructure for the state. The study effectively uses data and outreach to identify the issues on the freight system and includes multiple projects or policies to address trends and critical issues. A key gap is a strategic understanding of how the top economic sectors use the freight system and the issues they encounter.

Phase two of the Virginia Freight Study focuses on projects and the associated benefits relative to a no-build scenario. Phase two sets out the proposed projects and then identifies the associated benefits to Virginia as a performance measure of the freight plan itself. Projects are split between near-term and long-range and then supplemented by strategies and policies the state could implement in the near term at a relatively low cost. Phase two uses the project pipeline and previous freight studies to inform project selection and then supplements the list based on the plans findings.

Phase two's analysis focuses on comparing the build to the no-build scenario based on a number of metrics including freight congestion index, VMT, modal diversion, social monetized benefits and economic benefits at both a corridor and a statewide scale. The corridor profiles are very significant in their explanation of the corridor, commodities, surrounding business and projects. This level of analysis allows for a comparison of the relative importance of each corridor and region as well as the projects proposed under each alternative. These profiles would be an

effective outreach tool to garner local and regional support for transportation initiatives proposed by the plan.

Overall, phase two followed a similar style and level of analysis as phase one. Phase two effectively leverage past reports and their data to develop alternative scenarios of projects and defines their impacts. Additionally, the development of tools to assess the impact of freight improvement is a key deliverable that the DOT can use going forward. A key gap in the plan is there is an understanding how the proposed projects will affect the supply chains of Virginia's freight related business. The connection in phase two is limited to a general efficiency argument that industries located near these projects will benefit. Consultations with associations and large companies in these industries could have informed which projects would most affect their business, allowing for a decision to be made concerning a project aimed at enabling that industry. Absent the link to the needs of the freight-intensive industries, there is some question of prioritization and how improvements will impact businesses in Virginia. Lastly, there is not a single executive summary that ties phase one and two into a single deliverable for executive level managers and policy makers. As an outreach piece, the plan must have a succinct document that can convey the importance of freight throughout the DOT, state government, citizens and industry.

Best Practices from the Virginia Statewide multimodal Freight Study

- **Make a Case for Freight** – the freight plan should grab the attention of the reader as a first priority by making a case for why freight matters to a state, this point is even more important for executives and policy makers.
- **Use Maps, Graphics and Tables** – the display of data visually helps to convey information. Special care should be taken to choose the type of visualization to fit the data type.
- **Implement Multiple Data Metrics** – the use of multiple analysis metrics on a set of data allows for additional insights and perspectives adding depth and value to the analysis.
- **Provide Economic Context** – Using regional and national benchmarks for economic data displays the relative positioning of a state and provides context.
- **Implement Freight Plan Performance Measures** – as an outreach tool, the freight plan performance measures effectively convey the outcome of the plans guidance
- **Consider Regional Impacts** – a discussion of regional trends and infrastructure provides an understanding of how freight state infrastructure fits regionally and how projects outside the state borders may affect the state.

Georgia

The Georgia Statewide Freight and Logistics Plan (Freight Plan), was completed in 2012 and has undergone periodic updates since its initial release. The plan is an outgrowth of the 2010 Statewide Strategic Transportation Plan (SSTP). The conclusions of the SSTP served as a starting point for the development of freight themes for the Freight Plan and are reflected in the focus of the plan. The conclusions of the SSTP are as follows:

- Georgia's world class transportation assets were critical to growth in population and the economy over the past few decades.
- Georgia has allowed their competitive advantage in transportation slip by under-investing.
- Current funding levels will result in deteriorated performance that will threaten Georgia's ability to compete for future jobs and growth.
- A new investment strategy underpinned by increased financial resources could create economic growth and jobs in Georgia.⁴³

The conclusions of the SSTP were then translated into themes that specifically apply to the freight and logistics sectors. The themes express the same sentiments of the SSTP, but note that the under-investment in transportation jeopardizes Georgia's position as a Southeast freight hub. The themes describe the past, present and then end with the potential upside of economic growth if Georgia can regain its competitive advantage.

The focus on the competitive advantage and the Georgia's role as a freight hub came through in the freight plan. The plan itself focuses heavily on infrastructure assets, performance, trends, threats and opportunities, with a key end goal of returning the competitive advantage their transportation system provided in the past. This approach differs from states such as Virginia who place a larger focus on the economic context in the state and how freight infrastructure interfaces with the economy. Georgia's approach focuses heavily on high level analysis of the system lending it to more of a top-down economic approach, whereas Virginia's plan focused more on key industries and needs with more of a bottom-up approach. While neither approach is right or wrong, the resulting plan differs substantially in output and focus.

The composition of Georgia's Freight Plan is noteworthy. The executive summary is a succinct graphically focused document that conveys the strategy and needs of that state. The infrastructure network for each mode is presented along with the strategy, projects and benefits of increased investment. Finally, the executive summary includes a small discussion of the potential funding streams for each mode and a proposed timeline for project implementation. The value of this executive summary is in its ability to convey the plan's high points to public and private sector executives and legislative officials. Many of the factors affecting the implementation of a freight plan are not controlled by the freight office or DOT.

⁴³<http://www.dot.ga.gov/InvestSmart/Freight/Documents/Plan/StatewideFreightandLogisticsPlan-TaskReport2.pdf>

Therefore, creating an outreach piece is a best practice to elevate freight, within, and external to, the DOT.

Similar to the executive summary, the Georgia Freight Plan created a multimodal summary of the individual modal papers developed in the plan. The modal summary condenses the information in each modal paper and overviews the freight system in substantial detail. While the modal summary is twice as long as the executive summary, it provides an understanding of freight infrastructure in Georgia and allows the reader to seek additional information in the modal papers that underpin the summary. Again, as an outreach piece, the modal summary can cut across modally focused agencies and provide a high level view of each mode and their connections.

