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# **Draft** Arizona State Freight Plan

State Transportation Board

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October 6, 2022





# Presentation Outline



- Recent Actions and Key Steps
- Freight Plan Team
- Why do we need a Freight Plan?
- Elements of 2022 Freight Plan
- Federal and State Vision/Goals
- Freight System Characteristics
- Freight Plan Prioritization Strategy

# Recent Actions and Key Steps

FAC Meeting to Produce FAC Recommendations (Late August ) - **Completed**



ADOT Formulates *Draft* Plan (Early September) - **Completed**



State Transportation Board Review / Comments – Study Session (September - October)



USDOT Review/Comments and Public/Stakeholder Review/Comments (September – October)



State Transportation Board Endorsement of *Final* Plan (October – November)



USDOT Approval of final Arizona Freight Plan (November)

# Freight Plan Team



- **ADOT:**
  - Heidi Yaqub, Project Manager / Freight Planner
  - Clemenc Ligocki, Planning & Programming Manager
  - Thor Anderson, Asset Management and Performance Manager
- **Consultant Team:**
  - Aleksandra Maguire, Project Manager (IHS Markit)
  - Deputy Project Manager and QA/QC– Erin Dean and Craig Secrest (High Street Consulting Group, LLC)
  - Senior Advisors: Paul Bingham (IHS Markit) and Suzann Rhodes (Independent Contractor)
  - Stakeholder Engagement and Outreach: Kristin Darr (Central Creative)
  - State Freight Transportation Assets and Needs – Vamshi Yellisetty (Kittelson & Associates, Inc.)
- **Freight Advisory Committee (FAC):**
  - Key public and private sector stakeholders



# Why do we Need a State Freight Plan ?



- Prudent Planning
  - Freight carriers are important users of the transportation system
  - The Economy (national/state) is heavily dependent on freight movement
- Federal Requirements:
  - Each State shall develop a freight plan (49 USC 70202) that is:
    - Updated at least every 4 years (formerly 5 years)
    - Comprehensive, and addresses needs over an 8-year forecast period
    - In accord with federal planning laws/regulations
    - Fiscally constrained
    - Developed in consultation with the State freight advisory committee

# Who Comprises the Freight Advisory Committee?

- ADOT Staff
- Other State Agencies
- FHWA and other Federal Agencies
- Cities, Towns and Counties
- MPOs and COGs
- Major Universities
- Port Authorities
- Other State DOTs
- Native American Communities
- Major Utilities
- Arizona Trucking Association
- Motor Carriers / Shippers
- Natl Assn of Truck Stop Operators
- Arizona Mining Association
- Railroads
- Warehousing
- Mining / Rock Products
- Agriculture / Major Grocers
- Construction
- Aerospace
- Other Key Stakeholders



# Key Freight Plan Elements

(See 49 USC 167 for full list; includes IIJA Additions)



- Freight policies, strategies, and performance measures
- Freight network (primary, critical rural, critical urban)
- How the Plan addresses national freight program/policy goals
- An inventory of facilities with freight mobility issues (e.g. bottlenecks)
- Congestion/delay caused by freight movements and mitigation strategies
- The State's most recent commercial motor vehicle parking facilities assessment
- Environmental impacts, resilience considerations, and impacts on populations
- A freight investment plan, including a list of priority projects



# National Freight Policy Strategic Goals



- **SAFETY:** Improve safety, security, and resiliency of the national freight system
- **INFRASTRUCTURE:** Modernize freight infrastructure and operations to grow the economy, increase competitiveness, and improve quality of life
- **INNOVATION:** Prepare for the future by supporting the development of data, technologies, and workforce capabilities that improve freight system performance





# National Performance Goals



- **SAFETY:** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
- **INFRASTRUCTURE CONDITION:** To maintain the highway infrastructure asset system in a state of good repair
- **CONGESTION REDUCTION:** To achieve a significant reduction in congestion on the National Highway System
- **SYSTEM RELIABILITY:** To improve the efficiency of the surface transportation system
- **FREIGHT MOVEMENT AND ECONOMIC VITALITY:** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
- **ENVIRONMENTAL SUSTAINABILITY:** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
- **REDUCED PROJECT DELIVERY DELAYS:** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices.



