

Arizona State Freight Plan

Prioritization Framework

June 21, 2022

Agenda

✓ Prioritization Framework

✓ Data Refresh

✓ Updated Scores

✓ Priority Elicitation





Prioritization Framework

Building on the Arizona 2016 Freight Plan

Prioritization Framework





- Non-Recurring Bottleneck (Safety/Weather)
- Restrictions (Bridge, Haz Mat)
- Connectivity (non-rampable/requires detour)
- Accessibility (Border/Port of Entry)
- > Other
 - Inconsistent Lane Configuration
 - Crossing issue
 - Terrain

ADOT



First ... Some Terms to Know

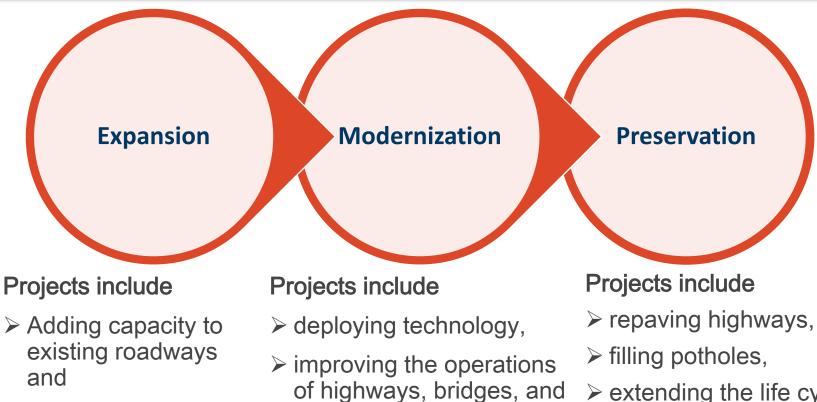
Key Commerce Corridors: **Highway corridors** throughout Arizona where targeted improvements represent the most potential to bolster the state economy and serve broader national and international markets

Learn more here https://azdot.gov/planning/transportationprograms/key-commerce-corridors

Goods produced here and sold elsewhere drive the Salt Lake City local economy Pop.: 1.1 million GDP: 71 billion Cheyenne Reno Denver Francisco Carson City Pop.: 2.6 million GDP: 162 billion Sacramento Las Vegas Pop.: 2 million **Kansas City** GDP: 93 billion Fresno Los Angeles Pop.; 13 millio Flagstaff **Oklahoma City** GDP: 747 billio Phoenix San Diego Pop.: 4.3 million GDP: 195 billion Albuquerque Pop.: 3.1 million GDP: 173 billion Dallas Tucson Pop.: 6.7 million GDP: 391 billion Pop.: 1 million Ensenada GDP: 32 billion Punta Colon El Paso Houston Pop.: 6.1 million Major City GDP: 420 billion Minor City Major Roadwave Hermos Major Railways San Antonio Other Roadways Chihuahua Eagle Pass Border Crossing Northwest Gross Domestic Product Laredo Mexico Monolov New trucking travel time Pop.: 10 million regulations. Los Angeles to GDP: 94 billion Central Arizona is the furthest trucks can travel without a mandatory rest period Torreon Saltillo Monterrey Mazatlan



Defining Broader Project Types



- extending the life cycle of existing pavement, and
- repairing or reconstructing bridges.

Arizona Department of Transportation

ADO

Constructing new

roads, bridges,

and interchanges

Prioritization Framework

> spot safety improvements

intersections, and

Fun with Acronyms (FwA)

- Annual Average Daily Truck Traffic (AADTT): Typical daily truck volume
- Truck Travel Time Index (TTTI): Ratio of "free flow" and congested travel times
- Truck Planning Time Index (TPTI): The amount of time over the expected travel time that should be planned to make an on-time delivery 95 percent of the time
- Vehicle Miles Traveled (VMT): Total miles of motor vehicle travel that are generated by a population over a given timeframe



 Benefit Cost Analysis (BCA): Ratio of monetized benefits (e.g., travel time savings, crash reduction) to estimated costs

APPENDIC Arizona Departm

Prioritization Framework

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 (29% 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 are 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 (27% 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 BQAZ Statewide Transportation Framework 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 form 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)





Data Refresh

Updates in project status and base year data

Update Data Sets

2019 (pre-COVID) datasets

TRANSEARCH

- Freight commodity tonnage
- Highway Performance Monitoring System (HPMS)
 - Truck traffic volumes

National Performance Management Research Data Set (NPMRDS)