The Georgia State Freight Plan presents three economic scenarios for the future of freight in Georgia. The scenarios are based off low, medium and high projections, each with different factors that affect freight transportation. The four factors are as follows:

- **Economics** – Economic, demographic and trade trends affecting freight forecasts.
- **Logistics** – Factor that details how goods are produced, sourced, stored, and distributed from origin to destination.
- **Transportation** – Transportation is a sub-component of logistics but overviews how freight is transported at the vehicle, firm and terminal level.
- **Policy, Regulation and Governance** – Factor that assesses how government policy affects the transportation system, including infrastructure investment and economic development.

Each factor is then separated into component factors that affect the way freight is transported. The values of each component factor may differ between each scenario and therefore affect the amount, method, and route of freight in Georgia.

Figure A-2: Key Categories and Component Factors for Georgia Scenarios

Key Category	Component Factors	
Economic Factors	Consumption	<ul style="list-style-type: none"> Population Households Income Lifestyle
	Production	<ul style="list-style-type: none"> GSP Industries Technology Labor Energy
	Trade	<ul style="list-style-type: none"> Demand Trade Partners/Lanes
	Economic Geography	<ul style="list-style-type: none"> Land Use
Logistics Factors	Supply Chains Sourcing Packaging Networks	
Transportation Factors	Motor Carriers/Highways	<ul style="list-style-type: none"> Business Services Traffic Volume Truck technology Highways
	Railroads/Rail Lines	<ul style="list-style-type: none"> Business Services Traffic Volume Rail Lines
	Shipping Lines/Marine Ports	<ul style="list-style-type: none"> Business Services Traffic Volume Ships/Terminals
Policy, Regulation, and Governance Factors	National State City/Local	

Source: Georgia Statewide Freight and Logistics Plan

The economic plan does a good job at explaining the scenarios and how each affects the movement of freight on the system. The plan effectively uses tables and maps to show the impact on industry output and the relative increases or decreases in freight on each of the modal infrastructure systems.

The economic context section of the freight plan also explores the needs of five key industries in Georgia to convey the importance of the freight transportation system as a driver of economic competitiveness. The freight plan effectively uses state comparisons to benchmark the employment in the key industries relative to other neighboring states. Similarly, the plan uses maps and graphics effectively to display key areas of production for industry and its use of infrastructure. The industry profiles vary on their specific analysis of the supply chains used in each industry. The plan does undertake three case studies of specific companies and their supply chains. The case studies and the industry profiles that overview the supply chains used in the industry explain the key corridors and considerations for the business or industry, providing insight into why decisions are made and the drivers of those decisions.

Finally, the Georgia State Freight Plan issues project improvement recommendations that use cost benefit analysis and forecasts to assess the impact of each project. Georgia assessed the impact of creating additional bypasses around urban areas to facilitate the movement of through traffic. The bypass essentially moves this traffic through Georgia as quickly as possible and preserves existing infrastructure for traffic that directly impacts the economic development of the state. The projects are then placed in priority corridor packages and the recommended

projects along each corridor. Packaging projects on a corridor groups projects into easy to understand geographic bounds. Additionally, the corridors are presented as facilitating trade with states or providing access to key infrastructure such as the Port of Savannah. Lastly, the corridor projects are input into the REMI model to provide a return on investment for the included projects based on increased Gross State Product and Employment.

Overall, the Georgia State Freight Plan is comprehensive in its assessment of freight movement in Georgia. The plan places a much larger focus on the infrastructure in Georgia than on the economy and the transportation needs of industry. Some of the transportation needs are overviewed in economic context paper and in the company case studies, but generally the plan focuses on increasing the efficiency of the system without a direct tie to the industry that uses the infrastructure.

Best Practices from the Georgia Statewide Multimodal Freight Study

- **Develop Freight Outreach Document** – The executive summary provides easy to read and visually appealing summaries of freight plan and makes a case for the needs and projects included in the plan.
- **Include Modal Summary** – The modal summary gives an overview of each mode and a far more condensed document than each modal paper. The document can be used as an information piece on the infrastructure and needs in Georgia.
- **Use of Maps, Graphics and Tables** – the display of data visually helps to convey information. Special care should be taken to choose the type of visualization to fit the data type.
- **Provide Supply Chain Case Studies** – case studies provide an opportunity to understand the decisions of users of transportation infrastructure.
- **Effectively Convey and Use Scenarios** – the plan uses multiple scenarios and effectively outlines the composite parts of each scenario including policy and regulations.
- **Display Economic Context** – Using state and national benchmarks for economic data displays the relative positioning of a state and provides context.
- **Define Project Corridors** – the compilation of projects on corridors provides an easy to understand visualization and think about project recommendations.
- **Assess Bypass Traffic** – The plan looks at ways to minimize the impact of through traffic on infrastructure performance to preserve infrastructure for goods produced or consumed in Georgia.
- **Quantify Impact of Recommended Projects** – the plan uses both a cost benefit and economic impact approach to assess the impact of recommended projects.

Minnesota

Minnesota completed their latest freight plan in 2005 and are currently underway developing a new plan. The Minnesota Statewide Freight Plan is informed by Minnesota DOTs (MnDOT) strategic plan and the Minnesota Statewide Transportation Plan. The Freight plan adapts the strategic direction and policies of strategic and transportation plan to reflect a freight focus and to formulate freight specific performance measures.

A review of the Federal Highway Administration's list of freight plans reveals Minnesota as an early adopter of freight planning activities. State freight planning practices have evolved during the past decade, there are still relevant lessons to learn from the Minnesota plan.

The Minnesota Statewide Freight Plan includes sections on infrastructure and the economy. Generally, these sections follow the standard approach of overviewing the system and the flows. Minnesota has developed a number of corridor classifications such as the Interregional Corridor System (IRC), which connects state trade centers. The IRC has various classifications including high and medium priority and regional corridor. One innovative feature in the plan, is that the state was broken into distinct subregions that produced and consumed similar commodities and had similar trading partners. The plan outlines top commodities for each subregion along with the modal distribution for the commodity. The subregion analysis displays differences in the economic composition and infrastructure needs of the regions suggesting a need for different freight investment approaches. The following figure displays the subregions defined in the Minnesota plan.

