APPENDIX D11: TOOELE COUNTY

Safety Summary

Tech Memo #1 Safety Analysis

Case Study Project Information Sheets

Case Study Project Location Map

Equity Index Map

TOOELE COUNTY SAFETY SUMMARY

Tooele County Geographic Focus Area

CSAP OVERVIEW

"A plan to provide local governments the means to make strategic roadway safety improvements"

Wasatch Front Regional Council (WFRC) is preparing a regional Comprehensive Safety Action Plan (CSAP). The CSAP will present a **holistic, well-defined strategy** to **reduce roadway fatalities and serious injuries** in the Wasatch Front region.

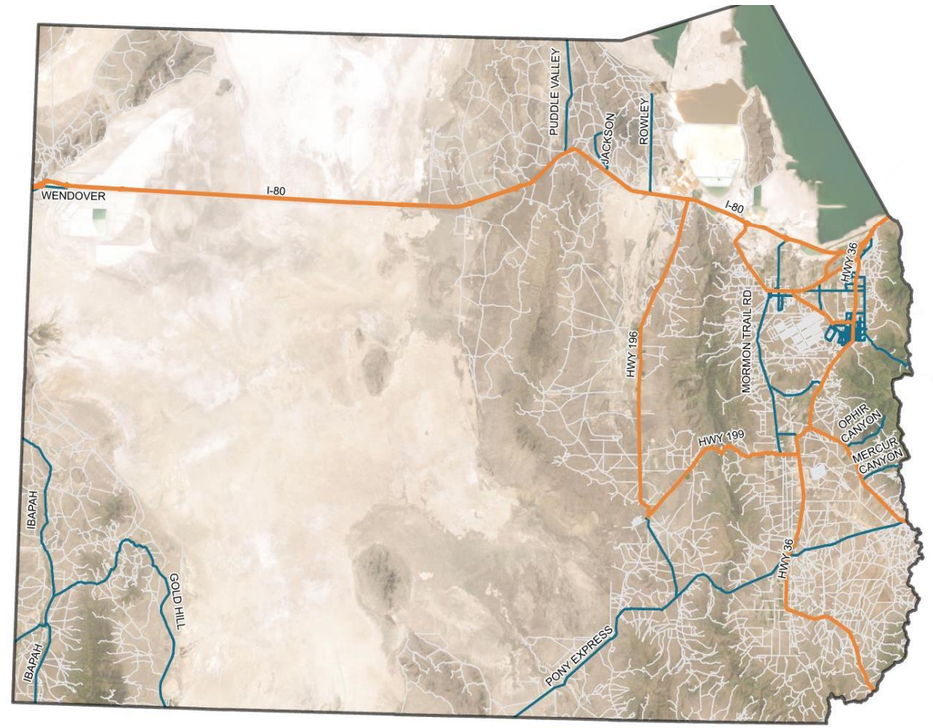
The CSAP will ***analyze*** safety needs, ***identify*** high-risk locations and factors contributing to crashes, and ***prioritize*** strategies to address them.

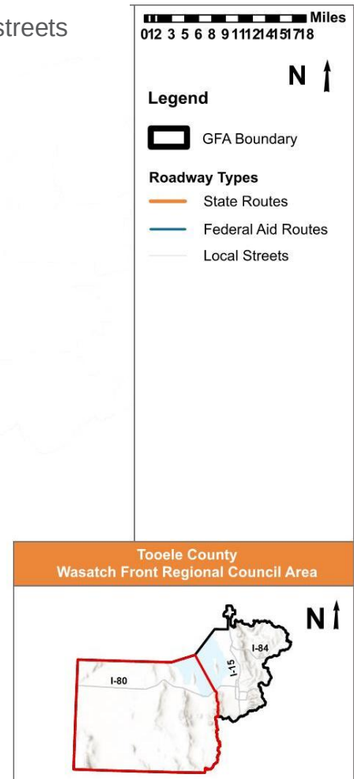
The CSAP will meet eligibility requirements that allow local jurisdictions to apply for **Implementation Grants** from the United States Department of Transportation (USDOT) Safe Streets and Roads for All (SS4A) discretionary grant program. The grant program was established by the Bipartisan Infrastructure Law (BIL) with $5 billion in appropriated funds, 2022-2026. A Safety Action Plan must include the following elements, as specified by FHWA to satisfy eligibility requirements to apply for an implementation grant:

