Arizona State Freight Plan: Project Screening & Prioritization

Prepared for:
Arizona Department of Transportation
Freight Advisory Committee

September 15, 2016

Team led by: CPCS

In association with:

HDR

And specialty sub-consultants:

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Meeting Goals

- Update FAC on Arizona State Freight Plan
- Initial screening of Critical Rural and Urban Freight Corridors (CRFC, CUFC)
- Update and input on project prioritization

Meeting Agenda

Time	Item	Presenter / Moderator
1:00 – 1:05	Welcome and Introductions	Michael DeMers (ADOT)
1:05 – 1:15	FAC Future Directions	Mike Kies (ADOT) & Michael DeMers (ADOT)
1:15 – 1:25	Project Status Report	Donald Ludlow (CPCS)
1:25 – 1:50	Critical Rural Freight Corridors	Michael DeMers (ADOT) & Alex Marach (CPCS)
1:50 – 2:00	Introduction to Project Prioritization Process	Donald Ludlow (CPCS)
2:00 – 2:10	Break	
2:10 – 2:40	Results of Issue Screening	Donald Ludlow (CPCS)
2:40 – 3:15	Prioritization Approach and Input	Michael LaBianca (HDR) & Donald Ludlow (CPCS)
3:15 – 3:30	Future Tasks and Implementation	Donald Ludlow (CPCS) & Michael DeMers (ADOT)
3:30	Adjourn	

Presentation Overview

FAC Future Directions

Project Status Report

Critical Rural and Urban Freight Corridors Approach and Input

Prioritization Approach and Input

Future Tasks and Implementation

Elements of FAC Charters in other States

Charter Elements Identified in other States	
Mission or Purpose	Staff Support of FAC
Member Responsibilities	Values Statement
Leadership Structure and Responsibilities	Quorum Requirement
Decision-making Structures	Use of Alternates or Proxies
Charter Amendment Process	State Authorization
Member/Participant Type/Distinction	Strategies (or Main FAC Activities)
Term of Membership	Membership/Size Limitation
Appointment Authority/Process	FAC Performance Measures
Meeting Frequency	Meeting Time/Place
Communications Policy (Private/Public)	Notice of Meeting Required
Conflict of Interest	Records and Minutes
Federal Authorization	Project List Process

Presentation Overview

FAC Future Directions

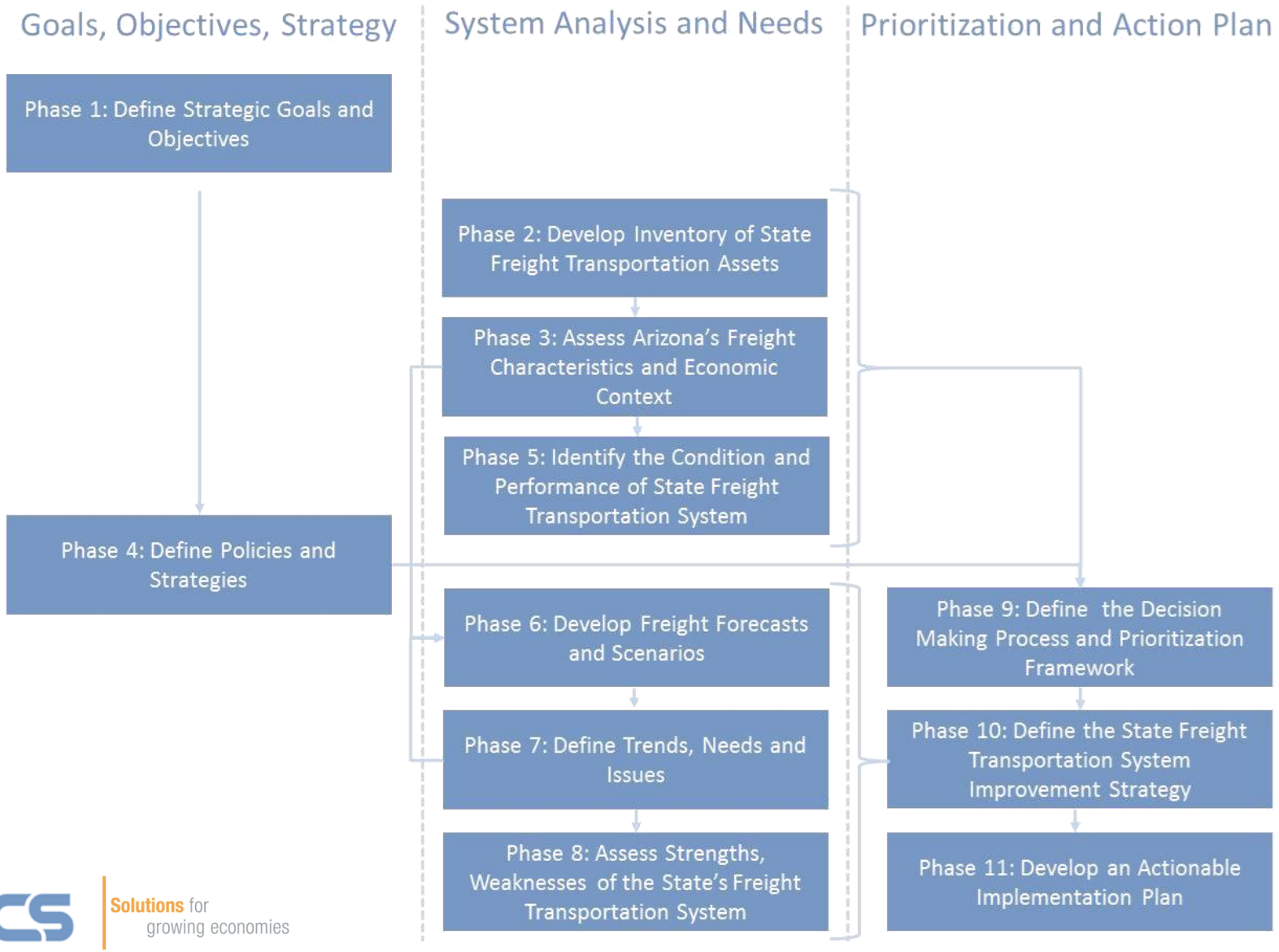
Project Status Report

Critical Rural and Urban Freight Corridors Approach and Input

Prioritization Approach and Input

Future Tasks and Implementation

Stepped Approach to the Project



Where are we Today?

Phase	Deliverable	Consultant	PM	TAC	Public
Phase 1	Arizona's Freight Transportation Goals	✓	✓	✓	✓
Phase 2	Inventory on State Freight Transportation System Assets	✓	✓	✓	✓
Phase 3	Individual WPs on Arizona's Top 10 Sectors	✓	✓	✓	✓
	Phase 3: Economic Context of Freight Movement in Arizona	✓	✓	✓	✓
Phase 4	Policies and Strategies Suggested for Arizona	✓	✓	✓	✓
Phase 5	Proposed Performance Measures, Data and Approach	✓	✓	✓	✓
	Condition and Performance of Freight Transportation System	✓	✓	✓	✓
Phase 6	Arizona Freight Forecasts	✓	✓	✓	✓
Phase 7	Potential Freight Scenarios, and Implications	✓	✓	✓	✓
	Trends, Needs and Issues, and Policy Responses	✓	✓	✓	✓
Phase 8	Freight system strengths, weaknesses and policy priorities	✓	✓	✓	✓
Phase 9	Key Strategic "Screens" to Assess Freight Investments	✓	✓	✓	
	Strategic Framework for Decision Making Prioritization Process	☐	☐	☐	
Phase 10	Strategic Options, Rationale, Linkage to Goals, Expected Outcomes	☐			
	Arizona Freight System Improvement Strategy	☐			
Phase 11	Funding and Financing Options to Implement the Freight Plan				
	Arizona State Freight Plan - Implementation Plan				

✓ Completed

☐ Underway

Presentation Overview

FAC Future Directions

Project Status Report

Critical Rural and Urban Freight Corridors Approach and Input

Prioritization Approach and Input

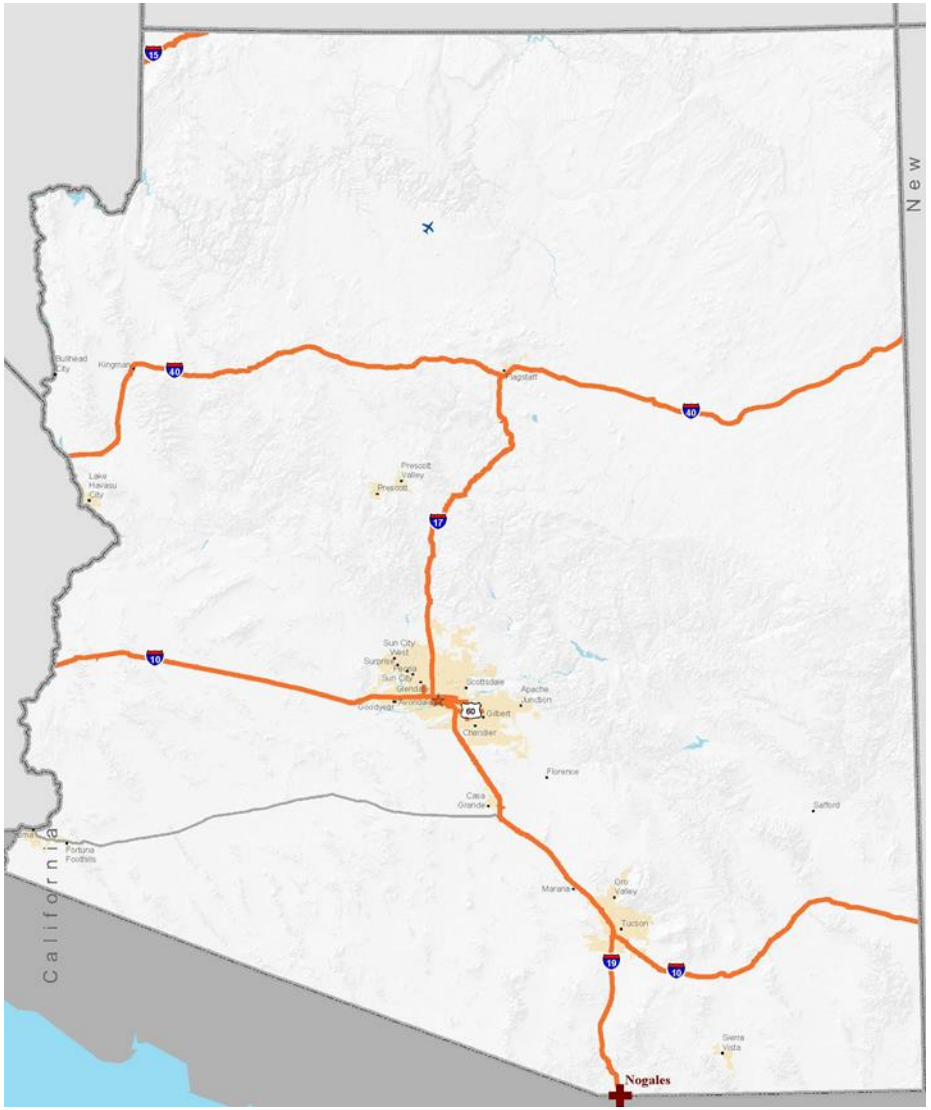
Future Tasks and Implementation

CRFC and CUFC Designation

- Refresher on CRFC and CUFC
- Guiding principles for corridor designation
- Proposed approach based on FAC guidance
- Solicit comments

CRFC and CUFC Refresher

- Defined in the FAST Act
- Part of NHFN
  - PHFS – 1,025 mi
  - Other interstates – 179 mi
  - CRFC – 205 mi
  - CUFC – 102.5 mi
- ADOT leads CRFC designation
- ADOT or MPO leads CUFC designation
- Criteria are open