# 2022 Arizona State Freight Plan Vision



Arizona's freight transportation system enhances **economic competitiveness** and **quality growth** through **innovation** and **effective system management**

# Arizona State Freight Plan Vision: Goals

2017 GOALS	2022 GOALS
<b>SAFETY:</b> A safe and secure freight transportation system	<b>SAFETY:</b> A safe and secure freight transportation system
<b>SYSTEM MANAGEMENT &amp; MOBILITY:</b> A reliable, resilient transportation system that enables efficient freight movement, and provides access to economic opportunity across Arizona	<b>SYSTEM MANAGEMENT &amp; MOBILITY:</b> A reliable, resilient, <b>future-oriented</b> transportation system that enables efficient <b>multi-modal freight</b> movement
<b>COMPETITIVENESS:</b> Strategic policies, investments, partnerships, and infrastructure that position Arizona to benefit from emerging opportunities and enhance its economic competitiveness in key sectors	<b>COMPETITIVENESS:</b> Strategic policies, investments, partnerships, and infrastructure that position Arizona to benefit from emerging economic opportunities
	<b>STEWARDSHIP:</b> Approaches to freight planning that include economic, social, and environmental stewardship

# Freight System Characteristics

## Arizona Freight Network Strengths & Weaknesses

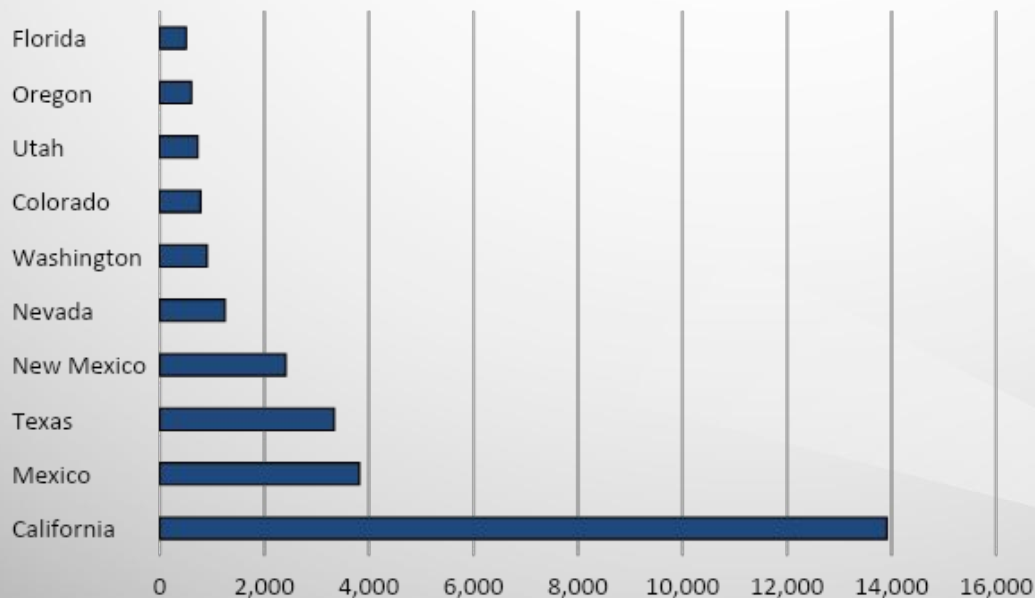
### Strengths of the Arizona Freight Transportation System

- Ample capacity and performs well
- Extensive, robust, and reliable network of freight transportation facilities
- Extensive freight rail system
- Phoenix Sky Harbor International Airport has sufficient capacity, moving about 90% of Arizona air cargo
- Arizona's freight business clusters are generally well connected to the multimodal network
- Arizona's freight transportation system provides the vital links with Mexico, California, and Texas.