State Route: Roadways owned, operated, and maintained by UDOT

Federal-Aid Route: Non-UDOT roadways eligible for federal funding – typically minor arterials and collectors

Local Streets: Other non-UDOT / non-Federal Aid roadways, primarily collectors, and residential streets





Self-Certification Checklist

Plan must include the following:

- ❑ Safety Analysis
  - ❑ Existing conditions and historical trends
  - ❑ Crashes by location, severity, and contributing factor
  - ❑ Systemic and specific safety needs
  - ❑ Geospatial identification of higher risk locations
- ❑ Identification of comprehensive set of projects and strategies

...And must complete 4 of the 6 elements to the right:

1. Leadership Commitment
   - ❑ Governing body publicly commit to a zero fatalities and serious injury goal
2. Plan Development
   - ❑ Committee charged with plan development, implementation, and monitoring
3. Development Activities
   - ❑ Engagement with public and relevant stakeholders
4. Equity
   - ❑ Data-driven, inclusive, and representative processes
5. Policies, Plans, Guidelines, and/or Standards
   - ❑ Assessment policies, plans, guidelines, and/or standards
6. Progress
   - ❑ Description on how progress will be measured over time

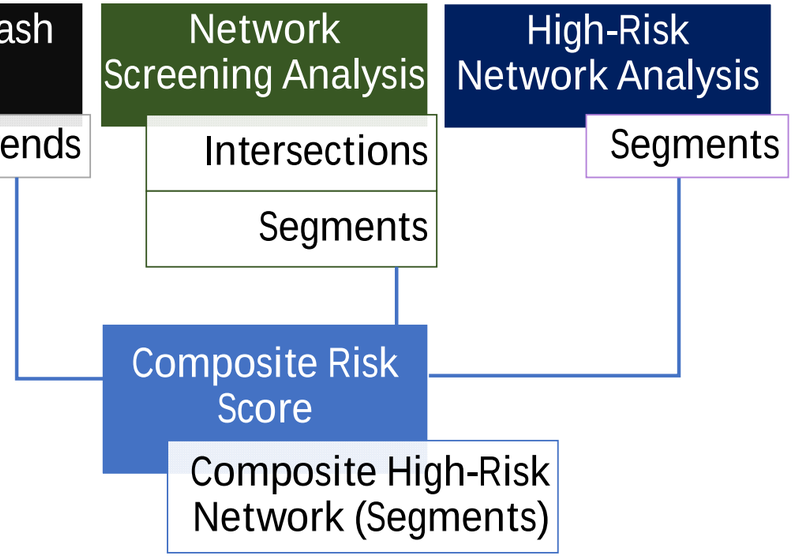
Safe System Approach

Implementing a Safe System Approach requires moving away from traditional safety paradigms.

- ❑ The Safe System approach seeks to prevent death and serious injuries.
- ❑ The Safe System approach designs for human mistakes and limitations.
- ❑ The Safe System approach focuses on speed management and strategies to reduce system kinetic energy.
- ❑ The Safe System approach aims to share responsibility among system users, managers, and others.
- ❑ The Safe System approach proactively identifies and addresses risks

Traditional Approach to Safety	Safe System Approach Paradigm
Prevent crashes	Prevent death and serious injury
Improve human behavior	Design for human mistakes/limitations
Control speeding	Reduce system kinetic energy
Individuals are responsible	Share responsibility
React based on crash history	Proactively identify and address risks

Safety Analysis Methodology



Four unique safety analysis methods inform identification of safety needs. Three of the analysis lead to identification of a Composite High-Risk Network. The analysis can be thought of as a layered approach, each focused on a different safety element. Segments with a score of "4" or "5" are included in the High-Risk Composite Network