➤Travel times

ADOT

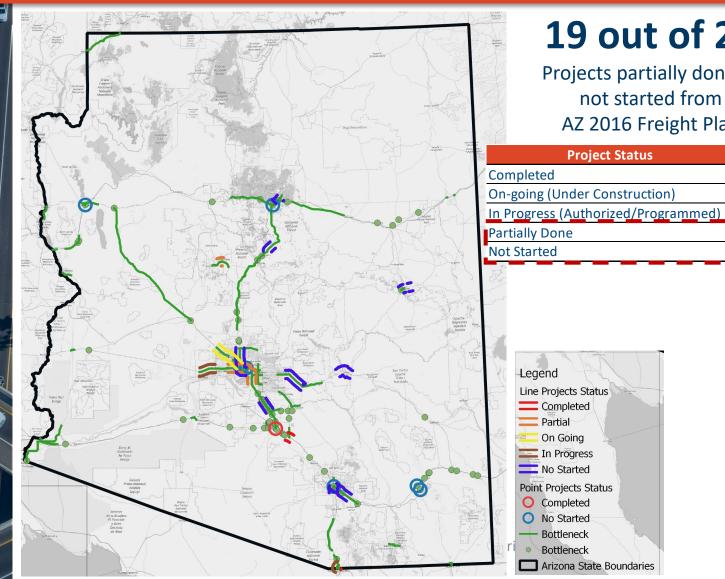
➤Crash records



Goal 1 Criteria	Goal 2 Criteria	Goal 3 Criteria
ls the Issue on a Key Commerce Corridor (KCC)?	Would Addressing the Issue Improve Multimodal Access?	Does the Project Prioritize Good Management of Assets?
Are the Flows Impacted by the Issue Significant?	Does the Issue Hinder Mobility?	Is the Project Appropriately Linked to Local Land Use/Regional Plans?
Do Future Scenarios Aggravate this Significance?	Does the Issue Hinder Freight Transportation System Reliability?	Would the Project be expected to Receive Freight Stakeholder Support?
is the Issue an Impediment to Trade?	Does the Issue Increase Transportation Cost of Freight Transportation?	Would the Project be Likely to Attract Funding/Financing Partners?
gend	Does the Issue Affect Transportation System Safety?	Does the Project Have Positive Benefit-Cost Analysis?
Today's Exercise	Does the Issue Result in Negative Social/Environmental Impacts?	



Updated Project Set (Excluding Truck Parking Needs)



19 out of 25

Projects partially done or not started from AZ 2016 Freight Plan

Project Status

196 Bottlenecks identified using updated data

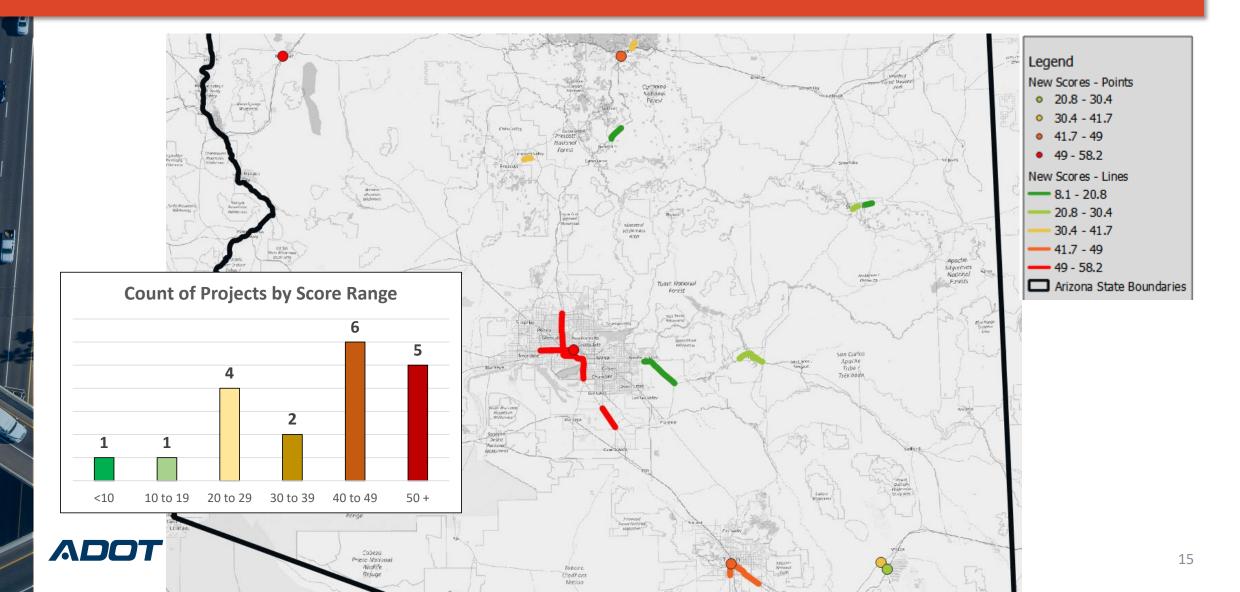
Salety/ Weather 5	
2 Urban 58 2 Non-Recurring Bottleneck 17 Safety/Weather 3	
2 Non-Recurring Bottleneck 17 Safety/Weather 3	
17 Safety/Weather 3	
Salety/ Weather 5	
Restrictions	
Bridge posted for height restriction 3	
Bridge posted for load restriction 3	
Hazardous material restriction 3	
Connectivity	
Rampable with detour 3	
One direction non-rampable 4	
Both directions non-rampable 36	
Accessibility	
Border Access 8	
AZ/CA POE 1	
Other	
Terrain 8	
I 8 EB to I 10 WB crossing issue 1	
Inconsistent Lane Configuration 1	5