Figure A-3: Minnesota's Freight Subregions



Source: Minnesota Statewide Freight Plan

Following the economic and infrastructure overviews, the Minnesota Statewide Freight Plan outlines the freight programs in the state. Following the list of programs, the plan overviews eight approaches the Minnesota could undertake to integrate freight issues and factors into highway planning, programming and implementation. The following are a short synopsis of ways to integrate freight:

- **Coordinate with other agencies** – As one of many state agencies promoting economic development, MnDOT should coordinate with other agencies to find projects that have complementary funding opportunities, including public private partnerships (PPP).
- **Leverage PPPs** – Project-specific improvements provide an opportunity to leverage private funds and the state could use the Freight Advisory Committee as a forum for PPP discussions.
- **Prioritize Freight** – The project funding process should give additional points and thus priority to projects on or connecting to the freight corridors.
- **Involve the Freight Office** – A consistent process should be developed to involve the freight office on investment studies where there are sufficiently large freight volumes. This would promote the state addressing freight issues on all relevant projects.
- **Freight Office Involvement in Committees** – The Freight Office should be involved on decision-making committees to represent freight in decisions.
- **Account for Trucks in Forecasting and Analysis** - Passenger Car Equivalent (PCEs) Units should be used in the forecasting and analysis of volume-to-capacity ratios, level of service, and speed to accurately account for differences in performance. This practice will elevate the importance of corridors with significant freight.
- **Look at Heavy Vehicle Specific Crashes** – Crash locations involving heavy vehicles could call for different strategies to minimize these events.
- **Consider the type of Freight when Updating the IRC** – IRC corridor identification should include an identification of whether corridors are high value or tonnage as opposed to just taking daily truck volumes.

The Minnesota Statewide Freight plan directly looks for performance measures to assess the advancement of freight in the state. The performance measures are created to supplement those recommended by the Minnesota Statewide Transportation Plan. Additionally, MnDOT solicited performance measures from the Freight Advisory Committee to track freight activity. The plan then overviews the availability of the data needed for the performance measures and then classifies each measure as developmental, emerging, and mature depending on whether data is available and if the measure already has a target.

The final aspect of the Minnesota Statewide Freight Plan highlighted in this work is the direct assessment of policy as an output of the freight plan. The plan sets out six freight policy directions and corresponding strategies for MnDOT. The plan also suggests which performance measures assess the policy direction. While the policy directions and strategies are not lengthy policy analysis, they do include a call for MnDOT to address, support or analyze important aspects of the freight system.

Overall, the Minnesota Statewide Freight plan stands in contrast to the plans in Virginia and Georgia. The plan is much more of a strategy document than the other two plans, which place

considerable focus on the system, economy and the projects needed in the state. The Minnesota plan touches on the system and economy and to a limited extent projects, but focuses heavily on the strategic actions of the freight office and the DOT as a whole. Following the freight plan, MnDOT undertook multiple freight studies on a variety of topics including assessments of freight within the Minnesota regions.

Best Practices from the Minnesota Statewide Freight Plan include:

- **Prioritized Freight Network** – The designation of the freight network in Minnesota underpinned some of the recommended project prioritization frameworks and serves to highlight critical infrastructure.
- **Analysis of Subregions of the State** – the plan develops and analyzes different subregions of the state that have distinct economic structures and infrastructure needs. As appropriate, this approach could be implemented to ensure investment match unique regional needs.
- **Integration of Freight in the State** – The plan outlines strategies and activities to promote freight within and external to the DOT.
- **Performance Measures** – to aid in the measurement of the strategic direction of the state, performance measures are proposed along with an assessment of the data needs.
- **Statewide Freight Policy Development** – the inclusion of policy and recommendations for ways policy could be changed in response to the plans findings addresses the internal and external strategies to promote freight.

Synthesis Studies on Freight Planning Best Practices

In addition to the state specific examples of innovative approaches and best practices, the research team overviews the findings of available synthesis studies on the best practices of statewide freight planning.

Tennessee commissioned a 2008 study of freight planning in Florida, Indiana, Kentucky, Maine, and Virginia which identified nine best practices that are key to the successful development and implementation of a state freight plan. Key best practices include:

- **Developing a Freight Champion** – This person is a key high-level official to advocate freight projects.
- **Dedicate Staff to Freight** – Staff focus on freight issues and developing relationships with freight stakeholders to ensure consistent stakeholder engagement.
- **Stakeholder Engagement** – Engage freight stakeholders in both public and private sectors to ensure project development meets local, regional, state and private sector needs.
- **Data** – The collection of internal data and utilization of sources external to the DOT when necessary is key to understanding freight movements and needs.
- **State Freight Plan Specifics** – At a minimum, a statewide plan should include an assessment of current and future infrastructure supply and demand, as well as gaps in the system. Other key topics include state economic structure, supply chains, the needs of specific industries and the statewide regulatory framework.
- **Freight Funding Opportunities** – As a driver of competitiveness, the funding of freight projects on roadways as well as those that enhance rail, water and air freight are important to the development of the state. As such, freight plans should explore traditional and non-traditional sources to fund freight projects.
- **Neighboring State Partnership** – Identify issues in neighboring states and seek to partner on projects to define solutions that solve a common problem.
- **Link Freight to All DOT Projects** – Involve freight staff in projects beyond those traditionally considered freight focused to further freight understanding and the nexus of freight and transit needs.
- **Small Steps Move Freight Forward** – Tasks such as visiting freight facilities and terminals may seem unimportant, but they give the plan a strong start and provide understanding of the freight system.

NCHRP 33: Best Practices in Statewide Freight Planning and the Tennessee study come to similar conclusions when identifying the key aspects of freight planning. NCHRP 33 takes a broader approach to freight planning best practices by including various different kinds of freight related

studies such as corridor analysis or long-range transportation planning. Overall the key elements to a successful freight planning programs are:

- **Develop a Freight Champion** – Support and buy-in from DOT leadership or from state officials to drive enthusiasm and lend credibility.
- **Inventory of the Freight System, Conditions, and Forecasts** – This approach defines what the state currently has and then uses future forecasts to define and focus needs.
- **Network with Stakeholders** – Conduct outreach to public and private agencies to define the policies, plans and projects within the state.
- **Develop Data and Tools** – Utilize available data and tools including those publically available.
- **Link to Long-Range Planning Process** – Elevate Freight projects to the level of passenger transportation.
- **Project Definition, Prioritization, and Delivery** – The end outcome of delivering a freight project lends credibility to the effort and continues momentum.