Analysis	Composite High Risk Score Element	Value
Historical Crash Analysis	Segment 5-Year Crash Totals ≥ 3 Crashes	1
Network Screening Analysis	Positive CCR Differential	1
High-Risk Network Analysis	Crash Profile Risk Score ≥ 20	1
	usRAP Vehicle Star Rating = 1-2 Stars	1
	usRAP Pedestrian Star Rating = 1-2 Stars	0.5
	usRAP Bicycle Star Rating = 1-2 Stars	0.5
Total Possible Composite Risk Score		**5**

Strategic Highway Safety Plan (SHSP) Emphasis Area Comparison

Based on a comparison of fatal and serious injuries for each Utah SHSP Emphasis area, the following emphasis areas should be considered when developing safety improvement projects specific to the **Tooele County** GFA.

- Roadway Departure
- Intersection
- Speed-Related
- Impaired Driving
- No Safety Restraints

Intersection, Roadway Departure, and Speed-Related emphasis areas rank highest in terms of number of fatal and serious injuries at the Statewide and WFRC Levels.

In addition to Intersection, Roadway Departure, and Speed-Related emphasis areas within the **Tooele County** GFA, Impaired Driving and No Safety Restraints are also identified as top emphasis areas.

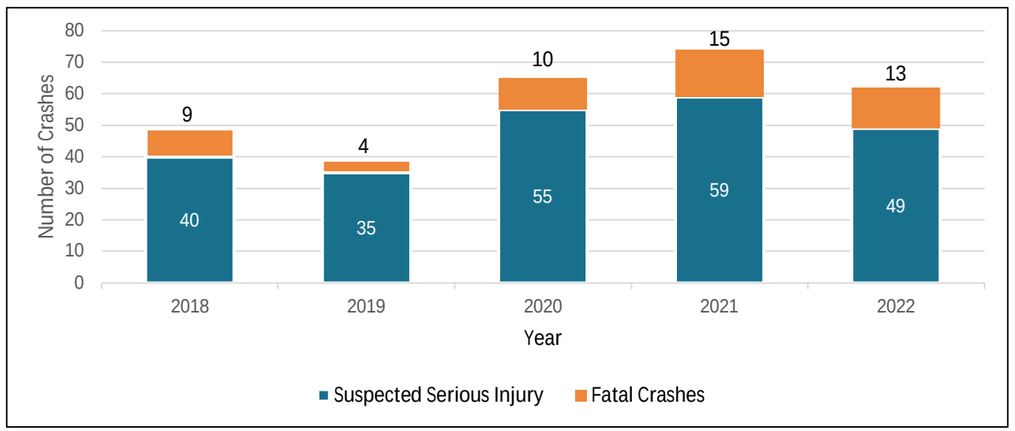
Strategic Highway Safety Plan Emphasis Area Comparison

Category	Utah SHSP Safety Emphasis Area	Statewide Totals		WFRC Totals		Tooele County Totals		
		Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Change in Rank From WFRC
Driver	Teen Driver	1,640	**4**	751	4	51	7	-3
	Older Driver	1,508	6	700	6	56	6	0
	Speed-Related	2,133	**3**	936	3	87	3	0
	Aggressive Driving	555	11	297	10	18	11	-1
	Distracted Driving	718	10	286	11	20	10	1
	Impaired Driving	1,184	8	623	8	64	4	4
	No Safety Restraints	1,542	**5**	599	9	64	5	4
Roadway	Intersection	3,567	**1**	2,163	1	89	2	-1
	Roadway Departure	2,931	**2**	1,014	2	151	1	1
Special Users	Motorcycle	1,457	7	750	5	38	8	-3
	Pedestrian	912	9	636	7	21	9	-2
	Bicycle*	280	12	167	12	1	12	0