### Weaknesses of the Arizona Freight Transportation System

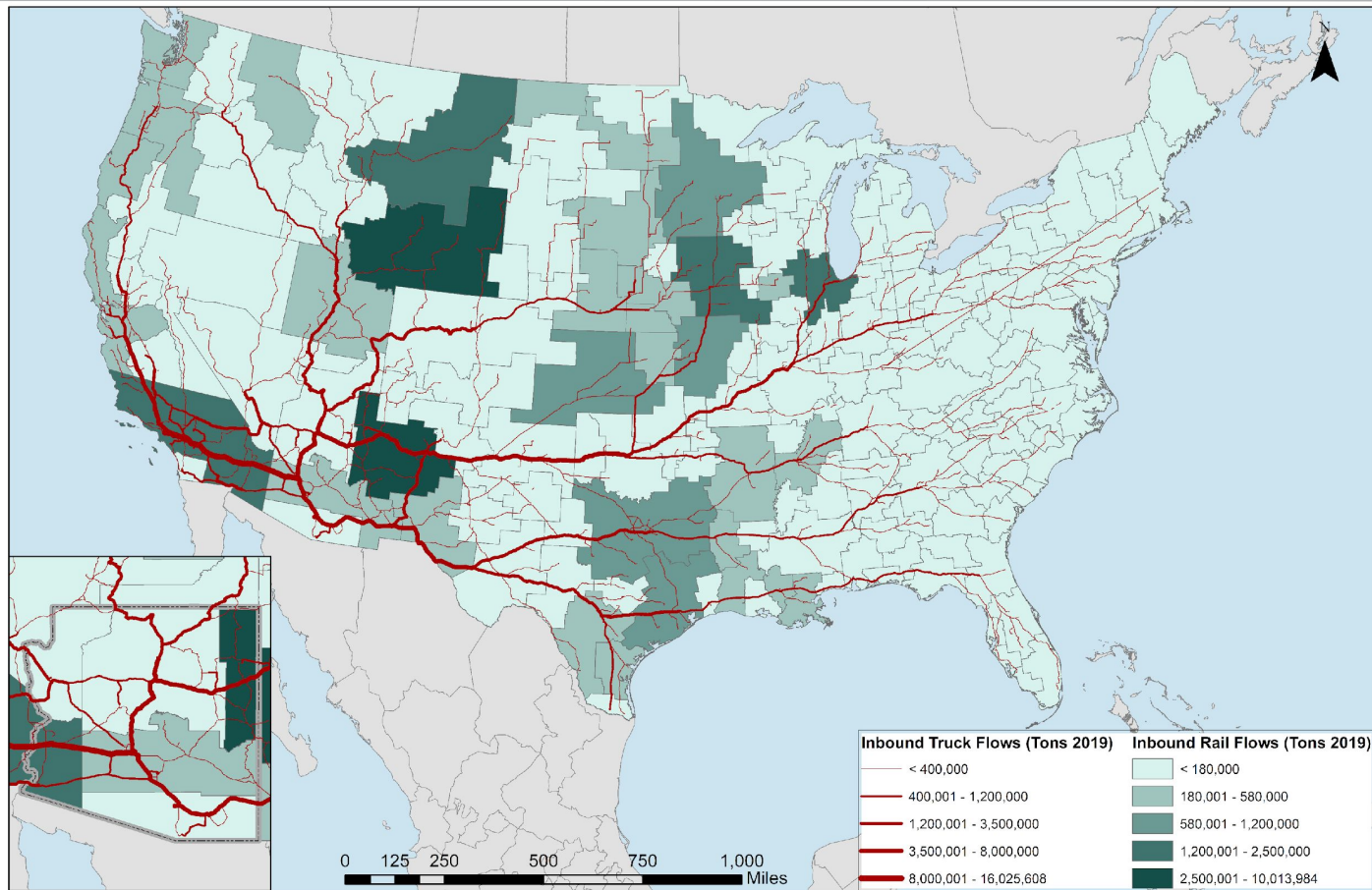
- Shortage of passing and climbing lanes on KCCs (Key Commerce Corridors)
- Shortage of safe truck parking across Arizona
- Congestion in and around urban centers
- Limited LPOE (Land Ports of Entry) highway and rail capacity and limited roadway connections result in poor reliability at the Mexican border

# Top 10 Truck Inbound Traffic Flows into Arizona



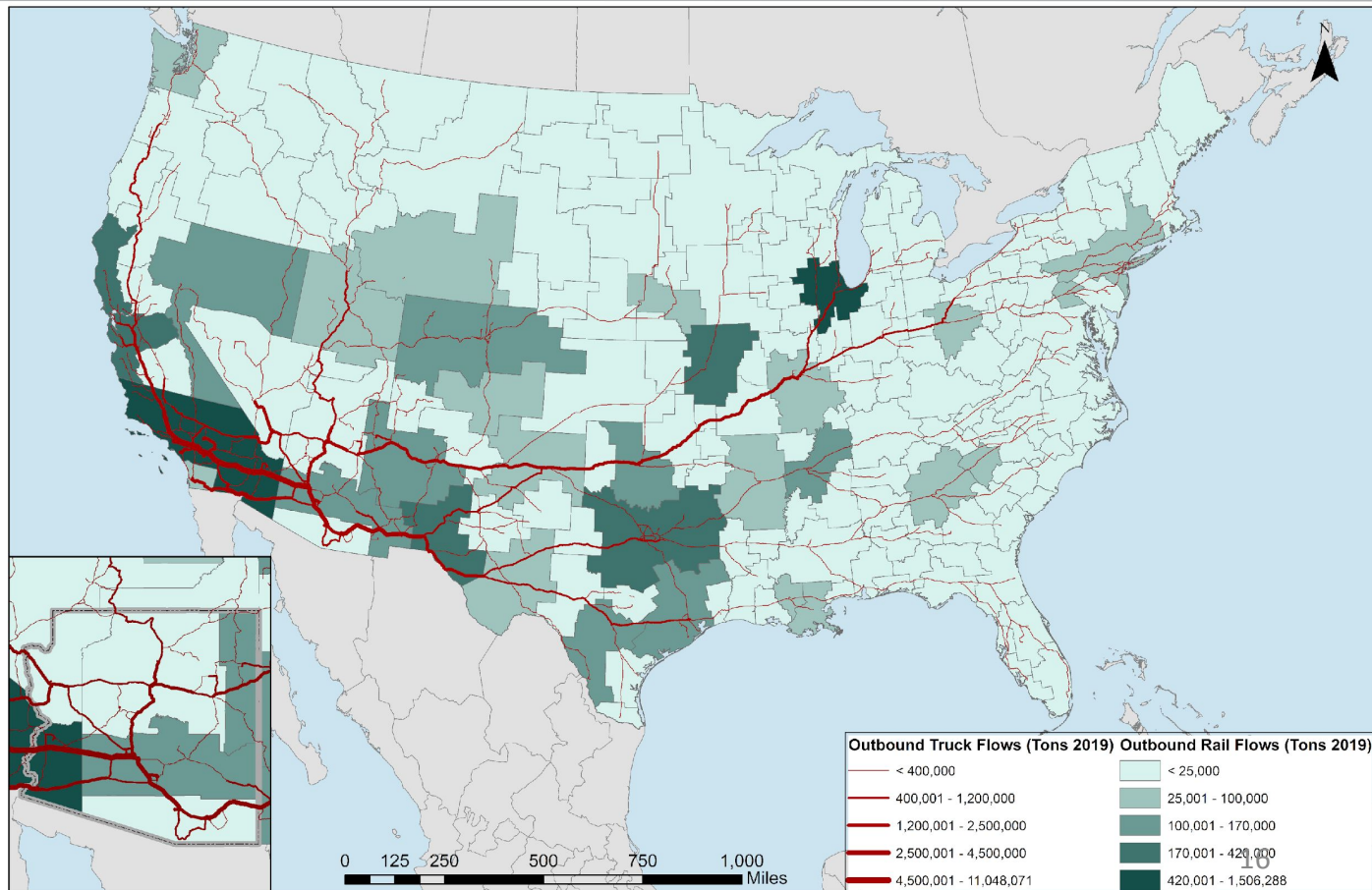
Origin State	Thousand Tons
California	13,910
Mexico	3,818
Texas	3,336
New Mexico	2,411
Nevada	1,247
Washington	904
Colorado	784
Utah	728
Oregon	606
Florida	506