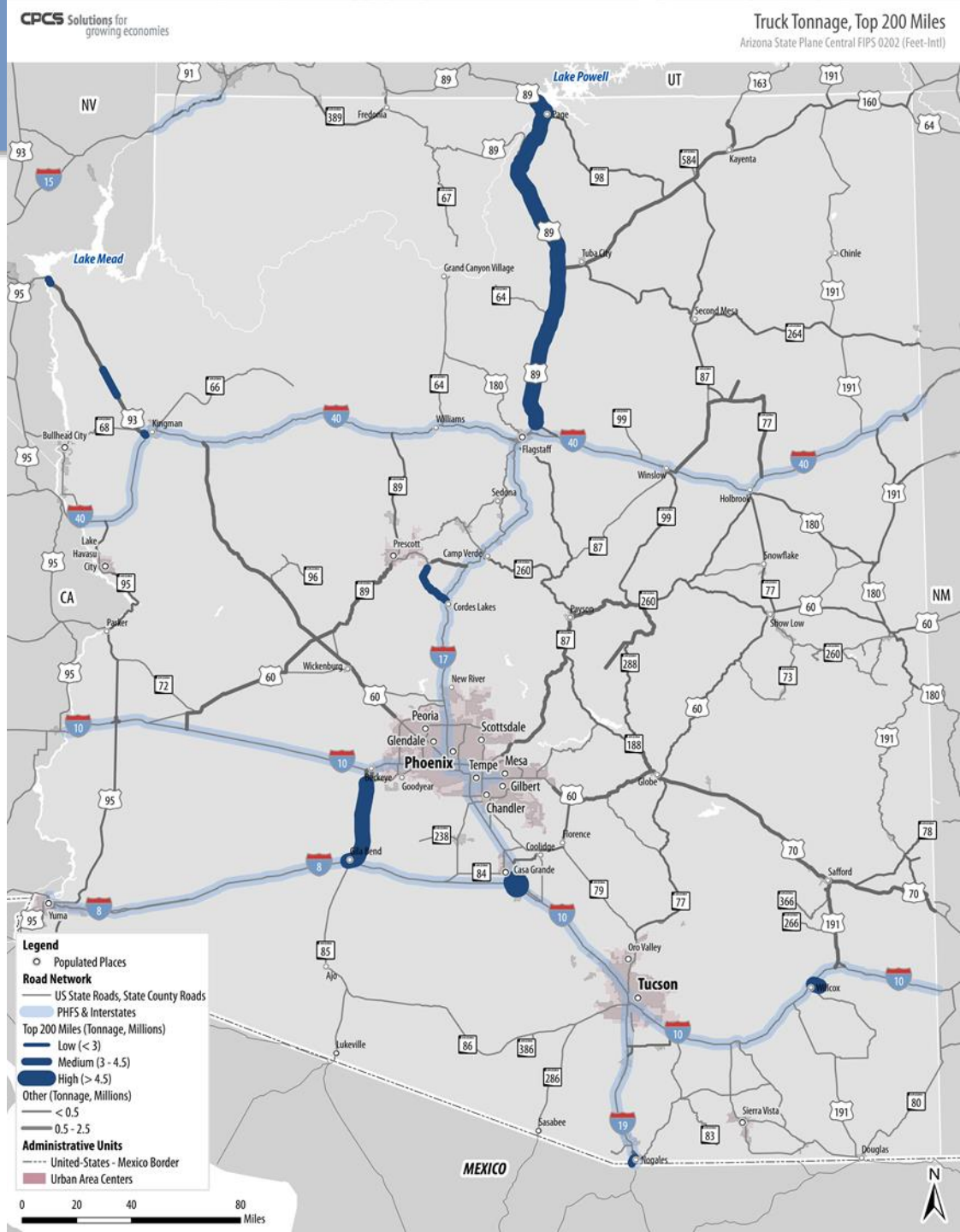
Draft – Guiding Principles for Designation

- Data driven approach
  - Triangulate using multiple data sets
  - Demand and performance focused
- Connected NHFN in Arizona
  - Focus on defining corridors
- Maximize the mileage
  - Minimize redundancy
- Collaboration
  - FAC, ADOT, MPOs

Draft – Criteria for CRFC Designation

- FAC provides stakeholder input
  - Identify criteria and freight generators
  - Solicit FAC comment and build network through an iterative process
- Criteria to date
  - Arizona tonnage & value - Transearch
  - Truck counts – ADOT 2015 data
  - Truck traffic percentage – ADOT 2015 Data
  - Annual hours of delay – ATRI & ADOT
  - Warehousing - CBRE

Draft – Critical Rural Freight Corridor Criteria - Tonnage



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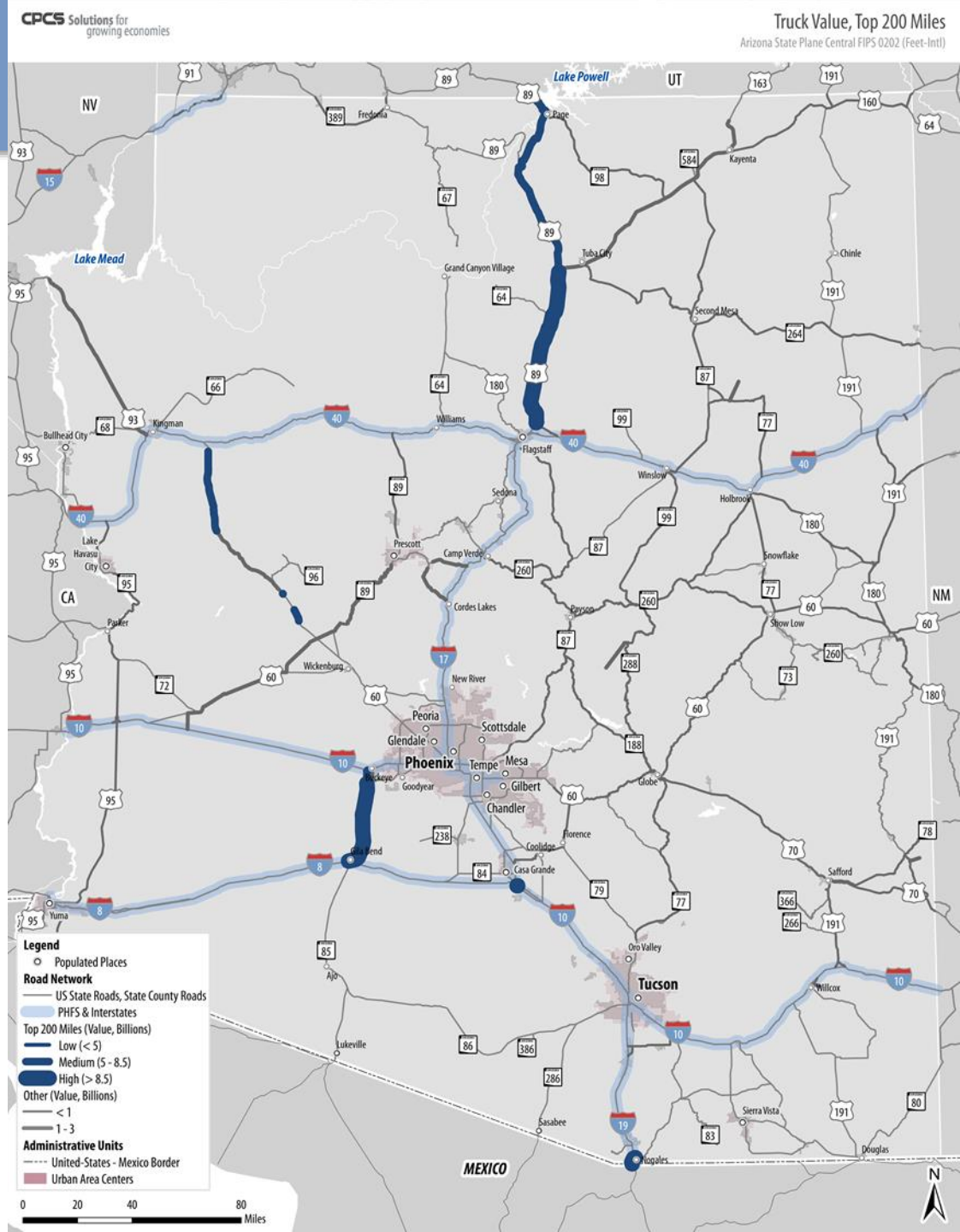
Draft – Critical Rural Freight Corridor Criteria - Value



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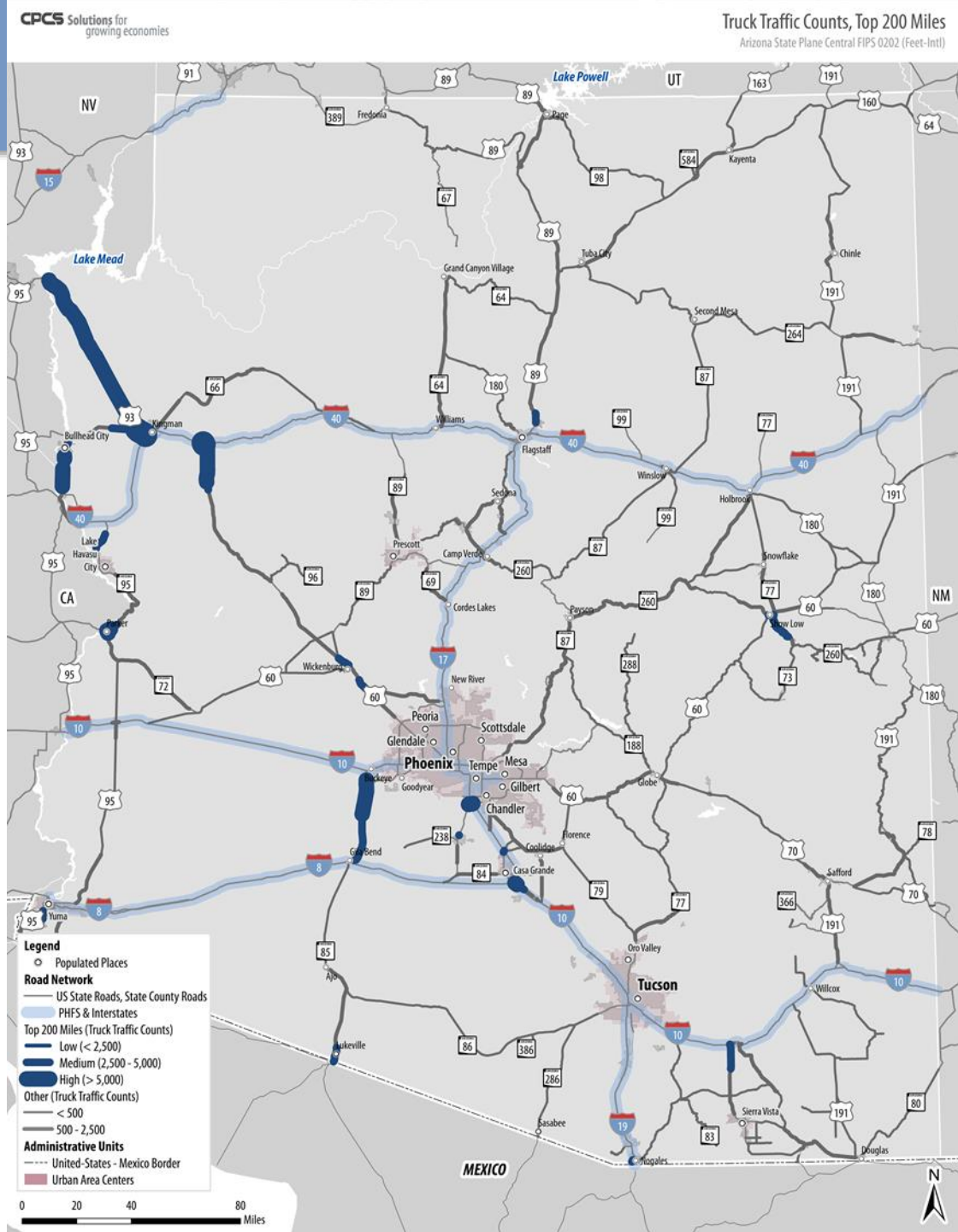
Draft – Critical Rural Freight Corridor Criteria - AADTT



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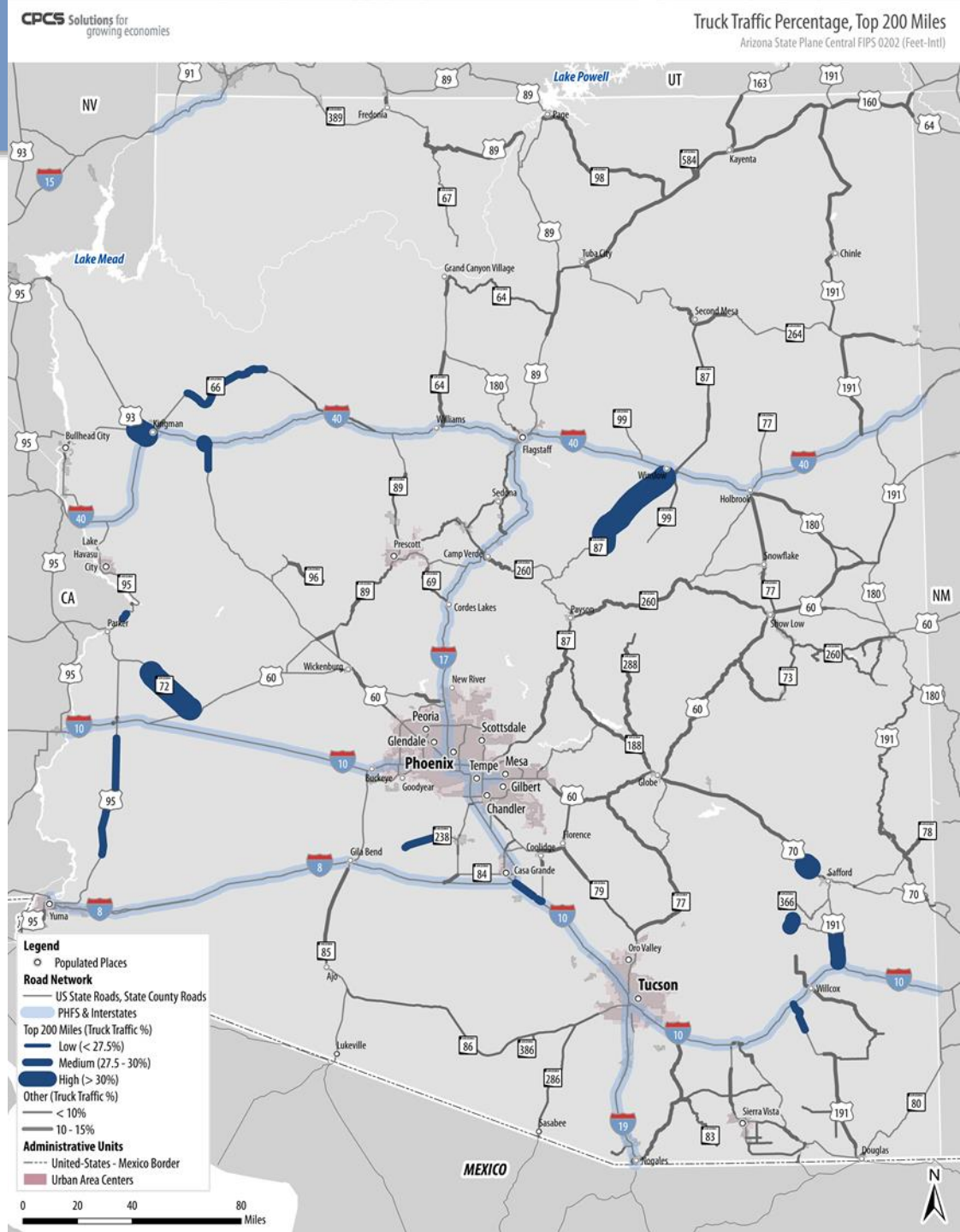
Draft – Critical Rural Freight Corridor Criteria – Truck Percentage