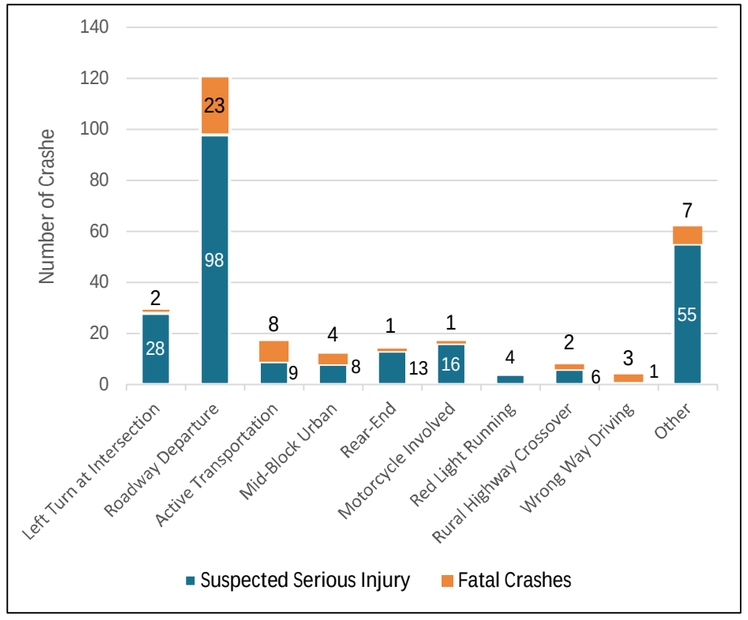
*While Bicycles are not one of the eleven Utah SHSP emphasis areas, they are included as part of the CSAP safety analysis.

5-Year Historical Crash Trends in the Tooele County GFA

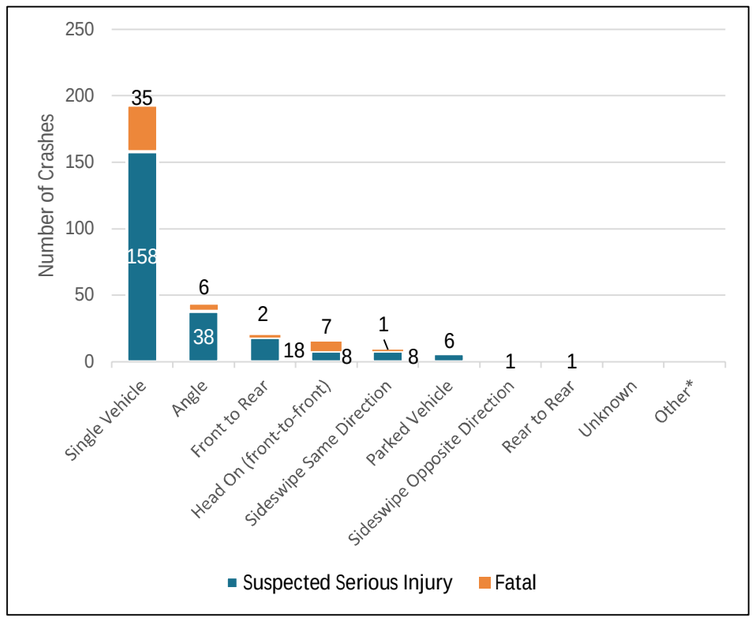
Route Type	State Route		Federal Aid Route		Local Street		Overall Total		% of WFRC
Crash Severity	Crashes		Crashes		Crashes		Crashes		%
	#	%	#	%	#	%	#	%	
Fatal	42	1%	8	1%	1	0%	**51**	**0.9%**	**0.0%**
Suspected Serious Injury	135	4%	50	4%	53	7%	**238**	**4.1%**	**0.1%**
Suspected Minor Injury	500	13%	144	11%	99	13%	**743**	**12.8%**	**0.4%**
Possible Injury	596	16%	217	17%	91	12%	**904**	**15.5%**	**0.5%**
No Injury / Property Damage Only	2,512	66%	844	67%	529	68%	**3,885**	**66.7%**	**2.2%**
Route Total	**3,785**	**100%**	**1,263**	**100%**	**773**	**100%**	**5,821**	**100%**	**3.2%**