# Inbound Truck and Rail Flows (2019 Tons)





# Outbound Truck and Rail Flows (2019 Tons)



Source: IHS Markit Transearch®



# Arizona Total Truck, Air, and Rail – 2019 and 2045

	2019 Tons (000's)	2045 Tons (000's)	2019 Share of Total Tons	CAGR** 2019-2045	2019 Value (Million \$)	2045 Value (Million \$)	2019 Share of Total Value	CAGR** 2019-2045
Truck	284,942	444,216	54.0%	1.7%	395,239	715,923	30.2%	2.3%
Rail	242,761	405,072	46.0%	2.0%	854,422	1,588,994	65.4%	2.4%
Air	364	875	0.1%	3.4%	57,784	125,810	4.4%	3.0%
<b>Total</b>	<b>528,067</b>	<b>850,163</b>		<b>1.8%</b>	<b>1,307,445</b>	<b>2,430,727</b>		<b>2.4%</b>

\*\*Compound Annual Growth Rate – mean annual growth rate from 2019 to 2045

# Progress from 2017 Freight Plan

# Priority Highway Projects from 2017 Freight Plan: Status

Route	Project	Funding Amount (\$million)	Status
I-40	I-40/US 93 System Interchange – Design *	5	Completed
I-10	I-10 West of Phoenix General Purpose Lane	33	Completed
N/A	Statewide Truck Parking and Freight Operations	10	Majority Completed
SR 189	Traffic Flow Improvements (Interim) Mariposa LPOE to I-19	15	Completed
I-40	I-40/US 93 System Interchange - Right of Way *	10	Completed
I-10	I-10/US 191 System Interchange Improvements (interim)	6.2	In Progress
US 191	US 191 Cochise RR Overpass Construction **	16.5	In Progress
	<b>Total National Highway Freight Program Expenditures</b>	<b>95.7</b>	

\* Currently programmed for construction

\*\* Currently programmed for construction – significant need for additional construction funding

## Truck Parking Projects Since 2019 Truck Parking Study

Route	Mile Post	Rest Area Name	Spaces Before	New Spaces	Total Spaces	Status
I-40	235	Meteor Crater EB	32	25	57	Completed and open to traffic
I-40	235	Meteor Crater WB	31	33	64	Completed and open to traffic
I-8	85	Sentinel EB	12	2	14	Under constr., open to truck traffic only. Completion by 2023
I-8	85	Sentinel WB	13	2	15	Under constr., open to truck traffic only. Completion by 2023
I-10	53	Bouse Wash EB	13	8	21	Completed and open to traffic
I-10	53	Bouse Wash WB	14	8	22	Completed and open to traffic
I-40	23	Haviland EB	7	22	29	Completed and open to traffic
I-40	23	Haviland WB	7	16	23	Completed and open to traffic
I-17	252	Sunset Point	28	4	32	Under construction, 9/27 open for truck parking only
I-17	296	McGuireville NB	20	0	20	In design, scheduled to begin construction 2023
TOTAL				120		