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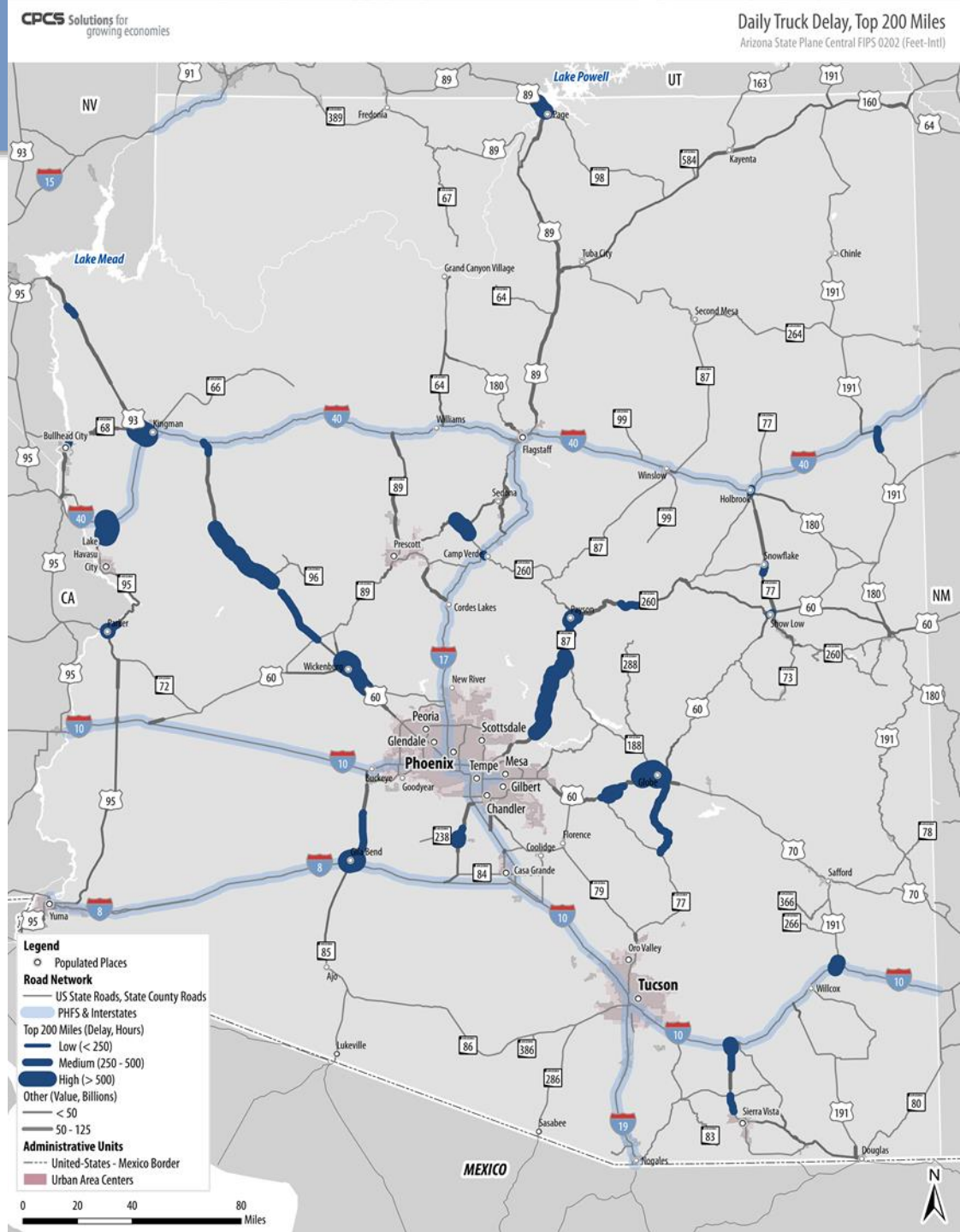
Draft – Critical Rural Freight Corridor Criteria – Annual Delay



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Discussion

- What other criteria might be included in the designation of CRFC?
- How should criteria be consolidated?
- Are there specific facilities that are not included that should be?

Presentation Overview

FAC Future Directions

Project Status Report

Critical Rural and Urban Freight Corridors

Prioritization Approach and Input

Future Tasks and Implementation

From Vision, Goals and Objectives to Strategy and Priorities

Prioritization is directly linked to Freight Plan Goals, Vision, Policies

Vision Statement, Goals and Objectives (Phase 1)

Policies and Strategies (Phase 4)

Decision Making Process and Prioritization Framework (Phase 9)

Phase Reference Graphics

Strategic Framework for Decision Making Process, Prioritization

Long list of issues within ADOT's jurisdiction

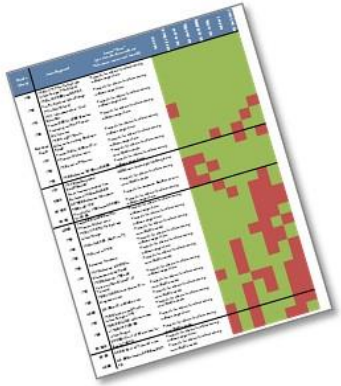
Step 1 - Strategic Filter: Qualitative assessment of issues against merit-based considerations

Short list of "strategic" issues

Step 2: Weighted Prioritization: Quantitative assessment of priorities

Priority projects

Step 2 Weighted Prioritization: Quantitative Assessment



Shortlist of the 30 most strategic issues (per Step 1)

Step 2: Weighted Prioritization: Quantitative assessment of priorities

Prioritization of strategic *issues* against Goal 1 and Goal 2 criteria and associated weights

Put forward potential projects to address each priority strategic freight issue

Prioritization of *potential projects* against Goal 3 criteria and associated weights

Priority projects

FAC Input on Prioritization of Projects

5-minute survey

- Complete during break
- Online version for remote participants

Results

- Will inform weights

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Arizona Freight Advisory Committee
Project Prioritization Input

1.1 Background

We are asking the Arizona Freight Advisory Committee (FAC) to provide input on freight stakeholder support for freight projects. FAC input will be used as a variable in the project prioritization process. The following outlines the specifics regarding this input:

- Individual responses will be kept confidential and will not be attributed to an individual or organization.
- The 30 projects identified in the first screen have been classified into representative project types.
- Aggregated scores will be used to increase the priority of projects with high support and decrease the priority of those with low support.

1.2 Type of Respondent

What best describes the type of transportation system user you represent? (Please Circle One)

Government **Shipper** **Carrier**

Industry Association **Other**

1.3 Freight Advisory Committee Input

Please rank each project type by circling one, two, three, four or five, with **one being the lowest level of support and five being the highest**. Do the same for the location factors, one being the lowest level of support and three being the highest. **Use each number only once when ranking project type and location variables.**

Project Types	Low High
Climbing/Passing Lanes • Constructing new climbing and passing lanes	1 2 3 4 5
Widening • Constructing lanes and to increase capacity	1 2 3 4 5
Traffic Interchange • Making improvements at points where roadways connect	1 2 3 4 5
Intelligent transportation system (ITS) • Optimize traffic signals, install signs providing information, etc.	1 2 3 4 5
Proposed Corridors • New roadways or significantly upgrading existing roadway	1 2 3 4 5

Break

10 Minute Break

Getting from Long List of Issues to Short List of Priority Projects

Long list of issues within ADOT's jurisdiction

Step 1 - Strategic Filter: Qualitative assessment of issues against merit-based considerations

Short list of "strategic" issues

Step 2: Weighted Prioritization: Quantitative assessment of priorities

Priority projects

A Long List of Issues and then Projects

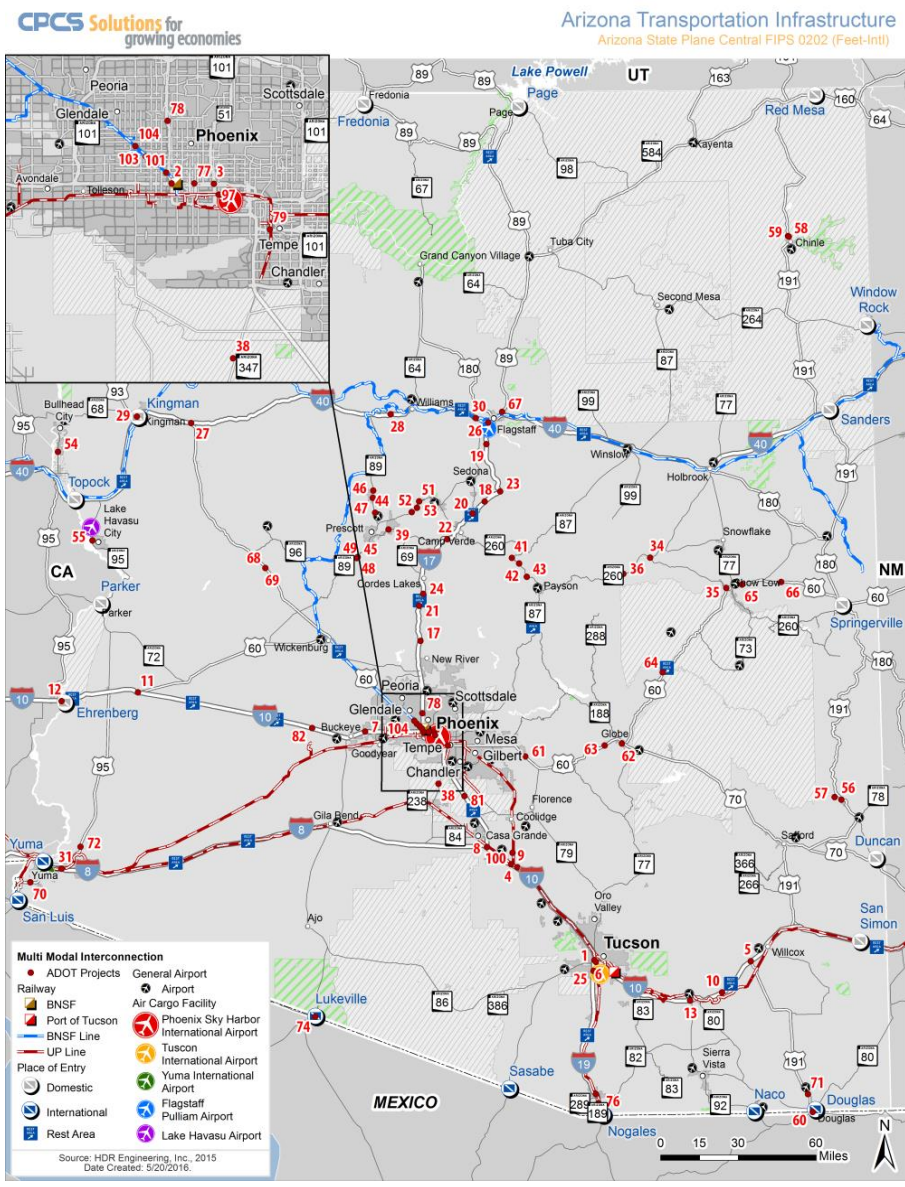
Freight Issues v. Projects – Screen issues then explore potential solutions

Freight Issues

- Issues are impediments to freight movement with many potential solutions

Freight Projects

- Projects are a specific approach to mitigating a freight issue



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Strategic Issues for Consideration

Working Papers:
(3) Economic Context
(5) Condition & Performance
(7) Trends, Needs, Issues