Both the Tennessee and the NCHRP study focus on the content and the institutions of the state freight plan. For the content, key emphasis is placed on stakeholder outreach, data and assessing the current state and future needs of the freight system. Institutionally, both studies highlight the need to elevate freight projects relative to traditional passenger projects and the importance of forward progress in the form of projects. A key element that warrants repeating is the need for a freight champion to push some of the other best practices such as the elevation and funding of freight projects as well as internal outreach across modes to integrate freight into other projects and planning efforts.

Overall, freight planning does not follow a one size fits all approach that is directly applicable to each state. States are different in their economic composition and freight needs, the size of their freight planning office and the understanding of freight's importance throughout the state. That said, critical best practices displayed through case studies and analysis of reports can provide guidance and the ingredients needed to develop a successful freight plan and in turn advance freight within the DOT and state.

Appendix B: International Best Practices in Freight Policies and Strategies

The research team undertook a global scan of policies, strategies and related investment programs specific to strategic freight transportation gateways and corridors in Canada, Australia, the European Union and Mexico. These are summarized below, along with lessons of relevance to the Arizona State Freight Plan.

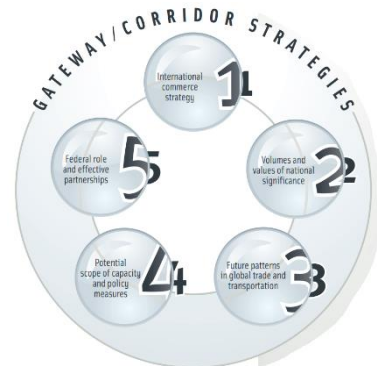
Canadian Freight Policies and Strategies

In 2007, the Government of Canada launched its “National Policy Framework for Strategic Gateways and Trade Corridors”⁴⁴ with the objective of advancing the competitiveness of the Canadian economy. The policy provides a direction for strategies to further develop and leverage transportation systems that are key to Canada’s most important trading opportunities.

Strategic Approach

The national policy framework set out five policy ‘lenses’ to guide strategic decision making and funding decisions⁴⁵:

- **Lens 1 - International Commerce Strategy:** Strategies must help align Canada’s major transportation systems with the country’s most important opportunities in global commerce.
- **Lens 2 – Volumes and Values of National Significance:** Strategies must have, at their core, systems of transportation infrastructure that carry nationally significant levels of trade.
- **Lens 3 – Future Patterns in Global Trade and Transportation:** Strategies must be forward-looking, addressing major trends in



⁴⁴ <http://www.canadassgateways.gc.ca/media/documents/en/NationalPolicyFramework.pdf>

⁴⁵ [Ibid](#)

international transportation. Long-term planning is essential, but must be based on empirical evidence and analysis, not just optimism.

- **Lens 4 – Potential Scope of Capacity and Policy Measures:** Strategies should go beyond infrastructure systems to address interconnectedness issues that directly impact how well the system works and how well Canada takes advantage of it.
- **Lens 5 – Federal Role and Effective Partnerships:** Strategies must ground federal actions in concrete federal responsibilities and effective partnerships with other governments and the private sector.

Consideration of the five policy lenses supported identification of two priority transportation corridors along which to implement the gateways and corridor strategies: the **Ontario-Quebec Continental Gateway and Trade Corridor** in central Canada, and the **Atlantic Gateway** covering the four Atlantic Provinces. A third corridor - the **Asia-Pacific Gateway and Corridor Initiative (ACGPI)**⁴⁶ in Western Canada - was actually established in 2006 (prior to the policy above being announced), and served as an example for application of the gateways and border crossings approach.

⁴⁶ The APCGPI was started in 2006, before the national policy on gateways and corridors was launched (2007), but was effectively the first application of the same approach.

Merit-based Approach to Project Selection

A description of the merit-based approach for funding allocations for the APGCI is presented here; a similar approach is used for the GBCF. Funding from the APGCI can be provided for up to 50% of approved project expenditures. For projects to be considered *eligible* to receive funding from the APGCI Fund, they must meet *all* three objectives of the APGCI (among other eligibility criteria):

- To improve the efficiency of the multimodal transportation network for the movement of international trade through Canada's Asia-Pacific Gateway, including the transportation corridors to North American markets, from a national perspective
- To enhance transportation infrastructure safety, security and quality of life related to the movement of international trade (e.g. road/rail grade separations)
- To improve connectivity/intermodal interfaces between modes (marine, port, rail, road, air) for international trade movements.

Once projects have passed the eligibility criteria, Transport Canada carries out an assessment of their relative merit-based on three criteria: value for money, recipient's experience and capacity, and quality of the proposal. Details of the criteria are specified in an Applicant's Guide.

Source: Asia-Pacific Gateway and Corridor Transportation Infrastructure Fund Application Guide,
<http://www.asiapacificgateway.gc.ca/media/documents/TC-APGCI-ApplGuide-E-ACCESS.PDF>

Funding Approach

Implementation of the national policy was supported by establishment of the Gateways and Border Crossing Fund (GBCF), which received an unprecedented C\$2.1 billion (US\$2.07 Billion⁴⁷) as part of the \$33 billion "Building Canada" national infrastructure plan. The ultimate objective of the GBCF is to enhance Canada's economic competitiveness and productivity. Funding for projects is awarded on a merit-basis (see text box below), and projects are cost-shared with recipients such as provincial, territorial and municipal governments, not-for-profit organizations, and private firms. Proposals seeking C\$100 million (US\$98 million) or more must be assessed in terms of their suitability for delivery as a Public-Private Partnership (P3).⁴⁸ The APGCI also received C\$1 billion as part of the \$33 billion "Building Canada" infrastructure plan announced in 2007 (as distinct from the C\$ 2.1 billion provided to the GBCF). The GBCF fund matching approach is seen as successfully having attracted additional funding from stakeholders. The proportion of funding provided by the GBCF has ranged from 15% to 100% of project costs. In some cases, funding was used to advance existing plans, and in other cases

⁴⁷ Conversion from \$C to \$US rate of April 1, 2010

⁴⁸ If the P3 screen determines that a project could be successfully procured through a P3 procurement and would generate better value for money as a P3, federal funding will be contingent upon the project being delivered as a P3. <http://www.infrastructure.gc.ca/plan/p3-prog-eng.html>

it served as a catalyst for others to invest. Overall, the fund-matching approach was influential in creating change, even at the low end of funding ratios.⁴⁹

Successes to Date and Lessons learned for Arizona

Strong Guiding Policy and Strategic Project Selection - Well-defined national policy for gateways and corridor, which fits within a broader and very well-publicized national infrastructure plan, make the objectives of the program clear to all participants. The policy lenses provide a baseline to identify key corridors of importance, while a merit-based approach ensures that only projects that meet specific objectives and value for money criteria are supported - retaining a focus upon the core elements of the program.