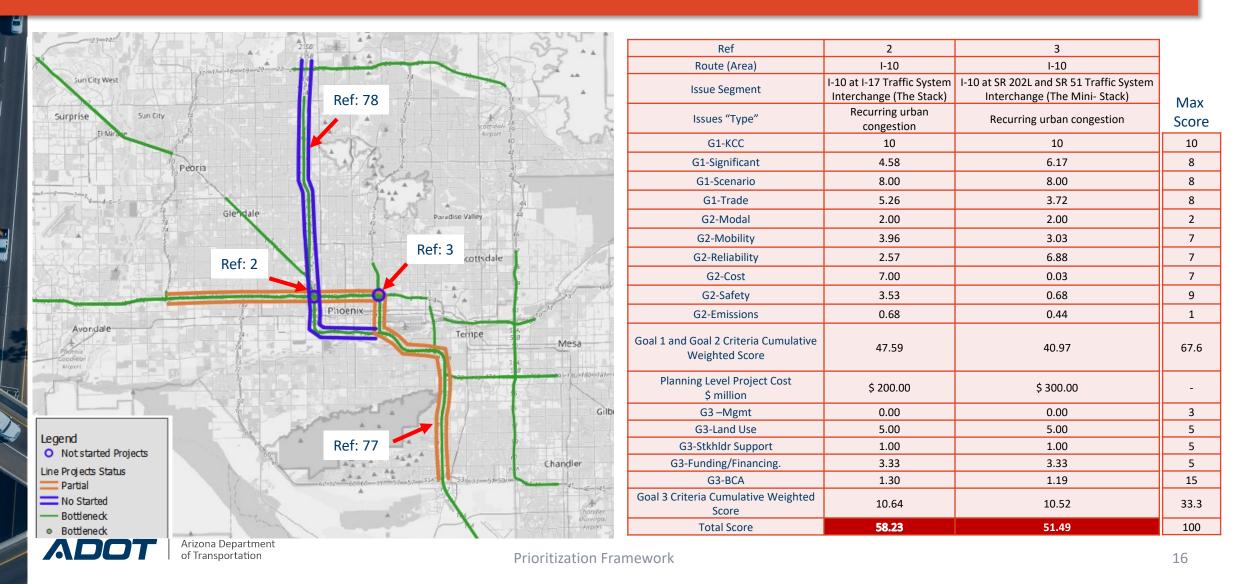
Updated Scores

Not-started/Partial Projects Components

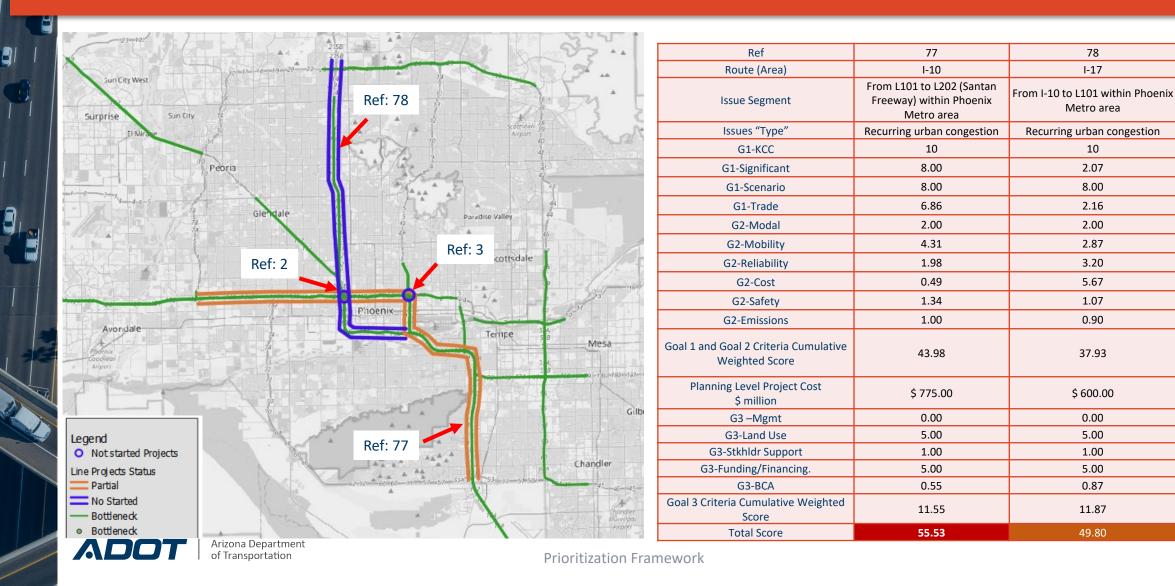
Updated Project Scores



Phoenix I-10 & I-17 (Slide 1 of 2)



Phoenix I-10 & I-17 (Slide 2 of 2)