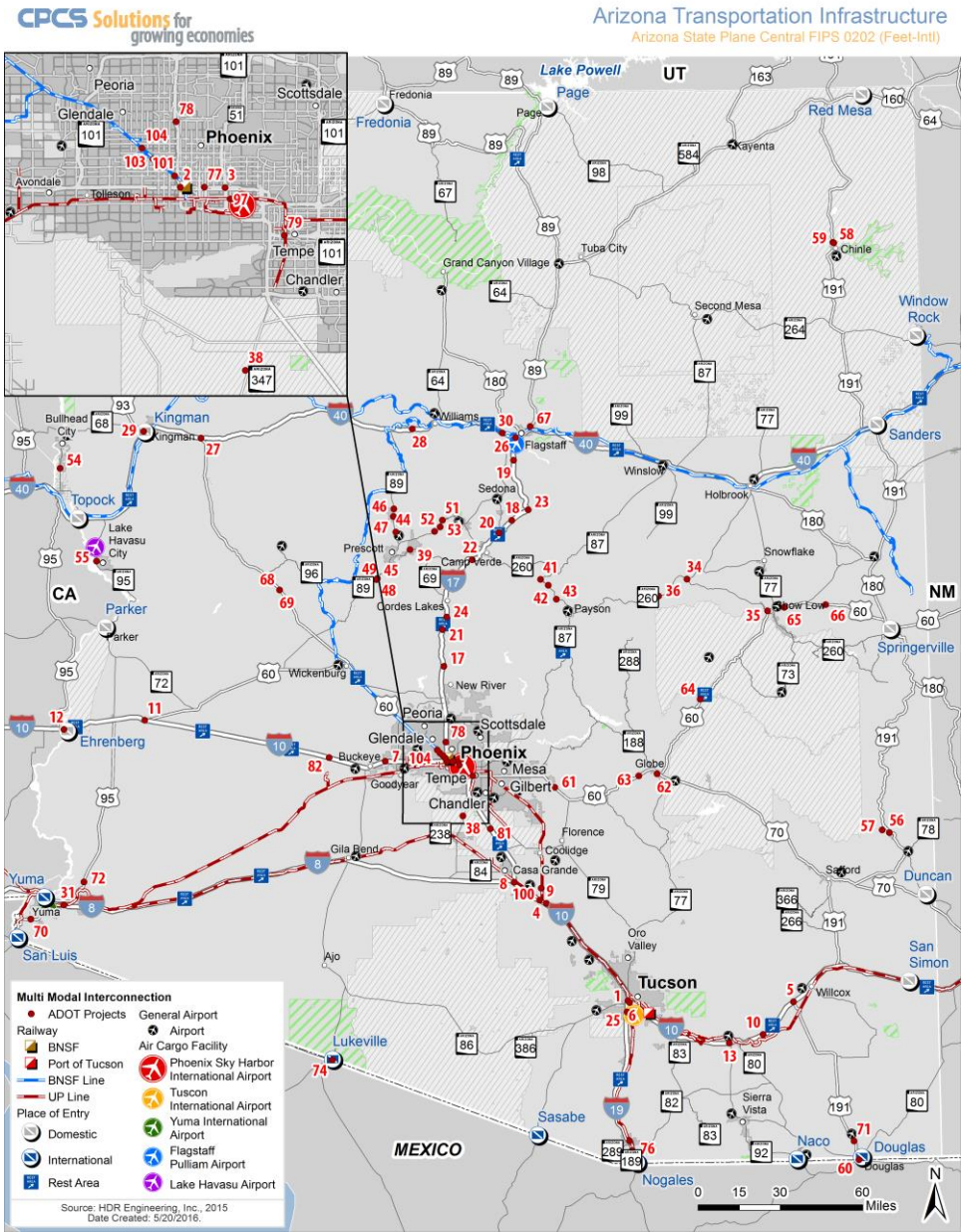
	Who's Jurisdiction?				
Issue Types	**ADOT**	**Federal**	**MPO/ Local**	**Private**	**ADOT Response Lever**
Re-occurring urban congestion	✓		✓		Planning, Operations, Investment
Improvements to maintenance and operations	✓		✓		Operations
Modernization of infrastructure, systems, operations (e.g. ITS)	✓		✓		Operations, Investment
Expansion of physical capacity (e.g. additional lanes)	✓		✓		Planning, Investment
Re-occurring rural bottlenecks	✓		✓		Planning, Investment
Inadequate passing/climbing lanes on the highway system	✓		✓		Planning, Investment
Inadequate highway on/exit ramps for truck access	✓				Planning, Investment
Border access	✓	✓	✓		Planning, Investment
Impediments to freight system resilience	✓	✓	✓	✓	Planning
Inadequate truck parking facilities	✓		✓	✓	Planning, Investment
Restrictive axle loads on certain corridors	✓	✓	✓		Regulations
Problematic at grade rail crossings	✓		✓	✓	Engagement, Planning, Investment
Rail infrastructure/services				✓	Engagement
Inadequate pipeline system storage capacity				✓	Engagement
Inadequate international air service				✓	Engagement
Municipal by-laws that impede truck movements (off-peak noise, road geometry, etc.)			✓		Engagement
Inadequate supply of truck drivers				✓	Engagement

Source: CPCS

The Long List (before any filtering)

Initial issues identification

- 104 total issues
- Mapped (where possible)
- Starting point for screening



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Step 1: Applying the Strategic Filter

Merit-based considerations tied to goals, objectives, strategies

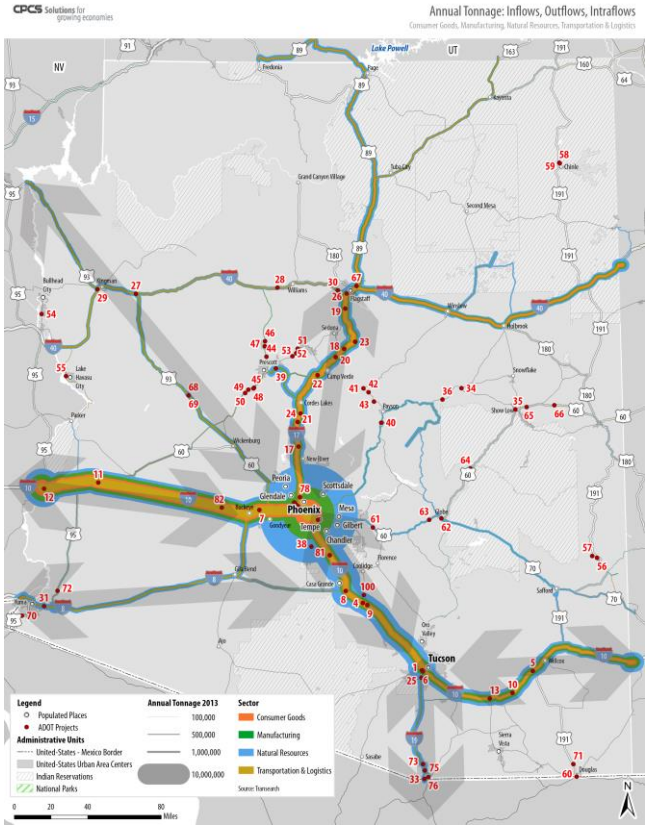
- Simple **Yes/No** approach to assessing merit-based considerations

Goal 1 - Enhance Economic Competitiveness

- Is the issue on a Key Commerce Corridor (KCC)?
- Are the flows significant?
- Is the issue an impediment to trade?

Goal 2 – Increase System Performance

- Does the issue improve mobility?
- Does the issue increase reliability?
- Does the issue improve safety?
- Does the issue reduce transportation costs?
- Is the issue in a nonattainment or maintenance area?



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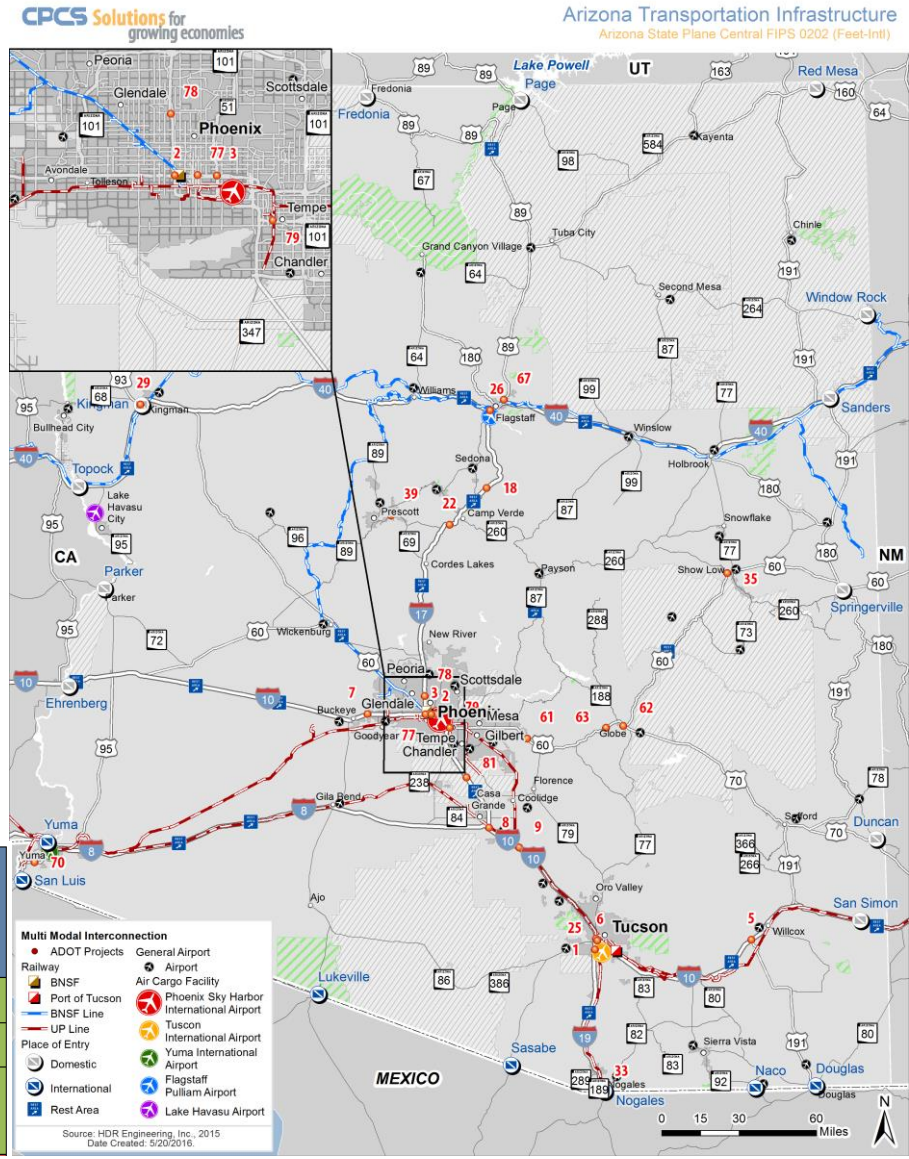
The Short List

Strategic filter results

- 30 total issues
- Most issues had five “yes” values
- About 60% of issues relate to urban congestion
- About 1/3 of issues related to rural bottlenecks (most are direct ADOT jurisdiction)
- Balance are inadequate passing / climbing lanes and border access

Ref	Route (Area)	Issue Segment	Issues “Type” (per classification in Figure 2-2)	G1-KCC	G1-Significant	G1-Export	G2-Mobility	G2-Reliability	G2-Safety	G2-Cost	G2-Emissions
1	I-10	I-10 at I-19 Traffic System Interchange	Projects to alleviate re-occurring urban congestion								
2	I-10	I-10 at I-17 Traffic System Interchange (The Stack)	Projects to alleviate re-occurring urban congestion								
3	I-10	I-10 at SR 202L and SR 51 Traffic System Interchange (The Mini-Stack)	Projects to alleviate re-occurring urban congestion								



Step 2: Weighted Prioritization

Long list of issues within ADOT's jurisdiction

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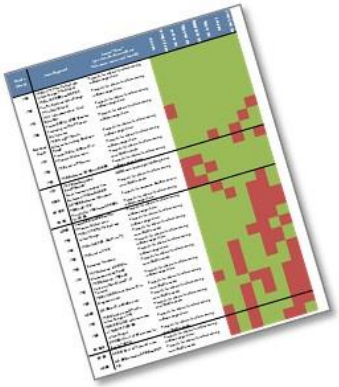
Priority projects

Step 2 Weighted Prioritization: Quantitative Assessment



Shortlist of the 30 most strategic issues (per Step 1)

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Put forward potential projects to address each priority strategic freight issue