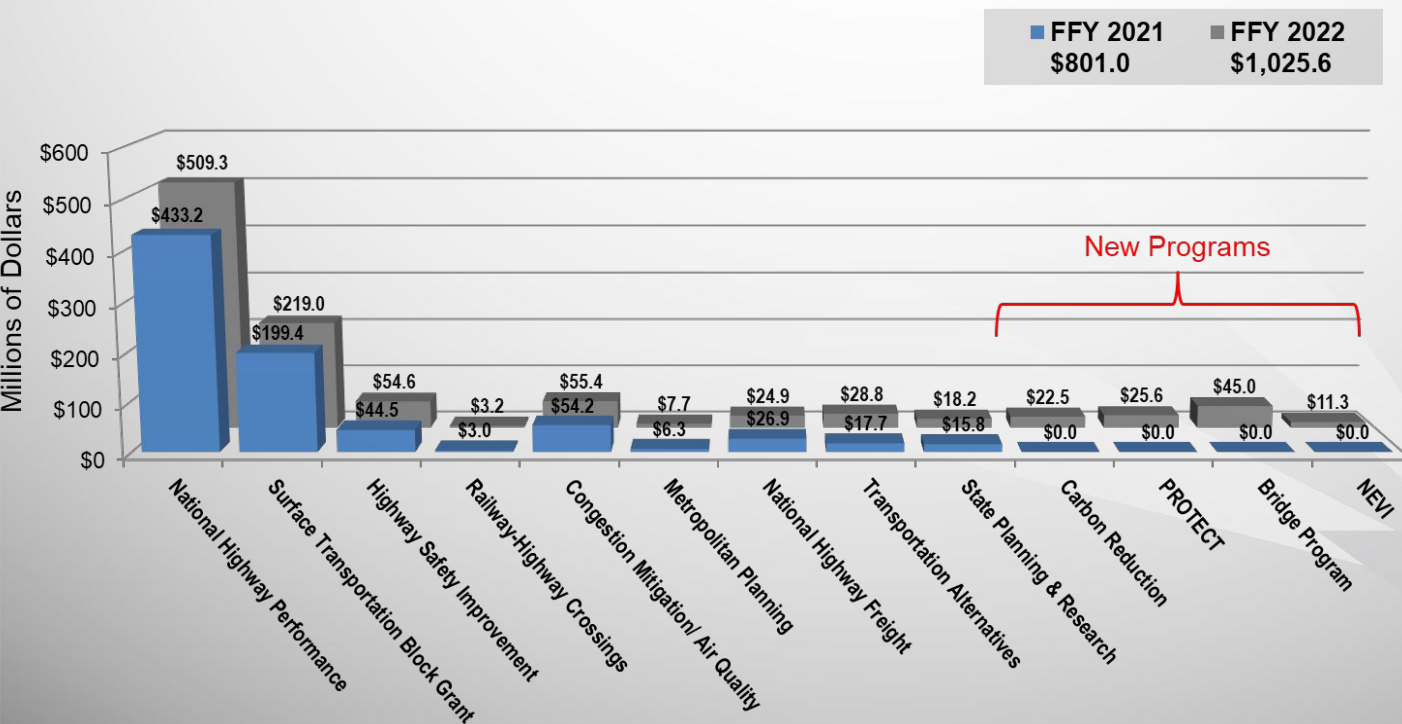
# 2022 Project Prioritization

# Funding and Eligible Projects



- Approximately \$125 million over 5 years (about \$25 million / fiscal year)
- Subject to Obligation Limitation (no new added spending authority)
- Freight Funding can only be used for projects in the approved Freight Plan
- Funding available for all phases (i.e. Planning through Construction)
- Eligible Projects include (see 23 USC 167 for full list):
  - Highway and bridge projects
  - Intelligent transportation systems, traffic signal optimization, & ramp metering
  - Railway-highway grade separation
  - Geometric improvements to interchanges and ramps
  - Additional road capacity to address highway freight bottlenecks
  - Truck parking, truck-only lanes, climbing and runaway truck lanes, shoulders

# FAST v. IJA Appportionment Comparison



# Project Prioritization Strategy



- Uses fundamental project prioritization framework and highway network from the 2017 Plan \*
- Projects and strategies are prioritized in line with National policy and performance goals as well as Arizona priorities/goals
- Note: A separate process will again be used for the ranking of truck parking projects

\* Acknowledgement and thank you to 2017 consultant, as well (CPCS, in association with HDR Engineering, American Transportation Research Institute Inc., Elliott D. Pollack & Company, Dr. Chris Caplice of MIT, Plan\*ET Communities PLLC, Leslie Dornfeld FAICP and Gill V. Hicks and Associates Inc.)