Partnerships with Stakeholders - A key feature of the GBCF was establishment of formal partnerships between the public and private sector (industry stakeholders), including Memorandum of Understanding between public agencies, and establishment of active Advisory Committees or Working Groups with non-governmental stakeholders. The major value added by such partnerships has been the additional information that partners bring to the table, particularly in terms of what is practical and realistic in terms of industry and community practices. These formal partnerships also supported the development of informal partnerships and broader buy-in to the gateways and corridors approach.⁵⁰

Transportation Systems Approach - The gateways and corridor approach used in Canada has emphasized an approach which emphasizes the transportation system and connections between it (e.g. supply chain), rather than focusing on any particular mode or element. Additionally, the gateways and corridor approach used both hard infrastructure investment and policy infrastructure to ensure that public policy, regulation and operation were aligned to maximize the positive impact of current infrastructure and to fully leverage new investments. By removing modal silos, Canada was able to consider broader goals such as roles of technology, environmental stewardship and security.

⁴⁹ Transport Canada, Evaluation and Advisory Services. "Evaluation of Gateways and Border Crossings Fund (GBCF)", March 2014. https://www.tc.gc.ca/media/documents/corporate-services/EN_EVALUATION_OF_GBCF.pdf

⁵⁰ Transport Canada, Evaluation and Advisory Services. "Evaluation of Gateways and Border Crossings Fund (GBCF)", March 2014. https://www.tc.gc.ca/media/documents/corporate-services/EN_EVALUATION_OF_GBCF.pdf

Australian Freight Policies and Strategies

In 2004, Australia launched the Auslink initiative which included the National Land Transport Plan, the first major multi-modal land transport plan in the country's history.⁵¹ It was developed explicitly to replace the existing piecemeal, short-term and mode-specific approaches used previously for transport planning. The Auslink approach had four key features; 1.) A multi-modal corridor approach, 2.) A multi-jurisdictional approach, 3.) Public sector involvement in planning, financing and operation and 4.) A single fund for projects on the National Network.

Strategic Approach

The Auslink National Transport Plan 2004 identifies eight strategic directions to improve long-term infrastructure and to guide investment priorities, including:

- Negotiating long-term strategies and establishing formal partnerships (bilateral agreements) with the States and Territories to develop the National Network on a corridor basis.
- Improving the capacity and performance of a selection of vitally important interstate corridors by upgrading critical road and rail links, increasing rail's market competitiveness, and improving intermodal integration.
- Enhancing the capacity and reliability of other critical interstate and interregional corridors, including in remote areas, to ensure national connectivity.
- Working with States to address congestion on urban and outer metropolitan sections of the National Network—including on links to ports, airports and other centers of intermodal activity—to facilitate passenger and freight flows.
- Improving infrastructure performance by facilitating the development and application of appropriate and cost-effective new technologies.
- Improve safety and security on the National Network.
- The Australian Government, working with States and Territories, will protect past investments in the road and rail network.
- The Australian Government will improve capacity to address local infrastructure backlogs and fund regionally significant projects.

⁵¹ The White Paper "AusLink: Building Our National Transport Future" (2004) is the Government's formal policy statement on land transport.

Funding Approach

The **Investment Road and Rail Program** is the centralised funding window for Investment Projects which are part of the National Land Transport Network.⁵² The approval of funding for an Investment Project is based on (though not limited to) consideration of the following⁵³:

- The extent to which the project is likely to improve the ability of industries and communities to compete in international, inter-State or inter-regional trade and commerce;
- The extent to which the project will improve the efficiency, integration, security or safety of transport operations;
- The results of any assessment of the economic, environmental or social costs or benefits of the project;
- The extent to which the project is likely to improve access for communities to services and employment;
- Any transport or land use plans that might be relevant to the project;
- The extent to which persons other than the Commonwealth (federal government) propose to contribute funding to the project.

The federal (Commonwealth) government and Australia's eight states and territories signed a partnership agreement setting out the specific parameters for federal government contribution to Investment Projects.⁵⁴ Among other items, the agreement requires that all projects explore the potential for financial participation from the private sector and that projects above AUS\$100 million in size (US\$80 million) must demonstrate consideration of public private partnership (PPP) procurement options. The federal government has also signed individual agreements with each State and Territory which include a list of projects that have been approved for funding (per guidelines described below).

The smaller **Transport Development and Innovation Projects** program funds research projects related to present and future uses of the National Land Transport Network, including corridor studies to support development of long-term investment strategies for each of the corridors on

⁵² The National Land Transportation Network is defined as roads or railways that are existing or proposed which connect two capital cities or major centres of commercial activity, or connect a capital city or major commercial centre to an inter-modal transfer facility. An existing or proposed transfer facility Inter-modal transfer facilities can be added to the National Land Transportation Network if it can be accessed by the roads or railways as defined above. Generally, to be included in the Network road, railway or inter-modal facilities must also be important for the development of international, inter-state or inter-regional trade and commerce and/or travel.

⁵³ As established in Part 3, Section 11 of the "National Land Transport Act 2014".