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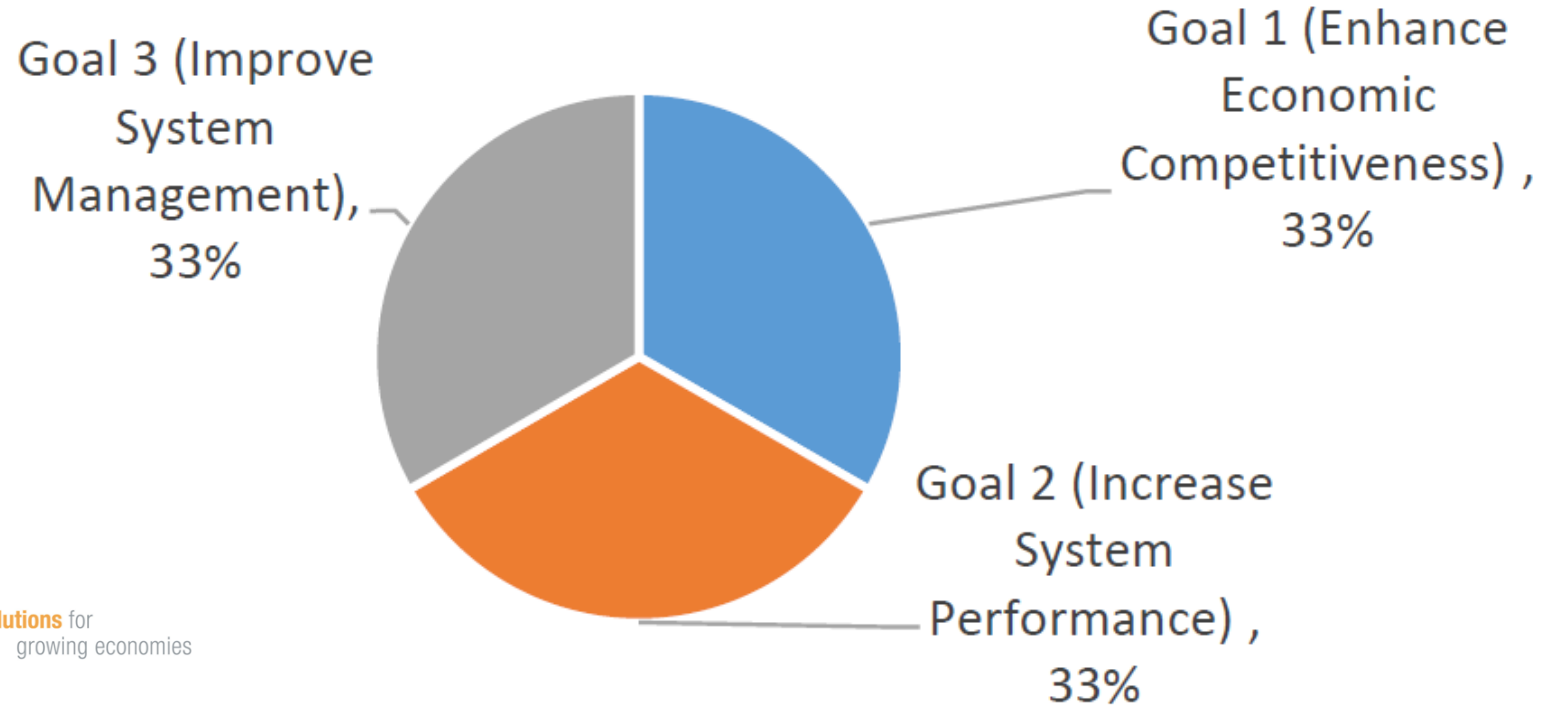
Priority projects

Draft – Goal Weighting

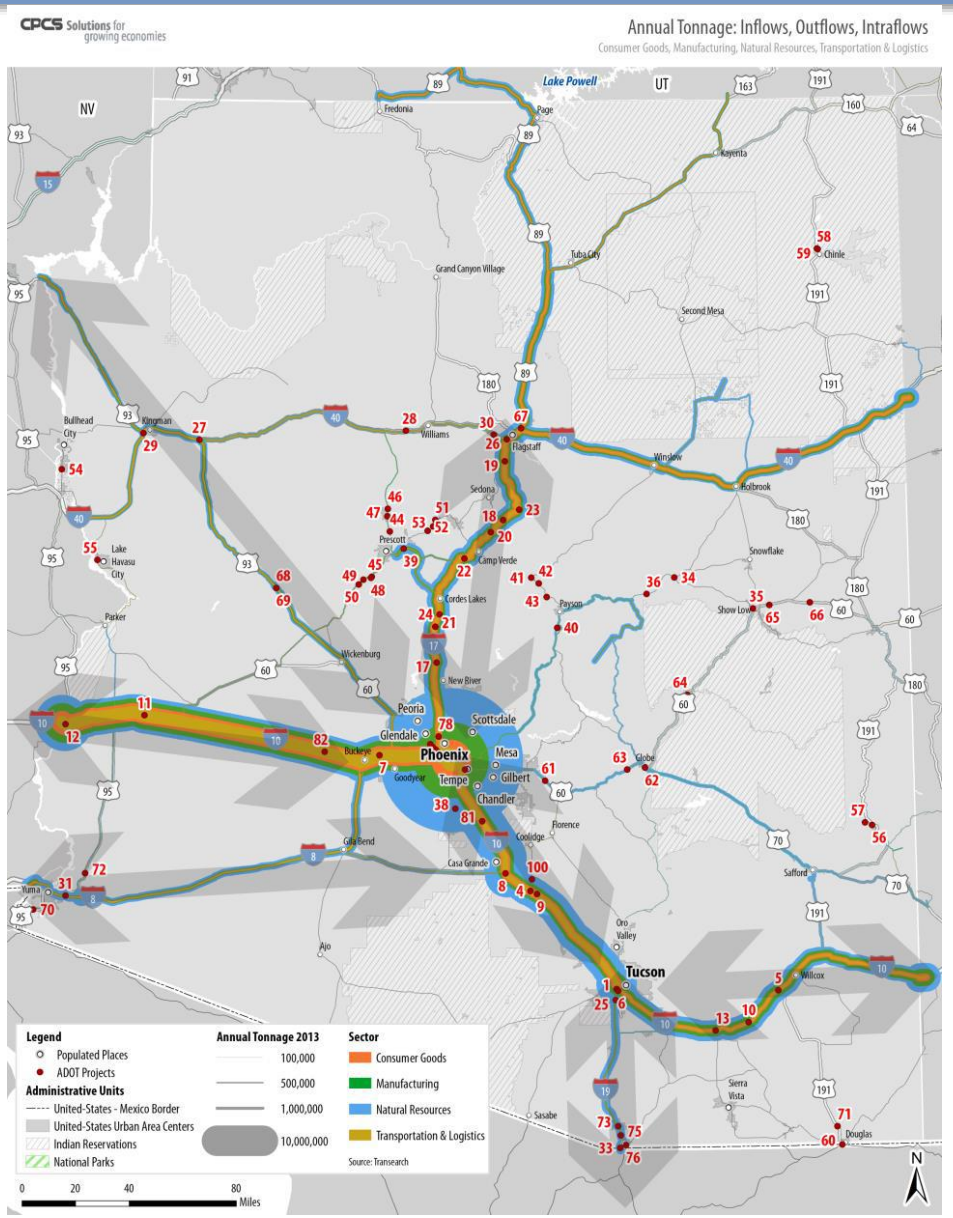
- Equal weights to correspond to each of the three overarching goals of the Freight Plan.
- Weighting differs by criteria relating to each goal.



Draft – Is the Issue on a Key Commerce Corridor? (G1-KCC)

The Arizona State Freight Plan should prioritize system improvements, including incremental improvements that will bolster the performance of the Key Commerce Corridors.

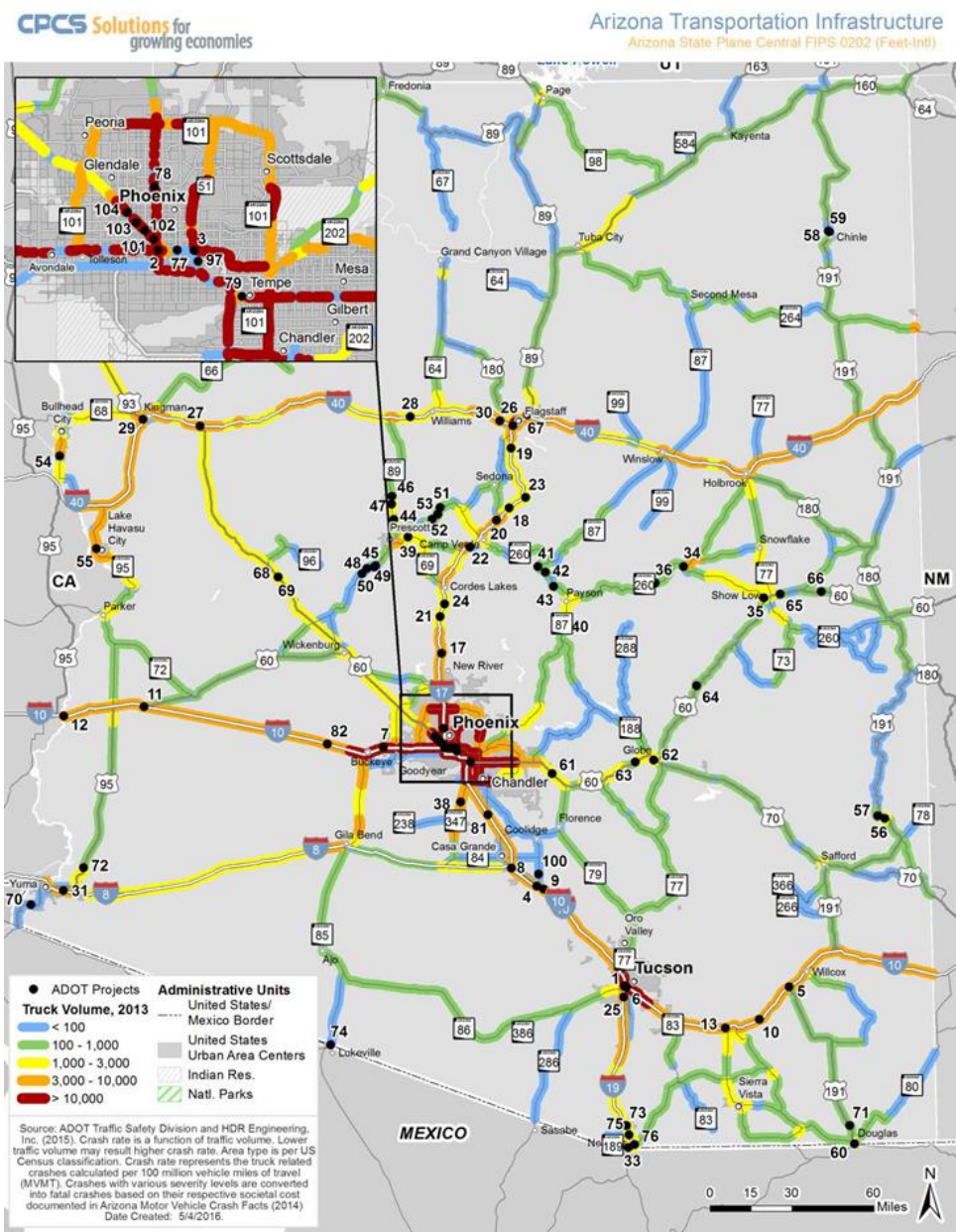
- *Weighting – 8% (25% Goal 1 weight)*



Draft – Are the Flows Impacted by the Issue Significant? (G1-Significant)

Annualized Average Daily Truck Traffic (AADTT) as a proxy for the significance of freight flows in Arizona.

- *Weighting – 8%*
  (25% Goal 1 weight)



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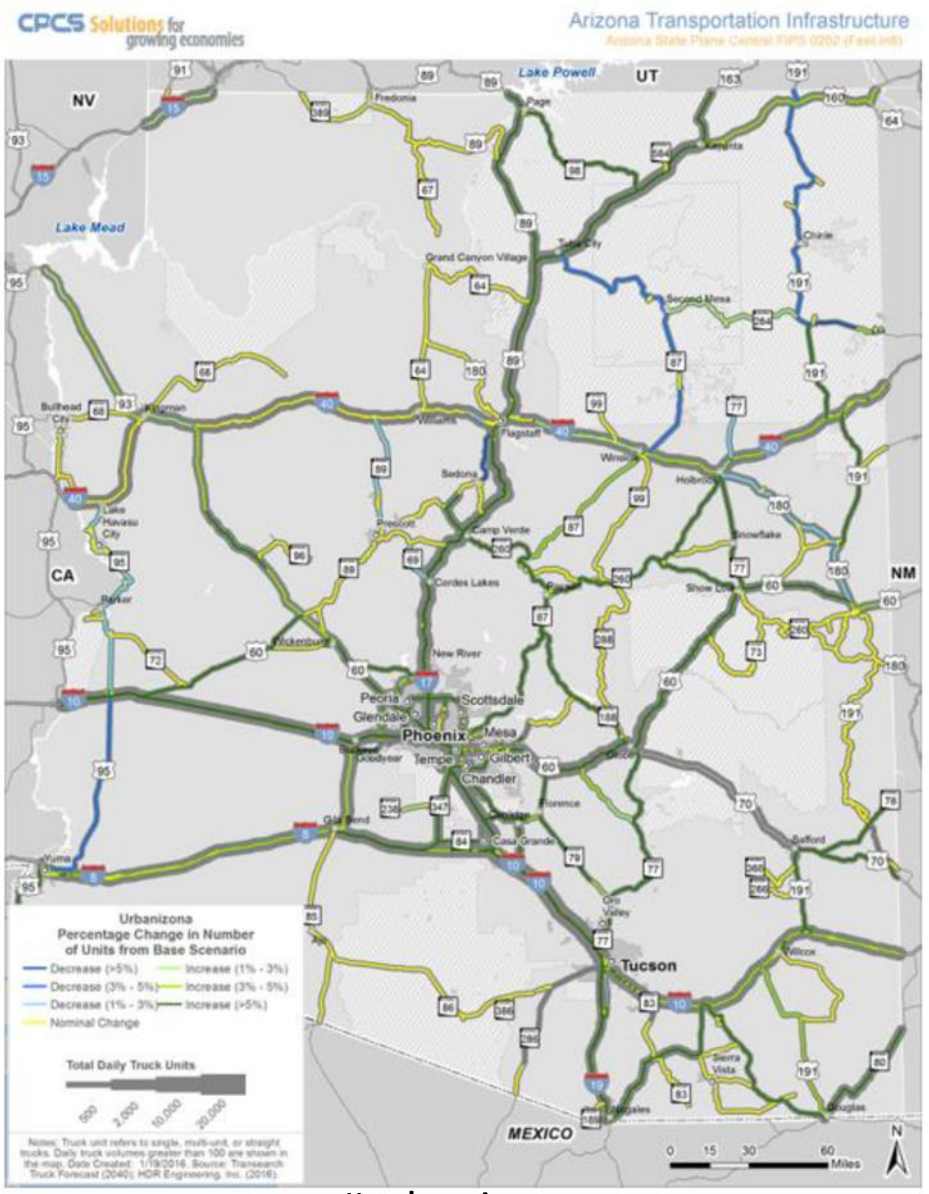
Draft – Do Future Scenarios Aggravate this Significance? (G1-Significant/Scenarios)