# Steps in the Freight Plan Prioritization Process

- Reviewed 2017 prioritization framework – determination to use the same project Scoring System for 2022 plan update
- Reviewed the project ranking in the 2017 plan
- Identified which 2017 Plan projects have been completed
- Overlaid the remaining projects and current issues
- Updated data/criteria for the remaining projects
- Ranked the remaining (19) projects
  - Identified projects that are in progress, but needing additional funding
  - Identified projects with high cost as infeasible (due to limited Freight funding)
- Note: A separate process was used for the consideration of truck parking projects

# Goal 1 Enhance Economic Competitiveness Criteria

Criterion (Issue-Specific)	Measure	Weight (34% of total)
Is the Issue on a Key Commerce Corridor (KCC)?	Issue is either 'on'; 'directly connected to'; or 'unrelated' to KCC	10% of total score/ 28% of Goal 1 score
Are the Flows Impacted by the Issue Significant?	Truck Volume (AADTT) through the issue segment	8% of total score/24% of Goal 1 score
Do Future Scenarios Aggravate this Significance?	AADTT significance (over 1000) on each issue segment that is common on all future Travel Demand Model Scenarios	8% of total score/24% of Goal 1 score
Is the Issue an Impediment to Trade?	Volumes of Arizona's commodity flows relating to manufacturing and natural resources (excl. aggregate intra AZ flows)	8% of total score/24% of Goal 1 score

## Goal 2 Increase System Performance Criteria

Criterion (Issue-Specific)	Measure	Weight (33% of total)
Would Addressing the Issue Improve Multimodal Access?	Is Issue a barrier to modal connectivity (e.g. access to airport or rail intermodal terminal)?	2% of total score/ 6% of Goal 2 score
Does the Issue Hinder Mobility?	Truck Travel Time Index (TTTI)	7% of total score/21% of Goal 2 score
Does the Issue Hinder Freight Transportation System Reliability?	Issue segment's Truck Planning Time Index (TPTI)	7% of total score/21% of Goal 2 score
Does the Issue Increase Transportation Cost of Freight Transportation?	Total truck delay per day (hours)	7% of total score/21% of Goal 2 score
Does the Issue Affect Transportation System Safety?	Truck Related Crashes per 100 million vehicle miles traveled (MVMT)	9% of total score/28% of Goal 2 score
Does the Issue Result in Negative Social/Environmental Impacts?	CO2 Emissions for a peak-hour volume of traffic	1% of total score/3% of Goal 2 score
Note: Percentages reported may not equal 100% due to rounding		

## Goal 3 Improve System Management Criteria

Criterion (Project-Specific)	Measure	Weight (33% of total)
Does the Project Prioritize Good Management of Assets?	Project is characterized as preservation vs. modernization vs. expansion	3% of total score/ 10% of Goal 3 score
Is the Project Appropriately Linked to Local Land Use/Regional Plans?	Project identified in Statewide Transportation Studies and/or regional transportation plans	5% of total score/15% of Goal 3 score
Would the Project be expected to Receive Freight Stakeholder Support?	Evaluation of Project with input from the Freight Advisory Committee (FAC)	5% of total score/15% of Goal 3 score
Would the Project be Likely to Attract Funding/Financing Partners?	Project's potential to attract project funding	5% of total score/15% of Goal 3 score
Does the Project Have Positive Benefit-Cost Analysis?	Actual project benefit cost analysis	15% of total score/45% of Goal 3 score