Max

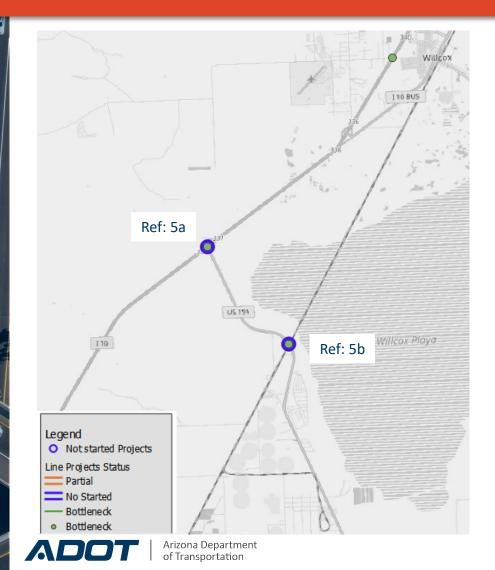
Score

67.6

-

33.3

Cochise I-10 & US 191



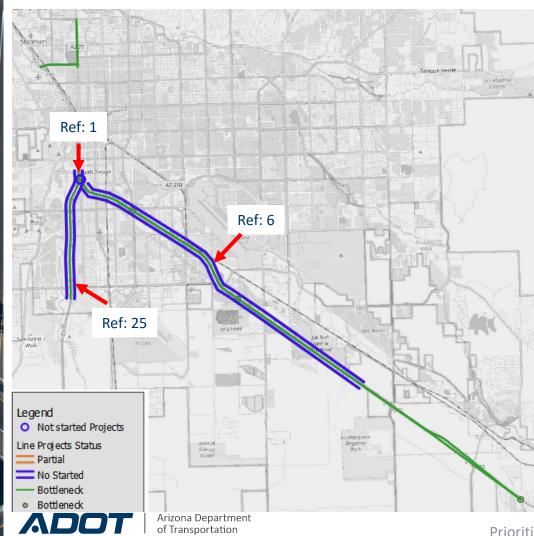
Ref	5a	5b	
Route (Area)	I-10	US 191	
Issue Segment	I-10 at US 191 (Cochise TI)	US 191/Cochise RR Overpass	Max
Issues "Type"	Recurring rural bottlenecks	Recurring rural bottlenecks	Score
G1-KCC	10	10	10
G1-Significant	0.00	0.00	8
G1-Scenario	0.00	0.00	8
G1-Trade	2.13	2.13	8
G2-Modal	0.00	0.00	2
G2-Mobility	0.00	0.00	7
G2-Reliability	0.11	0.11	7
G2-Cost	0.00	0.00	7
G2-Safety	2.38	2.38	9
G2-Emissions	0.10	0.10	1
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	14.72	14.72	67.6
Planning Level Project Cost \$ million	\$ 1.50	\$ 16.50	-
G3 – Mgmt	3.00	3.00	3
G3-Land Use	0.00	0.00	5
G3-Stkhldr Support	5.00	5.00	5
G3-Funding/Financing.	0.00	0.00	5
G3-BCA	15.00	2.08	15
Goal 3 Criteria Cumulative Weighted Score	23.00	10.08	33.3
Total Score	37.72	24.80	100

Tucson I-10 & I-19 (Slide 1 of 2)



P (-	c .	
Ref	1	6	
Route (Area)	I-10	I-10	
Issue Segment	I-10 at I-19 Traffic System Interchange	I-10 east of I-19	Max
Issues "Type"	Recurring urban congestion	Recurring urban congestion	Score
G1-KCC	10	10	10
G1-Significant	4.10	3.24	8
G1-Scenario	8.00	8.00	8
G1-Trade	5.21	7.55	8
G2-Modal	2.00	2.00	2
G2-Mobility	2.04	2.53	7
G2-Reliability	1.67	0.79	7
G2-Cost	0.32	0.02	7
G2-Safety	0.16	1.32	9
G2-Emissions	1.00	0.61	1
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	34.50	36.07	67.6
Planning Level Project Cost \$ million	\$ 83.00	\$1,860.00	-
G3 – Mgmt	0.00	0.00	3
G3-Land Use	0.00	5.00	5
G3-Stkhldr Support	5.00	1.00	5
G3-Funding/Financing.	3.33	3.33	5
G3-BCA	0.79	0.35	15
Goal 3 Criteria Cumulative Weighted Score	9.12	9.68	33.3
Total Score	43.62	45.75	100

Tucson I-10 & I-19 (Slide 2 of 2)



Ref	25	
Route (Area)	I-19	
Issue Segment	I-19 between I-10 and Valencia Road (south of Tucson)	Max
Issues "Type"	Recurring urban congestion	Score
G1-KCC	10	10
G1-Significant	4.31	8
G1-Scenario	8.00	8
G1-Trade	1.21	8
G2-Modal	2.00	2
G2-Mobility	2.45	7
G2-Reliability	1.10	7
G2-Cost	1.89	7
G2-Safety	0.85	9
G2-Emissions	0.48	1
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	32.29	67.6
Planning Level Project Cost \$ million	\$ 625.00	-
G3 –Mgmt	0.00	3
G3-Land Use	5.00	5
G3-Stkhldr Support	1.00	5
G3-Funding/Financing.	3.33	5
G3-BCA	0.53	15
Goal 3 Criteria Cumulative Weighted Score	9.87	33.3
Total Score	42.16	100