Three alternative future scenarios were developed:

- (0) assigned if there is no congestion over the issue segment under any of the scenarios;
- (1) if congestion aggravates the issue segment in one scenario;
- (2) if congestion aggravates the issue segment in two scenarios; anc
  (3) if congestion aggravates the issue segment in all three scenarios
- *Weighting – 8%*
  (25% Goal 1 weight)



#urbanizona

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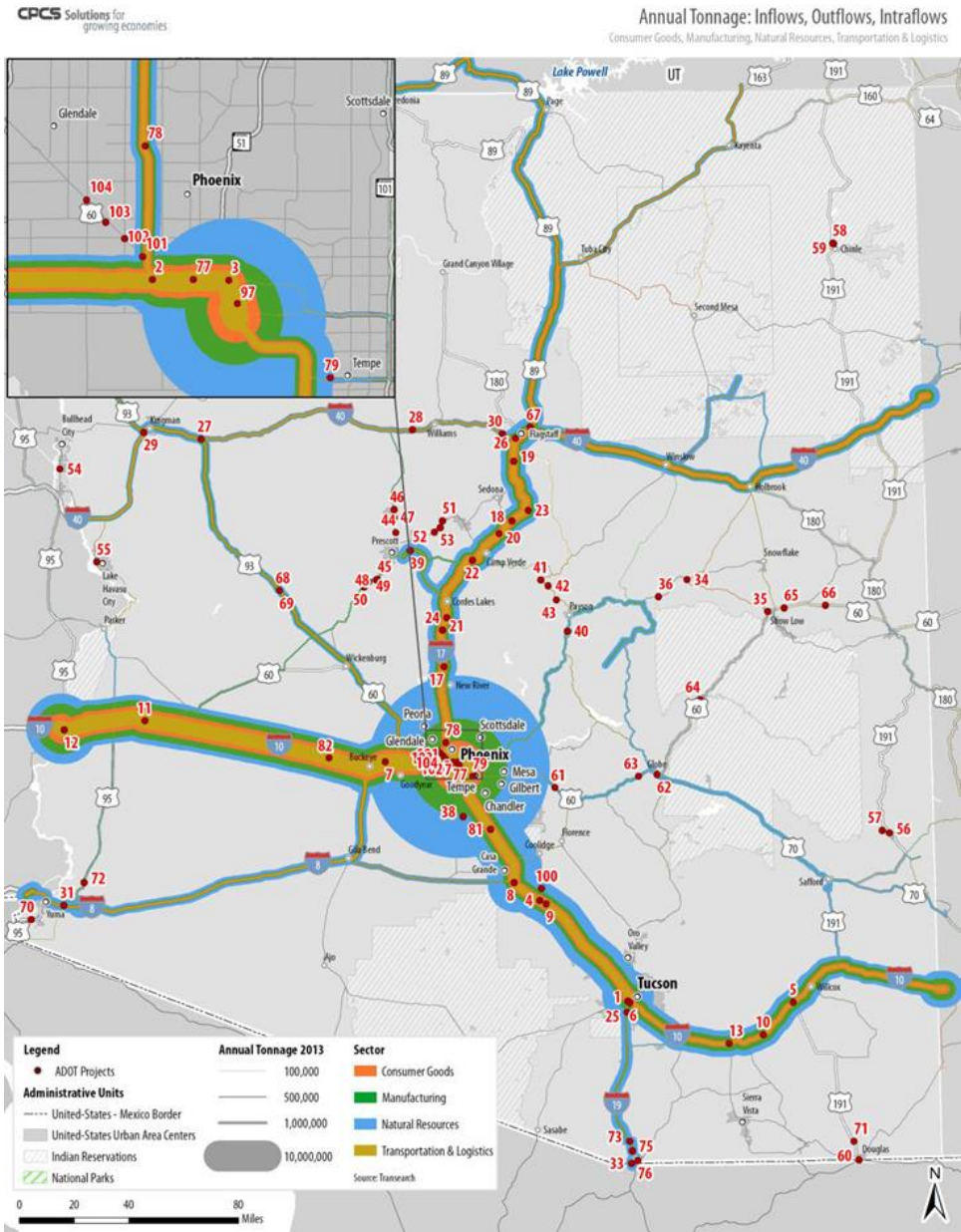
Draft – Is the Issue an Impediment to Trade, and in Particular, Exports? (G1-Export)

Inbound, outbound and through freight traffic flows of manufacturing and natural resources were used as proxies for trade, given the importance and prominence of trade to these sectors.

- *Weighting – 8% (25% Goal 1 weight)*



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Draft – Would Addressing the Issue Improve Multi-modal Access? (G2-Modal Access)

Issues are given a value of (1) if they improve or provide direct access to a facility offering access to a different mode of transportation (such as an airport or intermodal rail facility), and a value of 0 if they do not.

- *Weighting – 2% (5% Goal 2 weight)*

Port of Tucson

Sky Harbor

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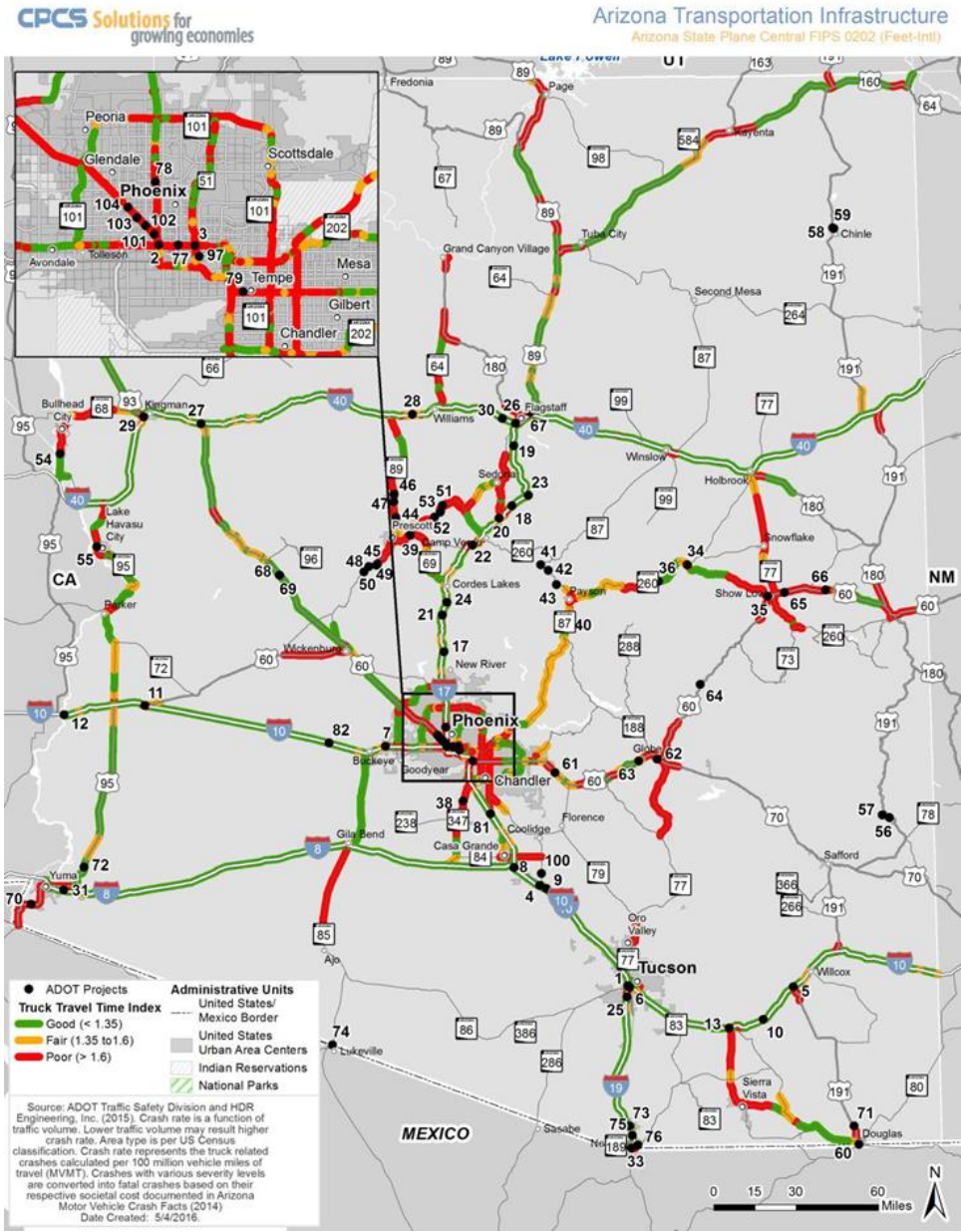
Draft – Does the Issue Improve Mobility? (G2-Mobility)

Mobility was defined using the Truck Travel Time Index (TTTI).

- *Weighting – 7% (20% Goal 2 weight)*



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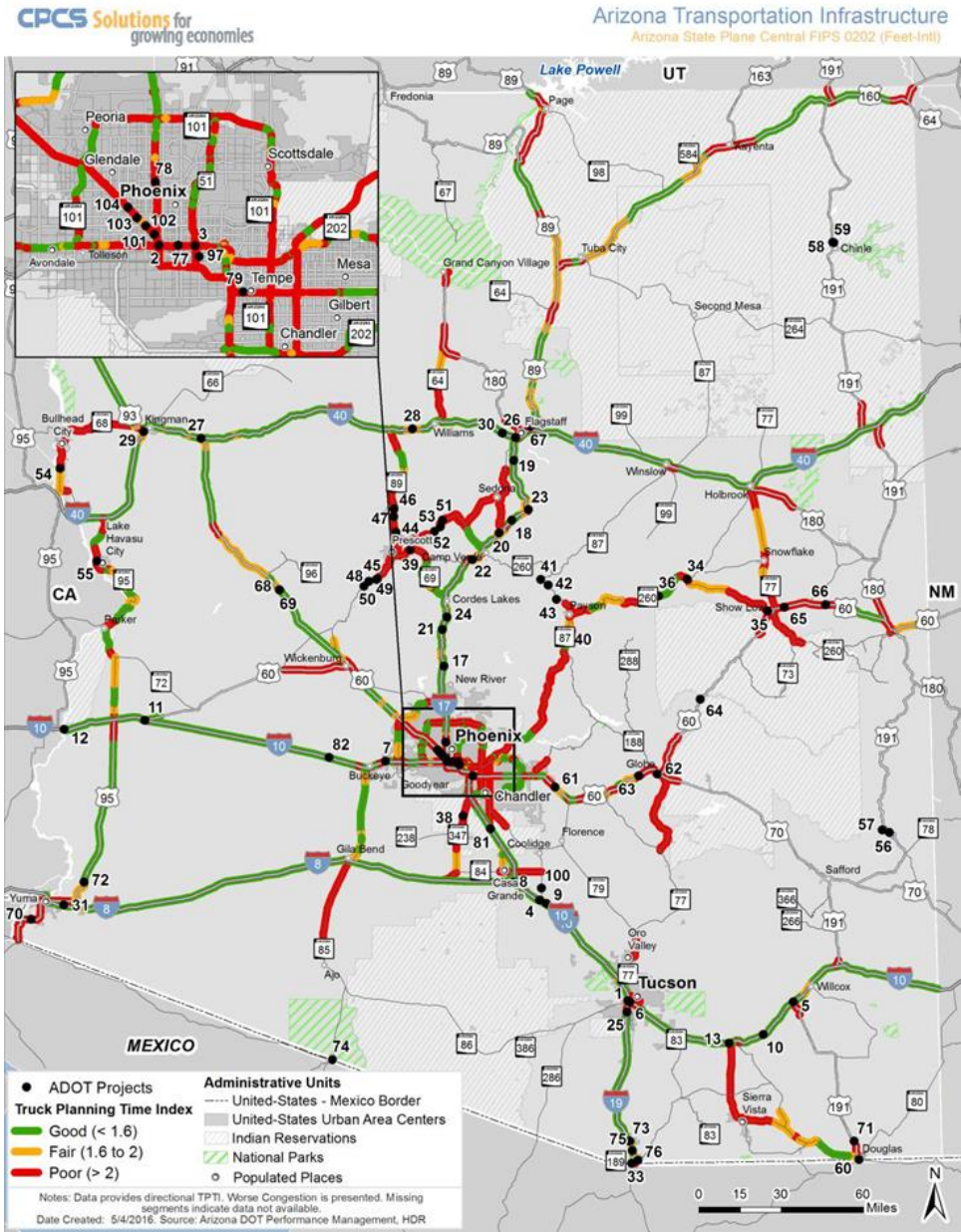
Draft – Does the Issue Increase Freight Transportation System Reliability? (G2-Reliability)

Reliability was defined using Truck Planning Time Index (TPTI).