# Truck Parking

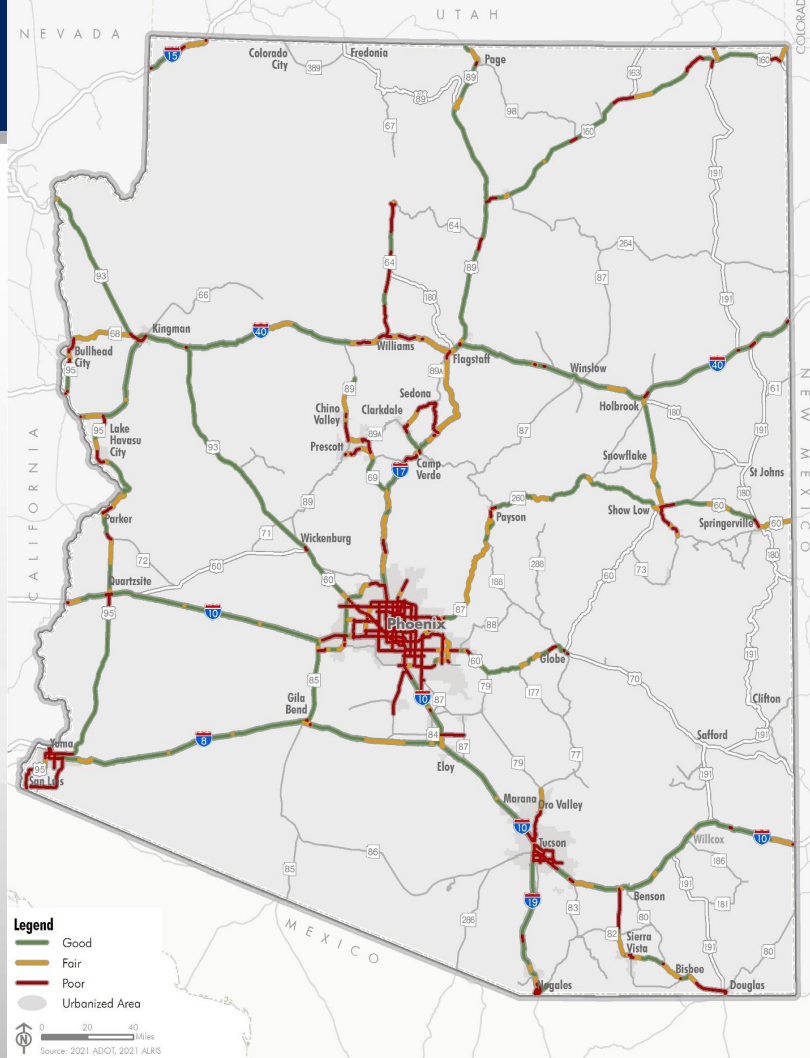


- Eligible for federal Freight funding
- Still important...perhaps growing in importance
- How much funding to set aside for truck parking vs. infrastructure projects?
- Appropriate criteria used to prioritize truck parking improvements
  - Will use/update 2019 truck parking study and use results of current rest area study
  - The update to the truck parking study should take the form of a Truck Parking ***Plan***, developed in coordination with the Arizona Trucking Association and the overall FAC, and should take advantage of the following ***new and emerging resources***, to include:
    - Information available from the National Coalition on Truck Parking
    - The new Truck Parking Development ***Handbook***, just released by the national Coalition on Sept 30
    - Ideas from other states' freight plans and truck parking strategies currently under development

# Arizona Freight Investment Plan Considerations

- Use FAC input on Truck Parking investments; take \$ “off the top”
- Recommend freight-beneficial highway projects with balance of Freight funding
  - Focus on list of top 19 candidate projects, according to prioritization process & FAC input
  - Consider Casa Grande Accord percentages for Project funding
    - 13% PAG; 37% MAG; 50% Greater AZ
    - Duly consider TMA (MAG & PAG) freight priorities within their regions
  - Focus funding on projects not fully funded in 5-Year Program or not yet programmed
  - Some Projects are too expensive to consider, given limited funding
  - Important to complete projects from 2017 Freight Plan

# Truck Travel Time Reliability (TTTR)



# 19 Highest Rated Freight Projects

Status (2022)	(2022 Rank)	Route	MP	Issue Segment	Project Option / Description	Est Cost \$M (2021)
Not in 5-Yr Program	1	I-10	143-145	I-10 at I-17 Traffic System Interchange (The Stack)	The Stack System Interchange Improvements	234.4
In 5-Yr Program; partially completed; likely <b>added \$ need</b>	2	I-10	134-160	From L101 to L202 (Santan Freeway) within Phoenix Metro area	"Broadway Curve" Project: From I-17 Split to SR 202L Santan from milepost 149 to 159 (10 miles). Add GPL in each direction; add HOV lanes; new direct HOV lane to SR-143; 3 ped bridges; reconstruct SR-143/Hohokam Expressway, Salt River Bridge and Broadway Rd Bridge; new collector-distributor roads between Baseline and 40th St.	908.1 (Broadway Curve component is 808)
In 5-Yr Program; <b>possible added \$ need</b>	3	I-40	48	I-40 at US 93 - Kingman area; <b>#1 rated project from 2017 Plan</b>	I-40/US93 W Kingman System Interchange Improvements	101.4
Not in 5-Yr Program	4	I-10	145-147	I-10 at SR 202L and SR 51 Traffic System Interchange (The Mini-Stack)	I-10/SR202L/SR 51 System Interchange Improvements	351.5
In 5-Yr Program	5	I-10	160-187	From SR 202L to East of SR 387	I-10 Gila River Indian Community Area Widening	221.5
Two interchange projects in 5-Yr Program	6	I-17	194-215	From I-10 to L101 within Phoenix Metro area	I-17 Phoenix Urban Area Improvements	703.1
Not in 5-Yr Program	7	I-40	195	I-40 (EB to NB system ramp at I-40/I-17/SR 89 interchange)	I-40/I-17 System Interchange Improvements	96.1
Partially in 5-Yr Program; <b>added \$ need</b>	8	I-10	260-274	I-10 east of I-19	Tucson Area I-10 Widening Project. I-10 from Alvernon Way to Valencia & I-10/SR210 Interchange (Widening & T.I.) - in program for CN - FY27; Country Club and Kino TI projects are also priorities in the corridor.	2179.5