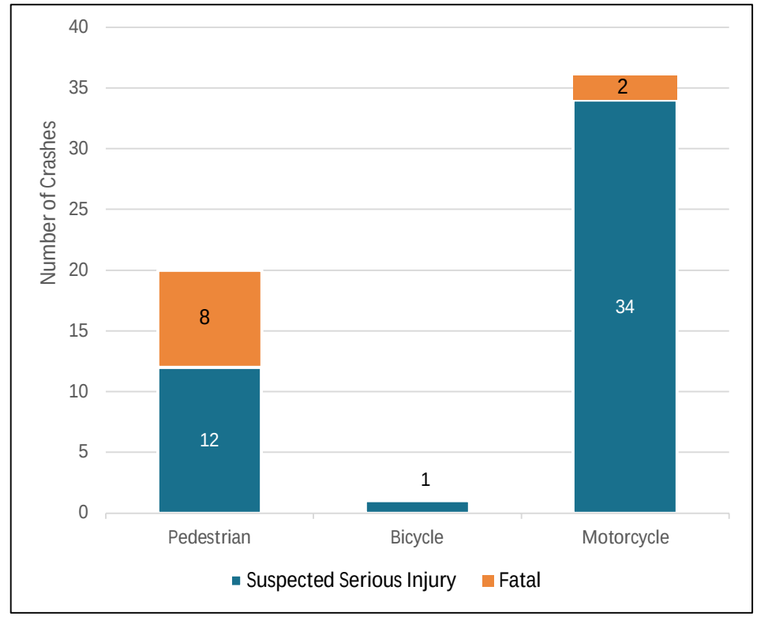
Annual Fatal and Serious Injury Crashes (2018-2022)