- TPTI measures non-recurring delay which refers to unexpected delay caused by closures or restrictions.
- Weighting – 7% (20% Goal 2 weight)



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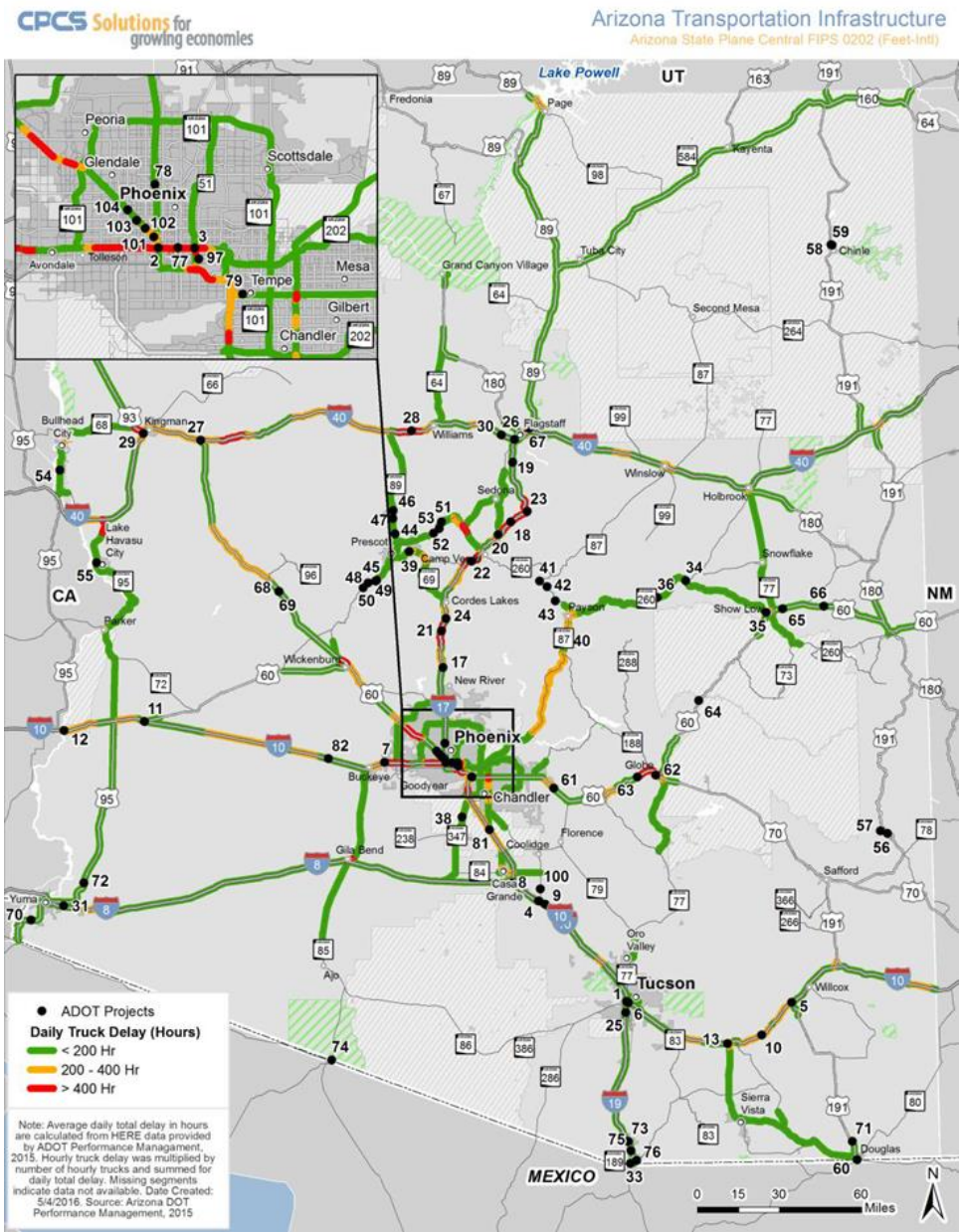
Draft – Does the Issue Reduce Transportation Costs of Freight Transportation? (G2-Cost)

Total daily hours of truck delay were used to assess truck costs on each issue segment.

- Weighting – 7% (20% Goal 2 weight)



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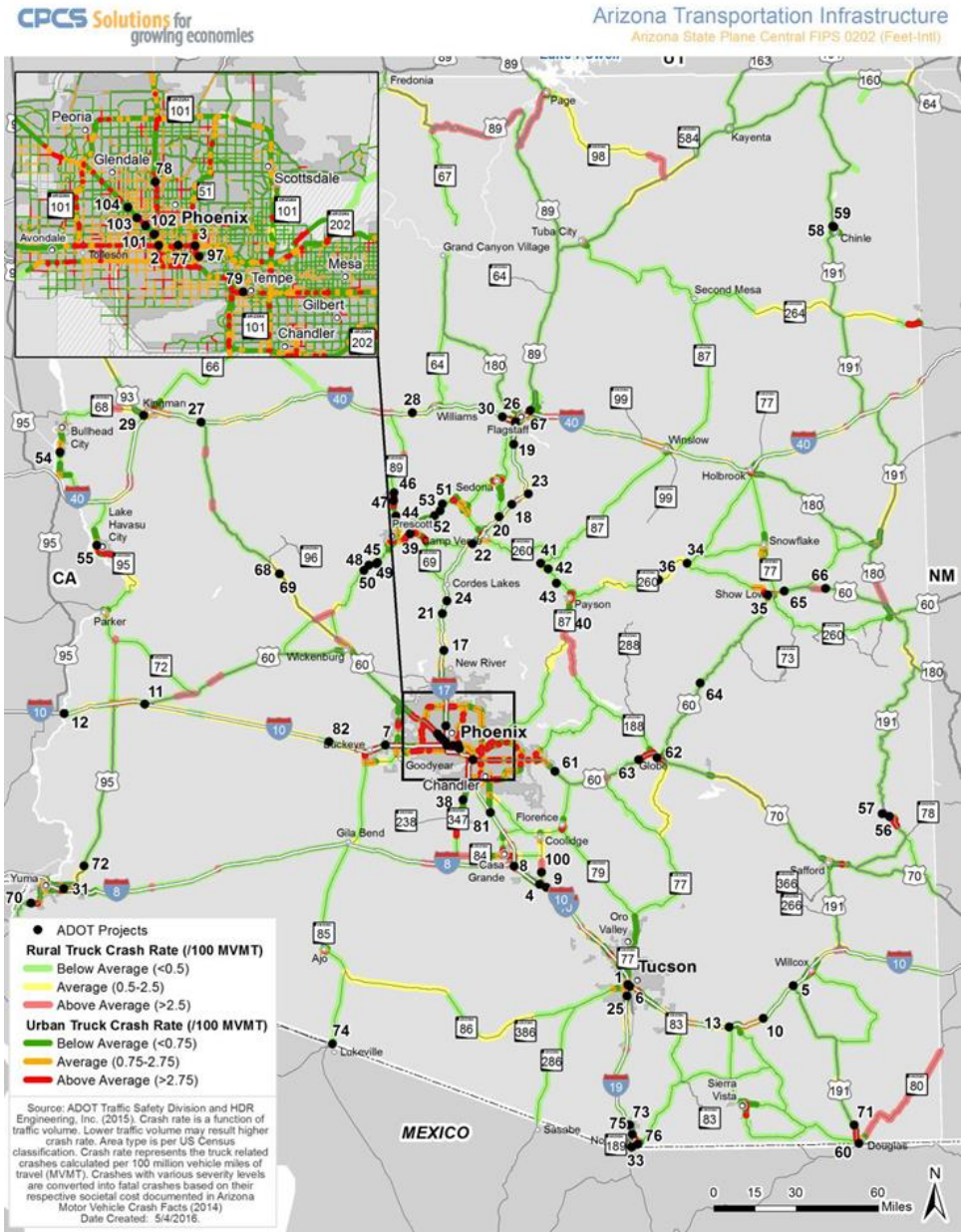
Draft – Does the Issue Hinder Transportation System Safety? (G2-Safety)

Safety was defined using the number of crashes involving trucks per 100 million vehicle miles travelled (VMT) and their total societal cost.

- Weighting – 7% (20% Goal 2 weight)



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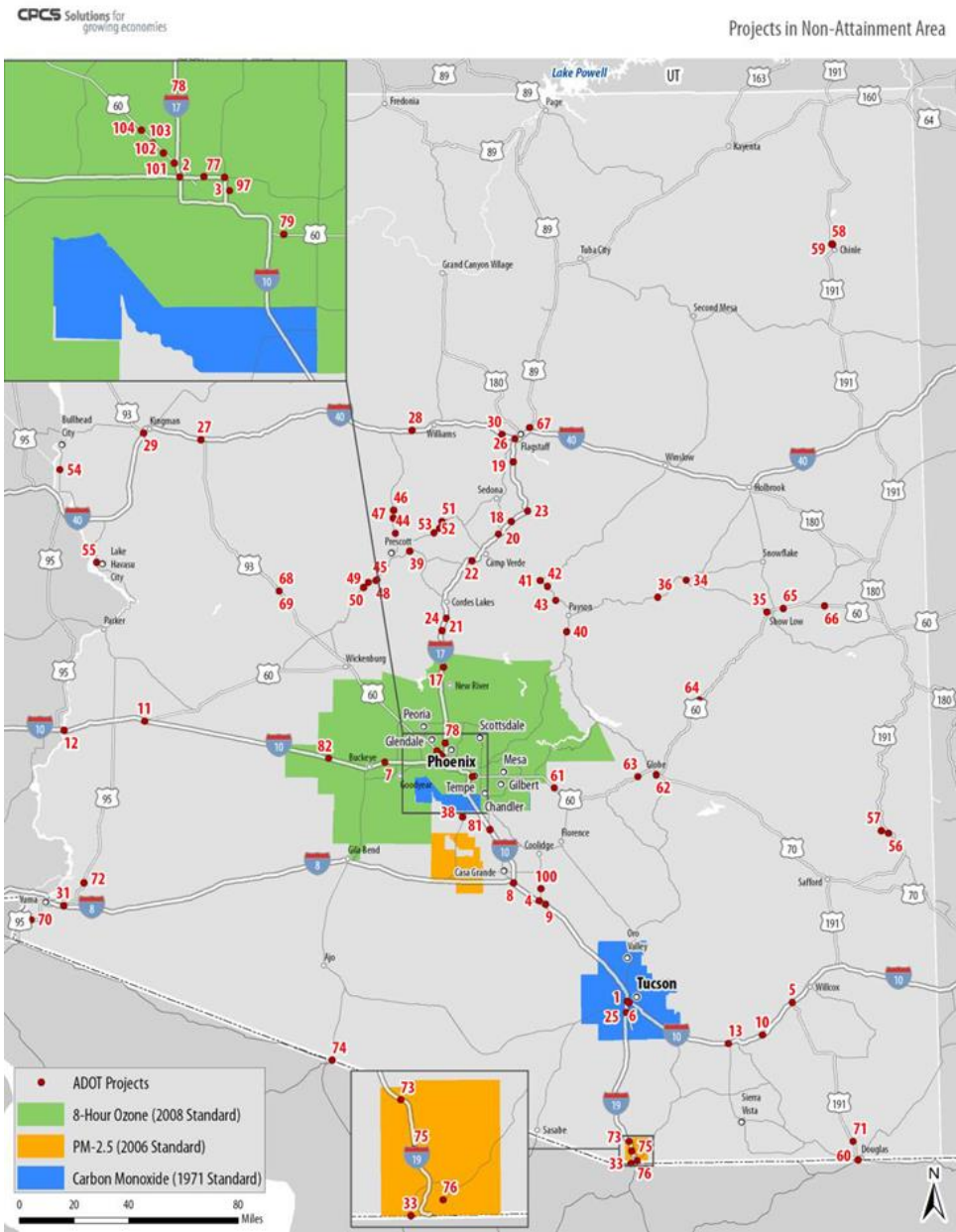
Draft – Does the Issue Result in Negative Social/Environmental Impacts? (G2-Emissions)

CO_2 emissions for peak-hour traffic volume for the project area were estimated, then peak-hour current speeds, volumes, road types, and truck percentages were used to estimate peak-hour emissions.