Gila River I-10 & Apache Junction/Gold Canyon/Globe US 60 (Slide 1 of 2)

Maricopa Indian	1 Jan	Superstition	MP	The H				
Community / Onk Akimel	A /1	Wilderness		Ref: 62	Ref	61	62	
O'odham / Xalychidom	AL THE AL	· · · ·	212	Rel. 02	Route (Area)	US 60	US 60	
Piipaash	Ref: 61	~~~~	- 7 \Gib1e		Issue Segment	US 60 between SR 88 and SR 79	US 60 within Globe area	Max
Mesa	Apache Junction	~ > ~	D REG	obe	Issues "Type"	Recurring rural bottlenecks	Recurring rural bottlenecks	Score
TREE TO THE		1			G1-KCC	0	0	10
Gibert		5	· tas	A	G1-Significant	1.14	0.60	8
handler		2 =		//	G1-Scenario	8.00	0.00	8
					G1-Trade	0.28	0.20	8
Qu	een Creek		17		G2-Modal	2.00	0.00	2
akes		1 1			G2-Mobility	2.02	2.39	7
INCS I P	a Tan Valley	/ - <u>"</u>			G2-Reliability	0.28	2.06	7
Ref: 81		1			G2-Cost	0.00	0.14	7
			Anit	1 Cm	G2-Safety	1.46	0.71	9
A Contain		15mm		25	G2-Emissions	0.11	0.07	1
	Fio	rence	l.		Goal 1 and Goal 2 Criteria Cumulative Weighted Score	15.30	6.17	67.6
				Legend	Planning Level Project Cost \$ million	\$ 245.00	\$ 6.80	-
				 Not started Projects 	G3 –Mgmt	0.00	3.00	3
		$\langle \rangle$		Line Projects Status	G3-Land Use	0.00	0.00	5
CaCO ande				E Partial	G3-Stkhldr Support	0.00	0.50	5
		λ		No Started	G3-Funding/Financing.	1.67	1.67	5
	Sen .			Bottleneck	G3-BCA	0.77	12.92	15
				Bottleneck	Goal 3 Criteria Cumulative Weighted Score	2.43	18.09	33.3

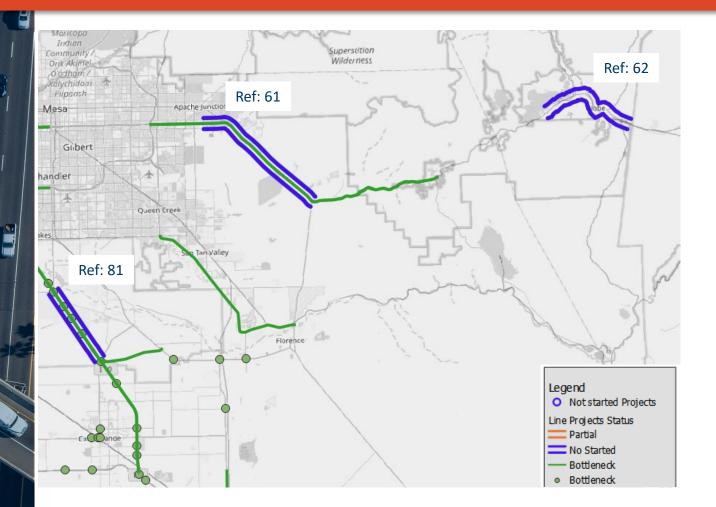
Arizona Departmen of Transportation 24.26

100

17.73

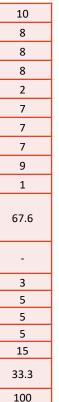
Total Score

Gila River I-10 & Apache Junction/Gold Canyon/Globe US 60 (Slide 2 of 2)



Ref	81
Route (Area)	I-10
Issue Segment	From SR 202L to East of SR 387
Issues "Type"	Recurring urban congestion
G1-KCC	10
G1-Significant	2.73
G1-Scenario	8.00
G1-Trade	8.00
G2-Modal	0.00
G2-Mobility	2.69
G2-Reliability	0.30
G2-Cost	0.12
G2-Safety	0.91
G2-Emissions	0.33
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	33.08
Planning Level Project Cost \$ million	\$ 189.00
G3 – Mgmt	0.00
G3-Land Use	5.00
G3-Stkhldr Support	1.00
G3-Funding/Financing.	3.33
G3-BCA	8.64
Goal 3 Criteria Cumulative Weighted Score	17.97
Total Score	51.05