⁵⁴ Council of Australian Governments, "National Partnership Agreement on Land Transport Infrastructure Projects", 30 October 2014. http://investment.infrastructure.gov.au/publications/policies/pdf/NPA_30_October_2014.pdf

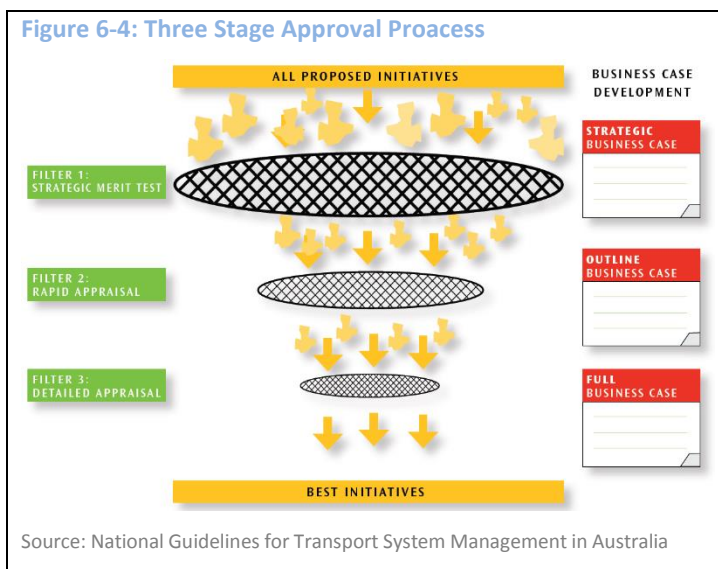
the National Network. Approval of a project takes into consideration (but is not limited to) the following⁵⁵.

Approach to Project Appraisal and Prioritization

The National Guidelines for Transport System Management⁵⁶ set out a three stage project appraisal framework (see Figure 6-4) for initiatives to access funding related to the National Network (road, rail and intermodal projects).

- **Stage 1: Strategic Merit Test** identifies how well the initiative is expected to contribute to transport system objectives, policies and strategies; any barriers to the initiative (e.g. risk, dependence on other initiatives, etc); and whether proper consideration has been given to alternative solutions or options.
- **Stage 2: Rapid Appraisal** using rapid Benefit-Cost Analysis to prepare an Outline Business Case, with the objective of eliminating proposals that are unlikely to pass a detailed appraisal.
- **Stage 3: Detailed Appraisal** using Benefit-Cost Analysis to prepare a Full Business Case.

The Benefit-Cost Analysis in Stages 2 and 3 considers money as the primary measure of value. The Guidelines recognize that some benefits cannot be captured in money terms and do permit applicants to describe non-monetised benefits for consideration in the evaluation.



Successes to Date and Lessons for Arizona

A number of fundamental tenants of Auslink and subsequent programs have enabled the Australian government to deliver corridor-focused transportation programs over the past 10 years. First, the Auslink program was established through a high profile policy and accompanying long-term transport plan focused on corridor development. This was a major shift away from mode-specific planning. Second, legislation was enacted specifically to support and implement the policy, again with a focus on promoting network and corridor-based initiatives. Third, the buy-in of states and territories has been integral to the approach, with local and state governments working more closely with the federal government to develop projects. The signing of bilateral agreements has supported this approach. Finally, significant

⁵⁵ As established in Part 4, Section 31 of the “National Land Transport Act 2014”.

⁵⁶ National Guidelines for Transport System Management, 2006 (2nd Edition)
http://www.transportinfrastructurecouncil.gov.au/publications/files/National_Guidelines_Volume_2.pdf

funding has underpinned the program. A total of AUS\$25 billion (US\$19.9 billion) had been paid or was committed for projects on the Auslink National Network between 2004 and 2014.

An audit of the Auslink program in 2008⁵⁷ identified a number of challenges the program faced in its first few years. Of note, decisions regarding allocation of funding were somewhat politicised in some cases, notably around election time, when commitments for funding specific projects were announced prior to carrying out adequate analysis to ensure projects could be realistically delivered within the proposed timeframe or budget. This led to States implementing the projects within timeframes and/or budgets which were not achievable.

⁵⁷ <http://www.anao.gov.au/Publications/Audit-Reports/2008-2009/Delivery-of-Projects-on-the-AusLink-National-Network/Audit-brochure#KeyFindings>

European Union Freight Policies and Strategies

The European Union (EU) comprises 28 member states committed encouraging the free movement of people and goods across EU borders. The EU recognizes that for their common market to function properly, an integrated transport system is needed, including harmonization of rules and interoperability of networks. The concept of a Trans-European Transport Network (TEN-T) was introduced in 1993, and is still the unifying vision and policy which EU countries follow to facilitate long-term transport planning.⁵⁸ The rationale for creating the TEN-T is that it benefits EU citizens by allowing more efficient transport, while reinforcing economic and social cohesion across the continent.

Strategic Approach

The TEN-T vision ensures that EU states work together to implement projects of specific importance to the territory. In 2013, the TEN-T policy was updated with the main change being definition of an integrated, multimodal “core network” comprising nine priority corridors,⁵⁹ each of which involves between four and nine different member states.⁶⁰ The corridors are based on three pillars:

- Enhancing cross-border connections and removing bottlenecks;
- Integrating different transport modes (multi-modality); and
- Promoting technical interoperability.

The corridors were established through a strategic, national level approach based on the following principles (among others):

- Grounding of corridor identification in market fundamentals, solid analytics and hard facts (based on benefit-cost analysis, complemented by multi-criteria analysis to enable inclusion of social goals);
- Corresponding to the long-term needs of the EU and remaining stable over a reasonably long period;
- Being multi-modal and benefitting all or large regions of the EU;
- Reflecting main long-distance and international traffic flows; and

⁵⁸ The extent to which policies and legislation are standardised in the EU varies by topic; in the case of transportation and the trans-European network, the EU and individual Member States have “shared competence”, meaning that if the EU has established legislation in the area, EU member states are obliged to follow it. This is established in the Consolidated Treaty of the Functioning of the European Union / Part One: Principles, Title I: Categories and Areas of Union Competence.

⁵⁹ List of corridors available here: http://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/corridors/index_en.htm

⁶⁰ Previously, TEN-T programing leaned more towards planning and funding of individual projects losing some of its corridor focus

- Being made up of nodes and links of high strategic importance and including the main ports and airports (gateways).