- Weighting – 3%
  (10% Goal 2 weight)



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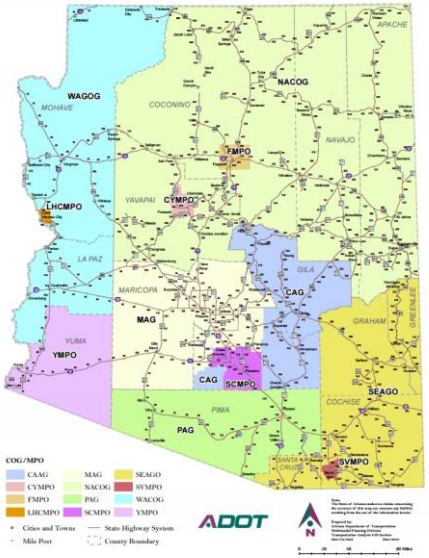
Conversion of Issues to Projects

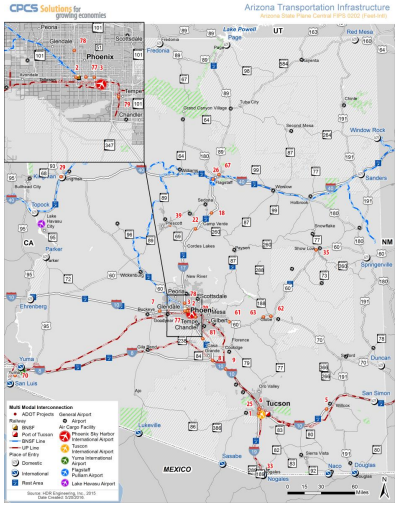
Put forward potential projects to address strategic freight issues

- Identify and prioritize most efficient projects to address issues



ADOT / MPO Input

Project parameters and data from recent / ongoing studies



Potential Projects

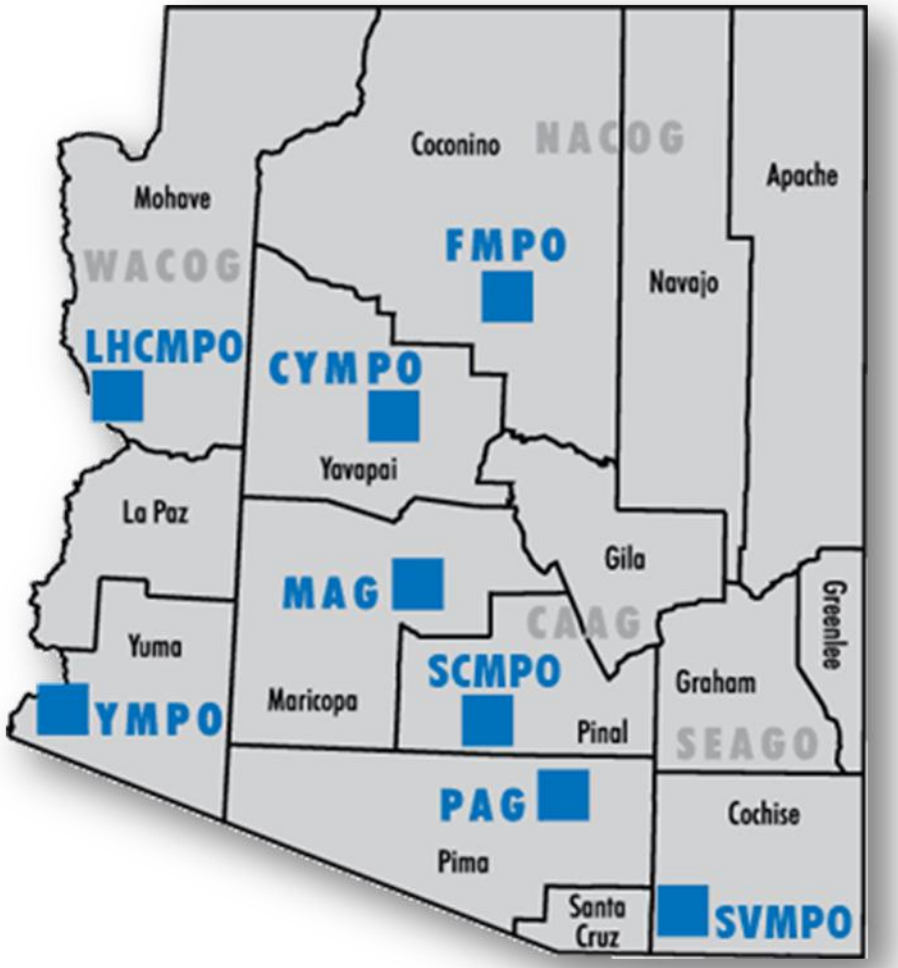
Draft – Does the Project Prioritize Good Management of Assets? (G3- Mgmt)

- Project is characterized as *preservation* vs. *modernization* vs. *expansion.*
- Weighting – 3%
  (10% Goal 3 weight)

Draft – Is the Project Appropriately Linked to Land-use/Regional Plans? (G3-Land Use)

Project is identified in BQAZ, statewide transportation framework studies and or regional transportation plans.

- Weighting – 5% (15% Goal 3 weight)



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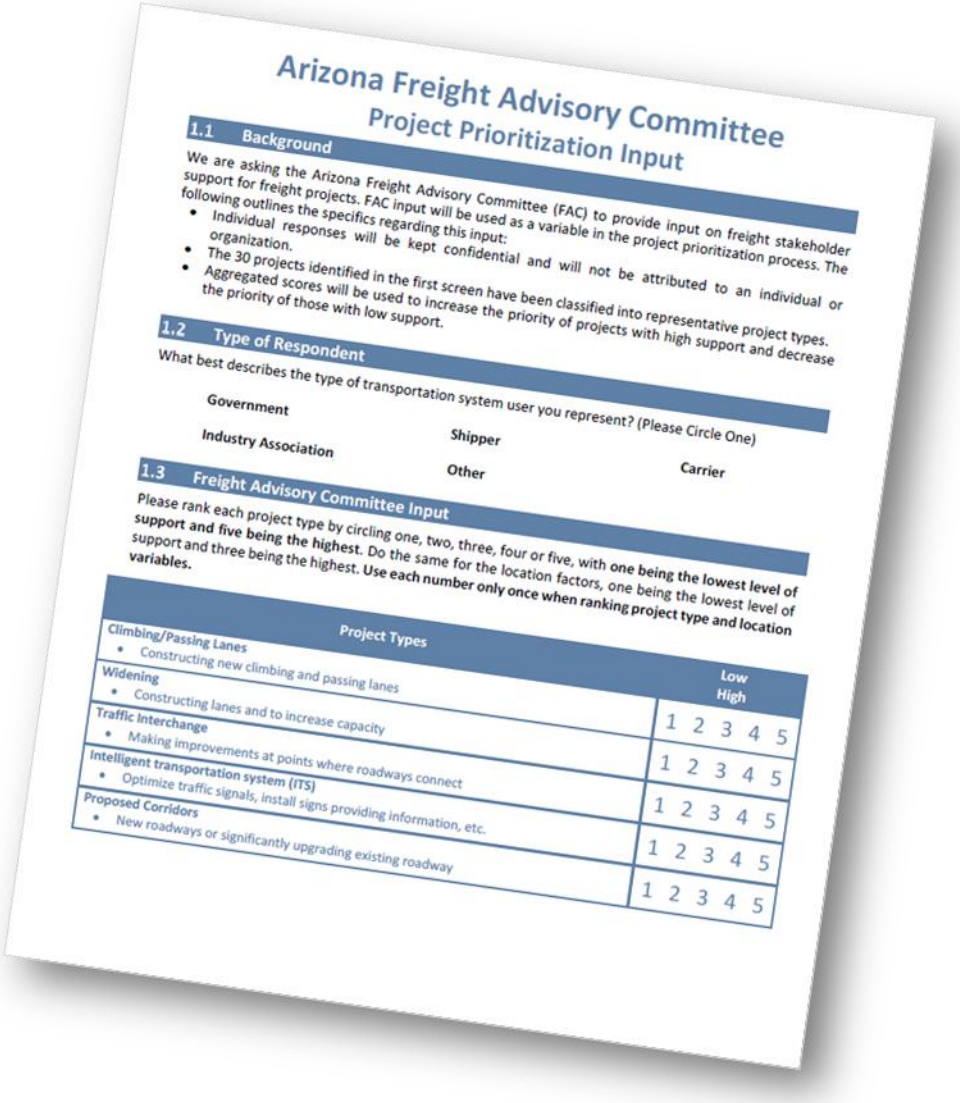
bqaz BUILDING A QUALITY ARIZONA

Draft – Would the Project be Expected to Face Public Resistance? (G3-Stakeholder Support)

Evaluate project with input from the Freight Advisory Committee.

- Weighting – 5% (15% Goal 3 weight)



Arizona Freight Advisory Committee
Project Prioritization Input

1.1 Background

We are asking the Arizona Freight Advisory Committee (FAC) to provide input on freight stakeholder support for freight projects. FAC input will be used as a variable in the project prioritization process. The following outlines the specifics regarding this input:

- Individual responses will be kept confidential and will not be attributed to an individual or organization.
- The 30 projects identified in the first screen have been classified into representative project types.
- Aggregated scores will be used to increase the priority of projects with high support and decrease the priority of those with low support.

1.2 Type of Respondent

What best describes the type of transportation system user you represent? (Please Circle One)

Government Shipper Carrier
Industry Association Other

1.3 Freight Advisory Committee Input

Please rank each project type by circling one, two, three, four or five, with **one being the lowest level of support and five being the highest.** Do the same for the location factors, one being the lowest level of support and three being the highest. **Use each number only once when ranking project type and location variables.**

Project Types	Low High
Climbing/Passing Lanes • Constructing new climbing and passing lanes	1 2 3 4 5
Widening • Constructing lanes and to increase capacity	1 2 3 4 5
Traffic Interchange • Making improvements at points where roadways connect	1 2 3 4 5
Intelligent transportation system (ITS) • Optimize traffic signals, install signs providing information, etc.	1 2 3 4 5
Proposed Corridors • New roadways or significantly upgrading existing roadway	1 2 3 4 5

Draft – Would the Project be Likely to Attract Funding/Financing Partners? (G3-Funding/Financing)

Projects assessed on their potential to engage partners to fund them.

- Value assigned for each of the following characteristics that applied to the project:
  - occurs within an MPO or COG;
  - the County(s) within which it occurs have a transportation designated sales tax;
  - a majority of it is within the incorporated area of a city or town; and
  - whether it is a fully access controlled facility.
- Weighting – 5%
  (15% Goal 3 weight)

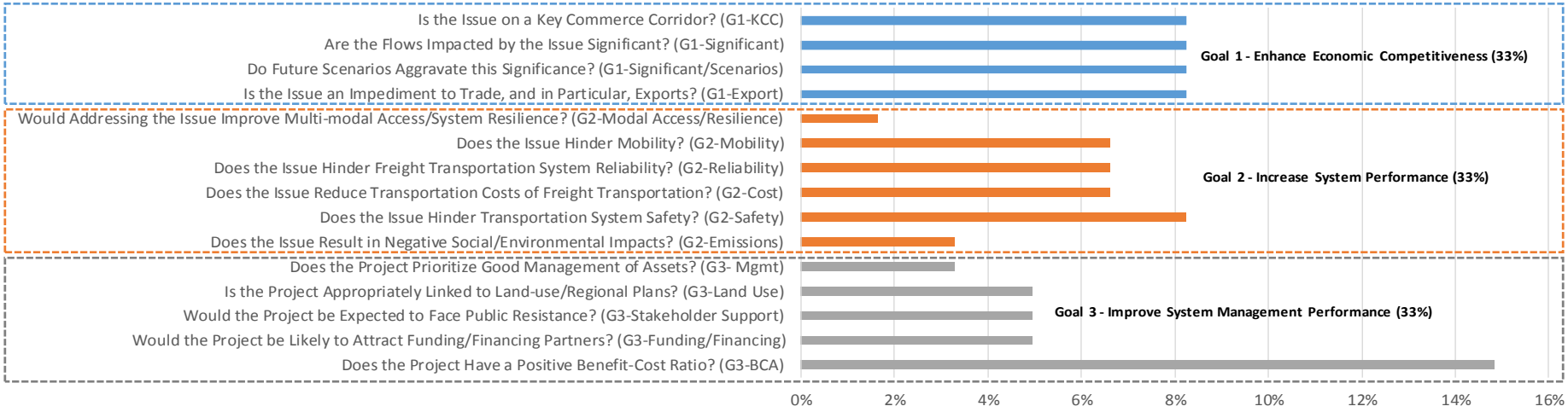
Draft – Does the Project Have a Positive Benefit-Cost Ratio? (G3-BCA)

Project ranking analysis that captures simplified benefits of travel time savings and safety, and expected project costs.

- The resulting value is normalized allowing projects to be compared even if the results of the simplified BCA suggest that the projects themselves are not cost-efficient.
- Weighting – 15%
  (45% Goal 3 weight)

Draft – Step 2 Weighted Prioritization: Quantitative Assessment

Summary of Weighted Values



Next Steps & Discussion

- Freight Project Prioritization and P2P Link
  - ADOT does not currently have dedicated freight project prioritization and funding mechanism.
  - Freight projects are evaluated against other projects in the allocation of funding via the P2P Link process.
  - As currently structured, the P2P Link prioritization process uses largely non-freight evaluation criteria
  - How should freight be integrated into P2P?
- Phase 9 – Strategic Prioritization
  - Integrate FAC input into prioritization
  - Complete prioritization
  - TAC and ADOT review
  - Share results

Presentation Overview

FAC Future Directions

Project Status Report

Critical Rural and Urban Freight Corridors

Prioritization Approach and Input

Future Tasks and Implementation

Future Tasks and Implementation

- Work underway on final phases
  - Phase 10 Freight System Improvement Strategy
  - Phase 11 Funding & Financing Implementation Plan
  - Arizona State Freight Plan document
- Other activities
  - CRFC / CUFC designation (with FAC input)

Improvement Strategy and Implementation

- What is the right improvement strategy?
- How to get prioritized projects funded?
- What is the best way to get this plan implemented?

Discussion

Thank You

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