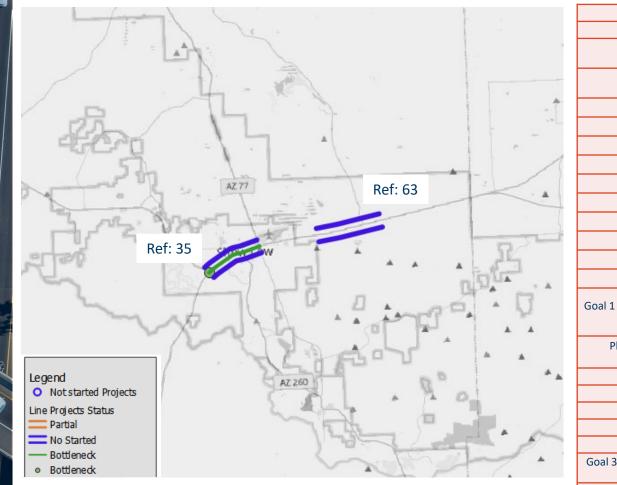
Max Score



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Prioritization Framework

Show Low SR 260 / US 60

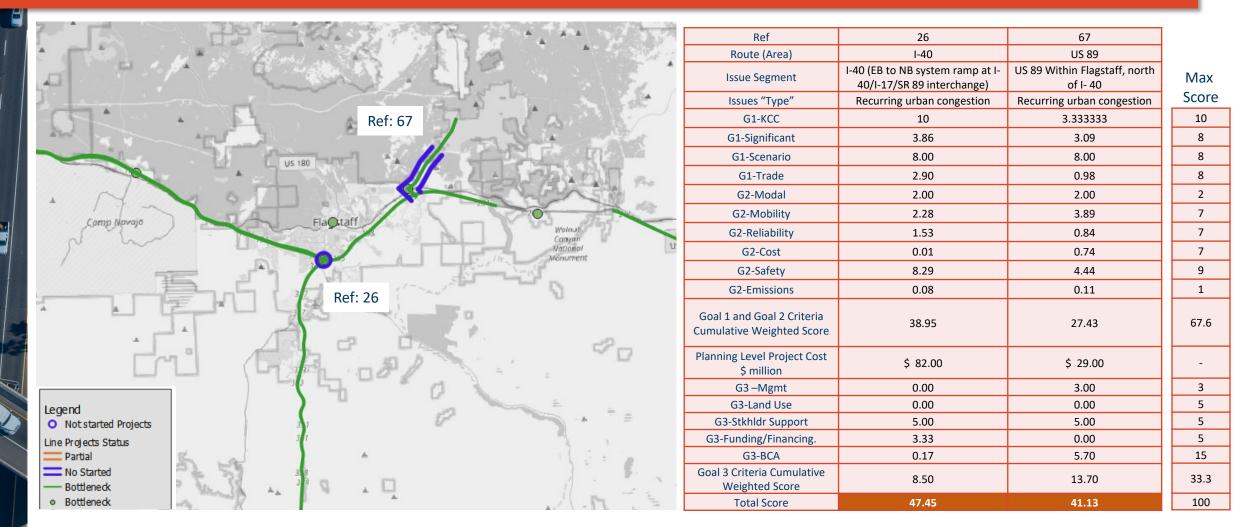


Bef	35	63	
Route (Area)	SR 260	US 60	
Issue Segment	SR 260, West of Show Low to East of SR 73	US 60 Passing Lane: Westbound	Max
Issues "Type"	Recurring rural bottlenecks	Inadequate passing/climbing lanes	Score
G1-KCC	0	0	10
G1-Significant	0.77	0.38	8
G1-Scenario	0.00	0.00	8
G1-Trade	0.00	0.04	8
G2-Modal	0.00	0.00	2
G2-Mobility	2.22	2.10	7
G2-Reliability	2.68	1.50	7
G2-Cost	0.83	0.59	7
G2-Safety	6.04	0.17	9
G2-Emissions	0.05	0.00	1
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	12.59	4.79	67.6
Planning Level Project Cost \$ million	\$ 8.00	\$ 5.10	-
G3 – Mgmt	3.00	0.00	3
G3-Land Use	0.00	0.00	5
G3-Stkhldr Support	5.00	0.50	5
G3-Funding/Financing.	0.00	1.67	5
G3-BCA	2.32	1.09	15
Goal 3 Criteria Cumulative Weighted Score	10.32	3.26	33.3
Total Score	22.91	8.05	100