Funding Approach

The European Commission's Directorate-General for Mobility and Transport (DG MOVES) ultimately decides which infrastructure projects are included in the TEN-T list of projects, but individual countries fund a majority of the work which needs to be done within their borders.

In 2011, a funding program entitled "Connecting Europe Facility" was established, with a budget of €31.7 Billion (US\$47 billion) to upgrade transport infrastructure, build missing links and remove bottlenecks, with €EUR 26 Billion (US\$38 billion) dedicated to funding the TEN-T network. Priority is given to projects with the highest value for all of Europe, particularly to complete missing cross-border links and remove bottlenecks. Priority is also given to projects that will deploy EU-wide systems of traffic management and positively impact the European transport network. This funding is expected to leverage investments of around €50 billion (\$US74 billion), giving a significant boost to the European economy.⁶¹

By early 2000s, approximately 10 years into implementation, the pace of execution of the TEN-T projects had not met expectations, in part due to financial constraints of EU Member budgets. A focus on increasing private sector financing and the concept of public-private partnerships (PPPs) was promoted, both to increase funds available and to speed up implementation of projects that have utilization-based revenues (e.g. toll roads). It was recognized that extensive risk transfer (notably of traffic risk) was a barrier for private investors in these types of projects and in 2008 the Loan Guarantee Instrument for TEN-T Projects (LGTT) was established to address this challenge. It was developed and is funded jointly by the European Commission and the European Investment Bank (EIB).

The LGTT can provide a guarantee to cover revenue shortfalls during the initial operating period (ramp-up) of TEN-T projects. Ramp-up risk is the risk of users slowly discovering the infrastructure and traffic volumes being lower than forecasted for an initial period only. The LGTT increases private sector involvement in projects by improving the ability of borrowers to service senior debt obligations during the ramp up period, and reducing risk margins (and therefore cost) of senior loans.⁶²

⁶¹ European Commission, "Core Networks, Corridor Progress Report of the European Coordinators", September 2014 http://ec.europa.eu/transport/infrastructure/tentec/tentec-portal/site/brochures_images/CorridorsProgrReport_version1_2014.pdf

Euro / US\$ exchange rates on May 1, 2011 (www.oanda.com).

⁶² European Investment Bank, "Evaluation Report: The Loan Guarantee Instrument for TEN-T Projects: An Evaluation Focusing on the Role of the EIB in the Implementation of the Instrument", April 2014. http://www.eib.org/attachments/ev/ev_lggt_en.pdf. Accessed May 1, 2015.

Successes to Date and Lessons for Arizona

A recent U.S. study⁶³ on the freight corridor programs of the EU highlighted a number of interesting findings for application to corridor planning in the United States.

- The TEN-T concept has served well as a unifying vision for the EU and has achieved major buy-in from the member states. This may be in part supported by the fact that transportation is an area of “shared competence” for the EU which means that member states are required to follow any transportation policy and legislation set by the EU.
- TEN-T has successfully been adopted as long-term approach to transport network planning, regardless of political (government) change. It has been embraced as a long-lasting vision through leadership changes across EU governments, and this consistency has helped attract private funding for transportation projects.
- The EU has addressed the significant challenges associated with having multiple jurisdictions involved in TEN-T project implementation through establishment of high-level project coordinators who are tasked with streamlining implementation of projects across borders.
- The EU member states look beyond intra-EU traffic to consider trade with global markets, including transport links to Russia, Asia and North Africa. A lesson for the US is to continue to promote awareness of domestic and international supply chains on US transportation networks and to share data and information on national goods movement across state and federal governments to better inform decision-making.
- The original application of the TEN-T Policy lacked market-driven and analytical rigour to a certain extent, and resulted in promotion of idealized, individual projects at the expense of a true corridor-based approach. As a result, the TEN-T was revised in 2014 with a greater focus on market fundamentals and analytics, including improving the quality and application of market and traffic data used in project selection. This is relevant for the US insofar as recognising the importance that corridor-level thinking must be grounded in objective, transparent facts and market analysis.

Mexican Freight Policies and Strategies

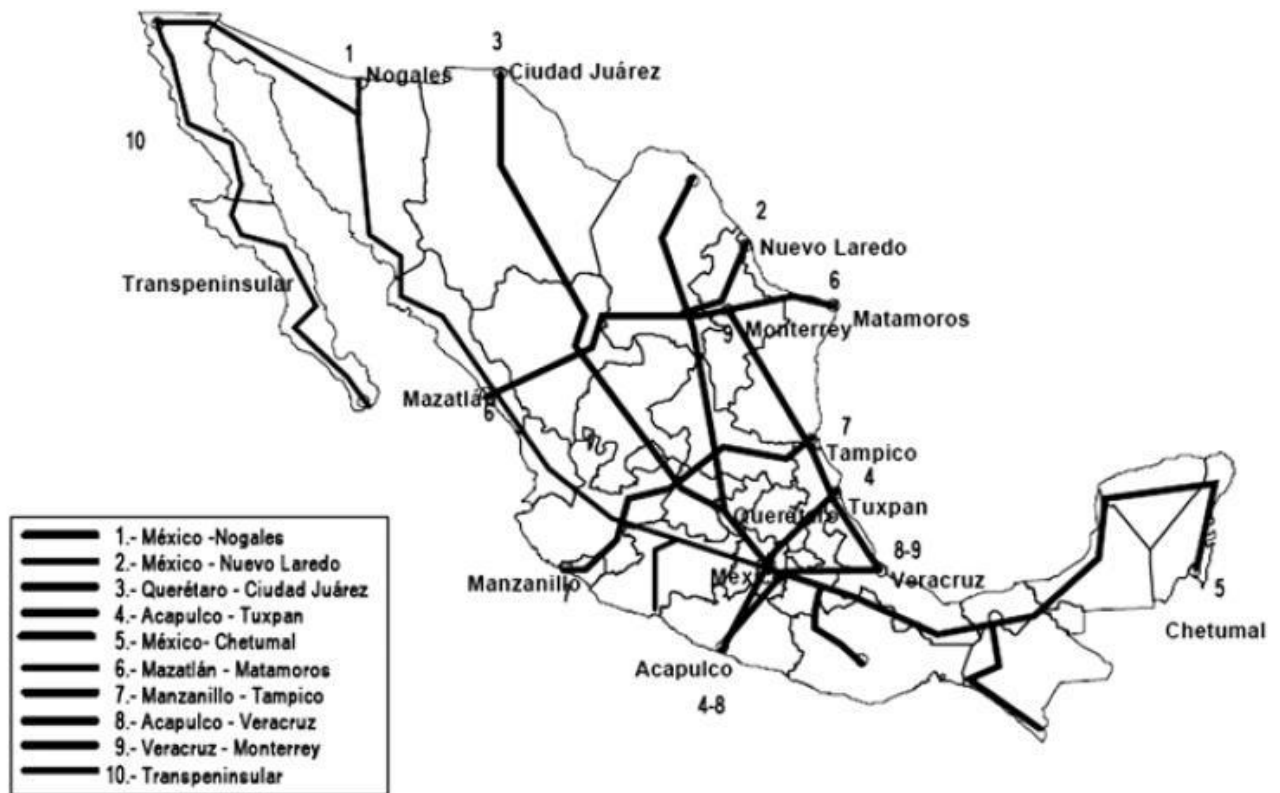
In 2004, private and public organisations of Mexico signed an agreement which aimed to promote the development of multimodal corridors (*Acuerdo de Concertación para el Desarrollo de Corredores Multimodales*). This agreement identified 10 existing corridors linked to the port gateways of Manzanillo, Lázaro Cárdenas, Veracruz and Altamira, as well as major cities of the interior such as Mexico City, Guadalajara, Nuevo Laredo, and Ciudad Juárez.⁶⁴ This led to the preparation of a Multimodal Corridor Master Plan (*Plan Maestro de Corredores Multimodales*