# 19 Highest Rated Freight Projects

Status (2022)	(2022 Rank)	Route	MP	Issue Segment	Project Option / Description	Est Cost \$M (2021)
Not in 5-Yr Program	9	I-10	259	I-10 at I-19 Traffic System Interchange	I-10/I-19 System Interchange Improvements	97.3
Irvington TI in 5-Yr Program; <b>Added \$ need</b>	10	I-19	92-102	I-19 between I-10 and Valencia Road (south of Tucson)	I-19 Tucson Area Widening and TI Improvements; Irvington TI is a priority in the corridor	732.4
Not in 5-Yr Program	11	US 89	418-421	US 89 Within Flagstaff, north of I-40	SR 89/I-40 System Interchange Improvements	34
Partially (1 mile widening) in 5-Yr Program; <b>\$ need</b>	12	SR 69	287-290	SR 69, East of Prescott area	SR 69 East of Prescott ITS Improvements; Signal optimization; DMS; variable speed limits; raised median (from ADOT CPS)	3.9
In 5-Yr Program for \$16.5M; <b>added \$ need</b>	13	I-10	331	I-10 at US 191 (Cochise TI) - <b>#2 rated project from 2017 Plan</b>	I-10/US 191 System Interchange Improvements (interim)Widen and upgrade Railroad Overpass, Replace existing bridge with a three span bridge 2 12' lanes with 10' shoulders. Drainage improvement.	41.0
<b>Not in 5-Yr Program</b>	14	US 60	243-255	US 60 within Globe area	Globe Area Freight Improvements: EB/WB Passing lane and freight deceleration/turning lane	8
In 5-Yr Program	15	I-10	63	US 191	US 191 System Interchange Improvements (interchange and RR underpass); East Willcox T.I.	5.6
<b>Not in 5-Yr Program</b>	16	SR 260	339-342	SR 260, West of Show Low to East of SR 73	SR 260 Show Low Area Intersection Improvements: Improve intersection at Deuce of Clubs; replace with roundabout	9.4
Not in 5-Yr Program	17	I-17	299-305	I-17 between AZ 179 to Stoneman Lake Road	I-17 Stoneman Lake Area Climbing Lane and ITS Improvements	27.1
Not in 5-Yr Program	18	US 60	198.7-211	US 60 between SR 88 and SR 79	US 60 Access Controlled Freeway Extension	287.1
<b>Not in 5-Yr Program</b>	19	US 60	345-348	US 60 Passing Lane: Westbound	US 60 Passing Lane – Show Low area	6

# ADOT's Recommended 2022 Freight Investment Plan (Draft)

(Approx. \$125M Available)

Project Rank *	Freight Benefit Rank	Route	Issue Segment	Project	NHFP (\$M)	Freight Benefit %	Est. Program FY
				Truck Parking	50.00		2023 -2027
				Planning/Research	2.00		2023
2	18	I-10	MP 149-159	Broadway Curve	27.00	14.8%	2023
8	7	I-10	MP 260-274	Country Club T.I. or Kino T.I.	4.50	22.4%	2024
10	25	I-19	MP 92-102	Irvington T.I.	5.00	8.8%	2024
12	21	SR 69	MP 287-290	ITS Improvements & Raised Median	3.90	13.1%	2027-2028
13	2	I-10	MP 331	I-10 at US191 Cochise T.I. (2017 Freight Plan)	24.75	54.0%	2024
14	15	US 60	MP 243-255	Passing lane & freight decel/turn lane - Globe	8.00	16.0%	2027-2028
				TOTAL	125.15		

Note: Projects with overall rank of #3, 5, and 15 (not shown above) are funded in current 5-Year Program; projects with overall rank #1, 4, 6, 7, 9, 11, 17 and 18 have costs too high for limited/remaining Freight funding; #16 needs further study.

## For Further Action/Study

- Update 2019 Truck Parking Study (as a **Plan**) as soon as feasible
  - Use the updated Truck Parking *Plan* to guide truck parking project identification associated with the 2022 state freight plan and to inform the development of the 2026 state freight plan.
  - Take full advantage of additional resources available from national coalitions, ATA and FHWA
  - Consider relevant findings from the ongoing Rest Area Study in the new Truck Parking Plan.
- Examine new bottleneck findings from the 2022 Freight Plan to inform future planning, including development of the 2026 Freight Plan. (Consider bottlenecks due to congestion and other restrictions.)
- Pursue strategy recommendations from the 2022 Freight Plan as prudent to fulfill federal and state priorities.
- Initiate more regular FAC interaction to mainstream freight planning more robustly into the overall statewide planning process. (This includes involvement in the new Truck Parking Plan.)
- Pursue additional study recommendations from the State Transportation Board.

# Questions?