ADOT

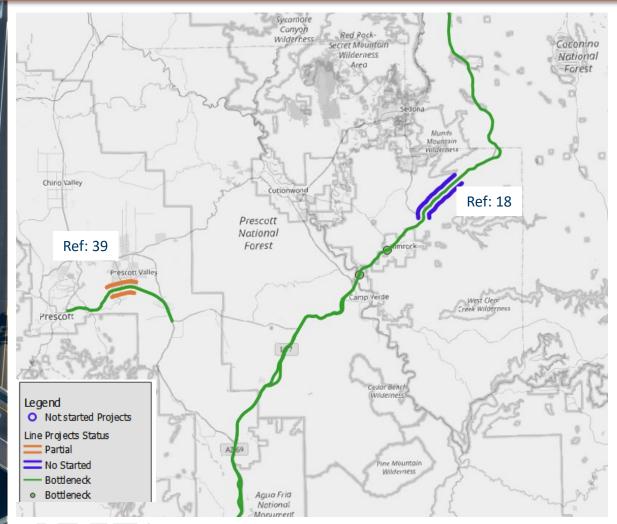
Arizona Department of Transportation

Flagstaff I-40 & US 89





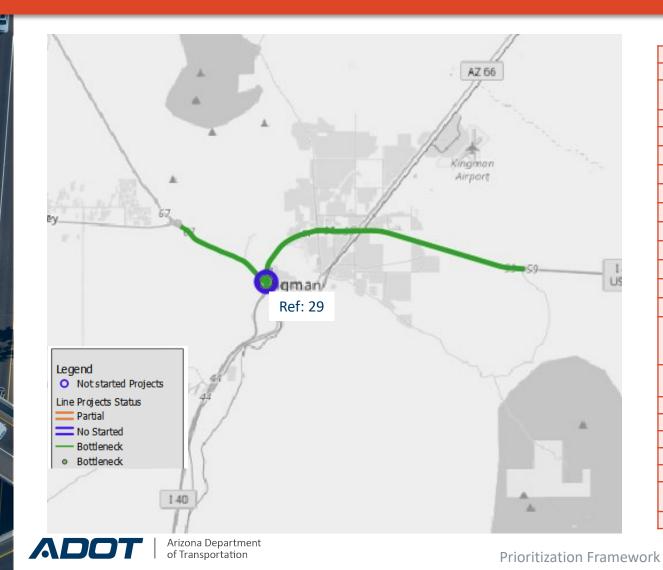
Prescott SR 69 & Coconino National Forest I-17



Ref	18	39	
Route (Area)	I-17	SR 69	
Issue Segment	I-17 between SR 179 to Stoneman Lake Road	SR 69, East of Prescott area	Max
Issues "Type"	Recurring rural bottlenecks	Recurring urban congestion	Score
G1-KCC	10	0	10
G1-Significant	1.10	1.60	8
G1-Scenario	0.00	2.67	8
G1-Trade	2.12	0.41	8
G2-Modal	0.00	0.00	2
G2-Mobility	2.71	2.81	7
G2-Reliability	0.00	5.74	7
G2-Cost	0.04	0.97	7
G2-Safety	0.50	1.01	9
G2-Emissions	0.11	0.17	1
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	16.58	15.37	67.6
Planning Level Project Cost \$ million	\$ 23.10	\$ 3.30	-
G3 –Mgmt	0.00	3.00	3
G3-Land Use	0.00	5.00	5
G3-Stkhldr Support	0.50	1.50	5
G3-Funding/Financing.	1.67	5.00	5
G3-BCA	1.50	9.67	15
Goal 3 Criteria Cumulative Weighted Score	3.67	24.17	33.3
Total Score	20.25	39.54	100

Arizona Department of Transportation

Kingman I-40 & US 93



Ref	29	
Route (Area)	I-40	
Issue Segment	I-40 at US 93 Junction within Kingman area	Μ
Issues "Type"	Recurring rural bottlenecks	Sc
G1-KCC	10	
G1-Significant	3.78	
G1-Scenario	2.67	
G1-Trade	4.02	
G2-Modal	2.00	
G2-Mobility	7.00	
G2-Reliability	3.39	
G2-Cost	1.16	
G2-Safety	9.00	
G2-Emissions	0.12	
Goal 1 and Goal 2 Criteria Cumulative Weighted Score	43.14	6
Planning Level Project Cost \$ million	\$ 86.50	
G3 –Mgmt	3.00	
G3-Land Use	0.00	
G3-Stkhldr Support	5.00	
G3-Funding/Financing.	1.67	
G3-BCA	0.00	
Goal 3 Criteria Cumulative Weighted Score	9.67	3
Total Score	52.81	1

Max Score

Projects by Scoring Tier

Highest Priority								Lowest Priority
 Phoenix I-10 at I-17 Traffic System Interchange (The Stack) Phoenix I-10 From L101 to L202 (Santan Freeway) Kingman I-40 at US 93 Junction Phoenix I-10 at SR 202L and SR 51 Traffic System Interchange (The 	7. 8. 9.	Phoenix I-17 From I-10 to L101 Flagstaff I-40 (EB to NB system ramp at I-40/I-17/SR 89 interchange) Tucson I-10 east of I-19 Tucson I-10 at I-19 Traffic System Interchange . Tucson I-19 between I-10 and	east of metro 13. Cochise I-10 at 191 (Cochise T	- t US -1) 1: 10	 Cochise US 191/ Cochise RR Overpass Globe US 60 Show Low SR 260 West of metro to East of SR 73 Coconino National Forest I- 17 between SR 179 to Stoneman Lake Road 	,	Apache Junction/ Gold Canyon US 60 between SR 88 and SR 79	19. Show Low US 60 Passing Lane:Westbound
Mini- Stack) Valencia Road 5. Gila River I-10 From 11. Flagstaff US 89 SR 202L to East of north of I-40 SR 387				DISCLAIMER: Not everything will be able to receive fund For context, ~ 6 projects from 2016 have since been completed, is on-going or now in-progress			ve since been	

ADOT





What should we fund?