⁶³ American Trade Initiatives / International Technology Scanning Program, “Understanding the Policy and Program Structure of National and International Freight Corridor Programs in the European Union”, August 2012. Sponsored by the U.S. Department of Transportation Federal Highway Administration, in cooperation with the American Association of State Highway and Transportation Officials and the National Cooperative Highway Research Program.

⁶⁴ Maldonado Carrasco, A.G., 2008, “La multimodalidad en México”, *Comercio Exterior*, vol. 58, no.: 10, pp. 720-730.

en México) which aimed to coordinate the development of logistical infrastructure in the country and appropriately allocate private and public funds.

Figure A-5: Mexico Corridor Identification



Source: Secretaría de Comunicaciones y Transportes

Following the 2012 Presidential elections, Mexican policies concerning gateways and corridors continued to promote multimodal corridor investments, but the approach adopted a strategy based on the development of a national network of logistical platforms (SNPL - *Sistema Nacional de Plataformas Logísticas de México*).⁶⁵ The studies aiming to determine how the SNPL will be implemented are expected to be finished in 2015. However, policies aimed at developing gateways and corridors support are fundamentally aligned to Mexico's National Development Plan (PND – *Plan Nacional de Desarrollo 2013-2018*) which defines sectorial objectives, notably in terms of transportation and communications. The six objectives of the PND for transportation and communications are:

1. Develop transportation and logistics infrastructure

⁶⁵ Logistics Platforms are considered to be ports, airports, distribution centers, dry ports, intermodal rail terminals, etc.

2. Improve transportation and logistics services
3. Create conditions for modern and efficient mobility of persons
4. Improve the coverage and access to improved communications services
5. Modernize administration
6. Develop the sector with national capabilities and technologies

The Transport and Communications Department (SCT – *Secretaría de Comunicaciones y Transportes*) translated these objectives into three strategic objectives which form the basis of an investment program for the road, rail, port, airport and communications sectors. The SNPL will contribute to reach the first strategic objective which consists in ameliorating Mexico's logistics system. The two others respectively consist in improving passenger mobility and, improving access to broadband communications.⁶⁶

Strategic Approach

The strategic approach to the development of the SNPL for Mexico is as follows:⁶⁷

1. Promote logistics infrastructure performance in Mexico.
2. Innovate to improve Mexico's supply chain competitiveness.
3. Establish a competitive logistics land planning process for Mexico
4. Promote the development of logistics infrastructure and services for domestic and international trade

The SNPL is articulated through the identification of a national network of logistics platforms linked by transportation corridors.

Funding Approach

Funding for transportation and infrastructure development in Mexico is elaborated according to priorities established in the transportation and communications infrastructure investment program for 2013-2018. Between 2013 and 2018, the government of Mexico planned to invest \$582 billion pesos (US \$38 billion) in transportation infrastructure.⁶⁸ Each year, the SCT prepares a work plan for transportation infrastructure funding. The 2015 work plan identifies specific

⁶⁶ Gobierno de la República Mexicana, 2013, *Plan Nacional de Desarrollo 2013-2018 – Programa Sectorial de Comunicaciones y Transportes*, 127 pages.

⁶⁷ Gobierno de la República Mexicana, 2013, *Sistema Nacional de Plataformas Logísticas*, presentation to the Banco Interamericano de Desarrollo, 78 pages.

⁶⁸ Secretaría de Comunicaciones y Transportes, 2013, *Programa de Inversiones en Infraestructura de Transporte y Comunicaciones*, 45 pages.

funding engagements for infrastructures, ports and transport totalling 94 billion pesos (US \$6 billion).⁶⁹

Successes to Date and Lessons for Arizona

The originality of Mexico's approach resides in the methodology to identify critical infrastructure that can support the country's domestic and international trade. As such, the SNPL will reflect functional relationships between socio-economic conditions, productive systems and supply chains, infrastructure and existing flows. While the plan is national by definition, regional planning and economic development priorities are considered in the establishment of the logistics platform network. Ultimately, the Government of Mexico aims to identify an institutional and management structure for the future SNPL.

⁶⁹ Gobierno de la República Mexicana, (non dated), *Plan Nacional de Desarrollo 2013-2018 – Programa de Trabajo de Comunicaciones y Transportes 2015*, 121 pages