Gathering FAC priorities and allocating resources

Comparing Apples and Oranges

Rhetorical Question (for now...)

What amount of funding should be set-aside for truck parking?





Some Context

• Typical truck parking project costs:

- Parking space addition without ramp alignment = \$195K/space
- Parking space addition with ramp alignment = \$285K 375K /space
- Lots paving and striping = \$100K/space





Some Context – Remaining projects

Rank	k Location Truck Parking Spaces within 25mi (Milepost) (Number of Spaces)		Expansion Opportunities	Information Solutions			
I-17 North of Phoenix							
8	Sunset Point Rest Area Ramps: I-17 (MP 252) Almost 60 spaces at 2 locations. Limited availability at nearby truck parking locations.		 Sunset Point Rest Area (MP 252): Unsuitable for Expansion Land surrounding the rest area is unsuitable for expansion Facilitate discussion and provide data for private truck stop (NATSO highlighted a members interest in developing a truck stop on I-17) 	Limited truck parking availability nearby limits the opportunity for an information solution			
I-10 a	t Texas Canyon						
9	Texas Canyon Rest Area Ramps: I-10 (MP 320)	410+ spaces at 5 locations. Truck stops at exits 302, 322, and 340. Availability at: • Exit 322: Shell (20) • Exit 302: Loves (125)	 Texas Canyon Rest Area (MP 320): Unsuitable for Expansion Land surrounding the rest area is unsuitable for expansion Facilitate discussion and provide data for private truck stop (NATSO highlighted a members interest in developing a truck stop on I-10 	Interstate Oasis Program with nearby truck stops.			
			west of Tucson)	TPIMS at Texas Canyon Rest Area.			
I-10 N	lear Casa Grande						
	I-10 Exit 200: On/Off Ramps Near Casa Grande	1,040+ spaces at 9 locations. Truck stops at exits 200, 203, and 208. Availability at: • Exit 200: Pride (50) & Petro (175) • Exit 203:TA (234) & Circle K (25) • Exit 208: Flying J (350) & Pilot (145)	 Sacaton Rest Area (MP 182): Expansion Opportunity (32 to 49 spaces) Eastbound: 17 truck parking spaces and opportunity for 8 additional spaces Westbound: 15 truck parking spaces and opportunity for 9 additional spaces The concentration of private truck parking near Sacaton makes the expansion of the rest area a low priority 	Interstate Oasis Program with nearby truck stops.			
I-40 E	ast Arizona						
12	I-40 Exit 300: Ramps	390+ spaces at 5 locations. Truck stops at exits 277, 283, 292, 325, and 333. Availability at:	No ADOT rest areas within 25 miles of Exit 300 and 320	Interstate Oasis Program with nearby			
13	I-40 Exit 320: Ramps	 Exit 292: Hopi Travel Center (150) Exit 325: Navajo Travel Center (60) Exit 333: Mobil (50) 		truck stops.			

ADOT

Some Context - Remaining projects

Rank	Location (Milepost)	Truck Parking Spaces within 25mi (Number of Spaces)	Expansion Opportunities	Information Solutions					
I-15 A	I-15 Arizona/Utah Border								
14	I-15 Exit 27: Ramps & Vacant Lot	There are no truck parking locations on I-15 in Arizona.	ADOT could formalize roadside truck parking that occurs at milepost 28 (Westbound on I-15) Additional study would be required to assess the right-of-way and identify the cost of developing a parking only location	Work with Nevada and Utah to inform drivers about truck parking locations on					
				I-15 near the Arizona border, such as notifying truck drivers that no truck services or parking are available on I-15 in Arizona					



Allocation "Warm up" Activity

Tradeoffs are hard ... time to get your thinking caps on

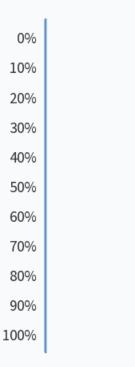
Please get out your favorite electronic device

When poll is active, respond at pollev.com/streets315
 Text STREETS315 to 22333 once to join



When poll is active, respond at pollev.com/streets315
 Text STREETS315 to 22333 once to join

Out of the available budget, what percentage would you allocate to truck parking?



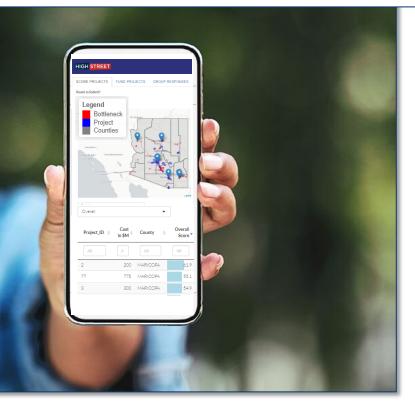
Start the presentation to see live content. For screen share software, share the entire screen. Get help at pollev.com/app



Feeling sufficiently warmed up? Let's update scores and allocate some resources

Please get out your favorite electronic device and navigate to:

https://highstreet.shinyapps.io/azfac/



Next Steps

- Identify any criteria additions/modifications
- Gather any remaining projects
- Confirm costs





Thank you

Questions, Comments, Compliments...