Crash Type



Manner of Collision



Active Transportation

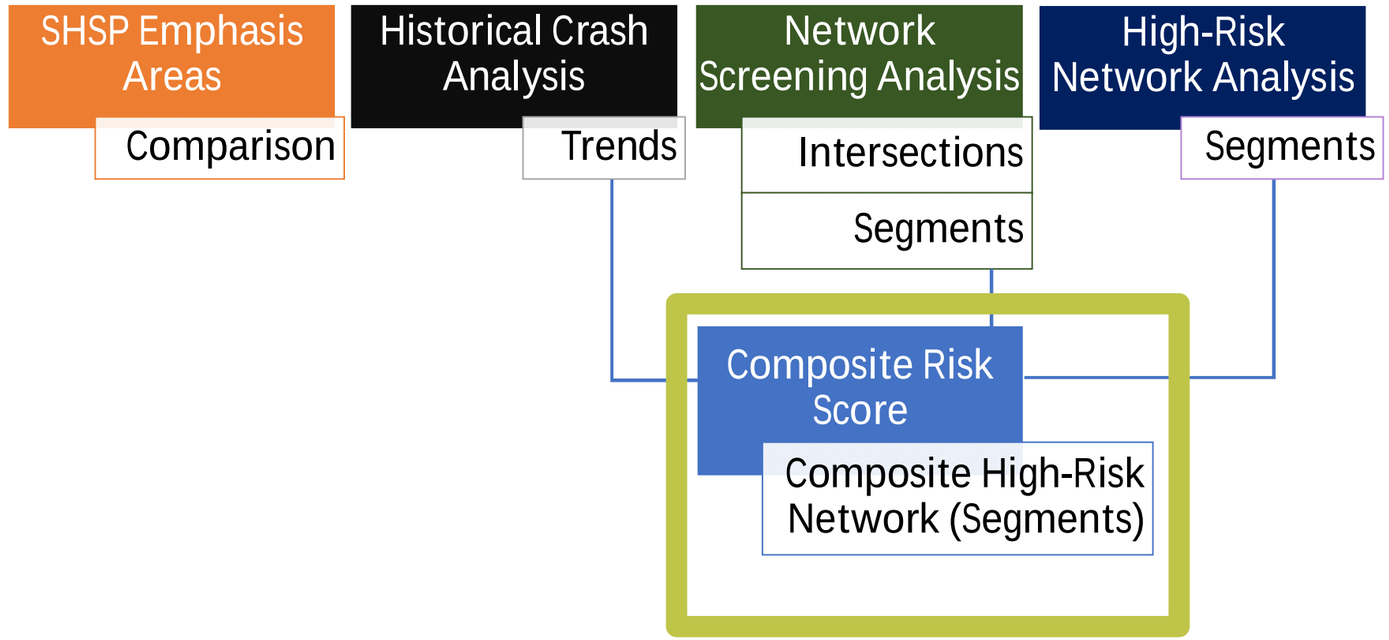
Composite High-Risk Roadway Network

Each of the completed safety analysis methodologies identified segments or intersections that are **candidates for safety improvements** to reduce fatalities and serious injury crashes.

To provide focused information for jurisdictional decisions regarding **prioritization of safety improvements**, an analysis was performed to identify overlapping segments from each of the analysis methodologies. A **composite score**, from zero to five, was assigned to each State Highway or Federal Aid Route segment in the region. State Route or Federal Aid Route segments with a score of "4" or higher are included in the Composite High-Risk Network. These represent the top 10% of State Route and Federal Aid Route segments for the entire WFRC area.

The Composite High Risk Network map on page 8 includes State Route and Federal Aid Route segments with a score of "4" or higher.

A list of locally-owned and maintained Federal Aid Route segments in the **Tooele County** GFA Composite High-Risk Network is included on the next page. Streets operated and maintained by local agencies are an emphasis of the SS4A program.



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Historical Crash Analysis	Segment 5-Year Crash Totals ≥ 3 Crashes	1
Network Screening Analysis	Positive Local CCR Differential	1
High Risk Network Analysis	Crash Profile Risk Score ≥ 20	1
	usRAP Vehicle Star Rating = 1-2 Stars	1
	usRAP Pedestrian Star Rating = 1-2 Stars	0.5
	usRAP Bicycle Star Rating = 1-2 Stars	0.5
Total Possible Composite Risk Score		**5**

Composite Risk Score
Composite High-Risk Network (Segments)

Composite High-Risk Network (State Route/Federal Aid) and Local Street Risk Network

Facility	Limits	Functional Classification	City	Length (miles)	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes	Local Street Risk Assessment
State Route											
SR-36	I-80 to Cimmarron Way	Other Principal Arterial	Lake Point, Erda	7.5	X	X	X	X		X	
Main Street (SR-36)	1280 North to 100 South	Other Principal Arterial	Tooele	2.0	X	X		X	X	X	
SR-36	900 South to Gravel Site Road	Other Principal Arterial	Tooele	4.5	X	X	X	X		X	
Federal Aid Routes											
Bates Canyon Rd	Cambridge Way to SR-36	Major Collector	Unincorporated	0.1	X	X	X		X	X	
Saddleback Blvd	UT-36 to Mountain View Rd	Major Collector	Lake Point	0.4	X	X	X		X	X	
Local Streets					Local Street Risk Assessment						
1000 North	SR-36 to 400 East	Minor Arterial	Tooele	0.6	The Local Street Risk Assessment considered factors such as locations of crashes, proximity to schools, and hard-braking.						X
400 North	Landmark Drive to Droubay Road	Major Collector	Tooele	1.9							X
Bates Canyon Road	Tom's Lane to August Street	Major Collector	Stansbury Park	2.3							X
700 West/1280 North	670 North to 80 East	Major Collector	Tooele	1.3							X
600 North	50 West to 100 East	Major Collector	Tooele	0.2							X
2000 North	400 East to Berra Boulevard	Major Collector	Tooele	0.5							X
Village Boulevard	Mast Lane to Droubay Road	Major Collector	Stansbury Park	2.0							X
Utah Avenue	Coleman Drive to 1000 North	Minor Arterial	Tooele	1.9							X
100 South	200 West to SR-36	Local	Tooele	0.3							X
Stansbury Parkway	Brigham Road to SR-36	Local	Stansbury Park	0.7							X

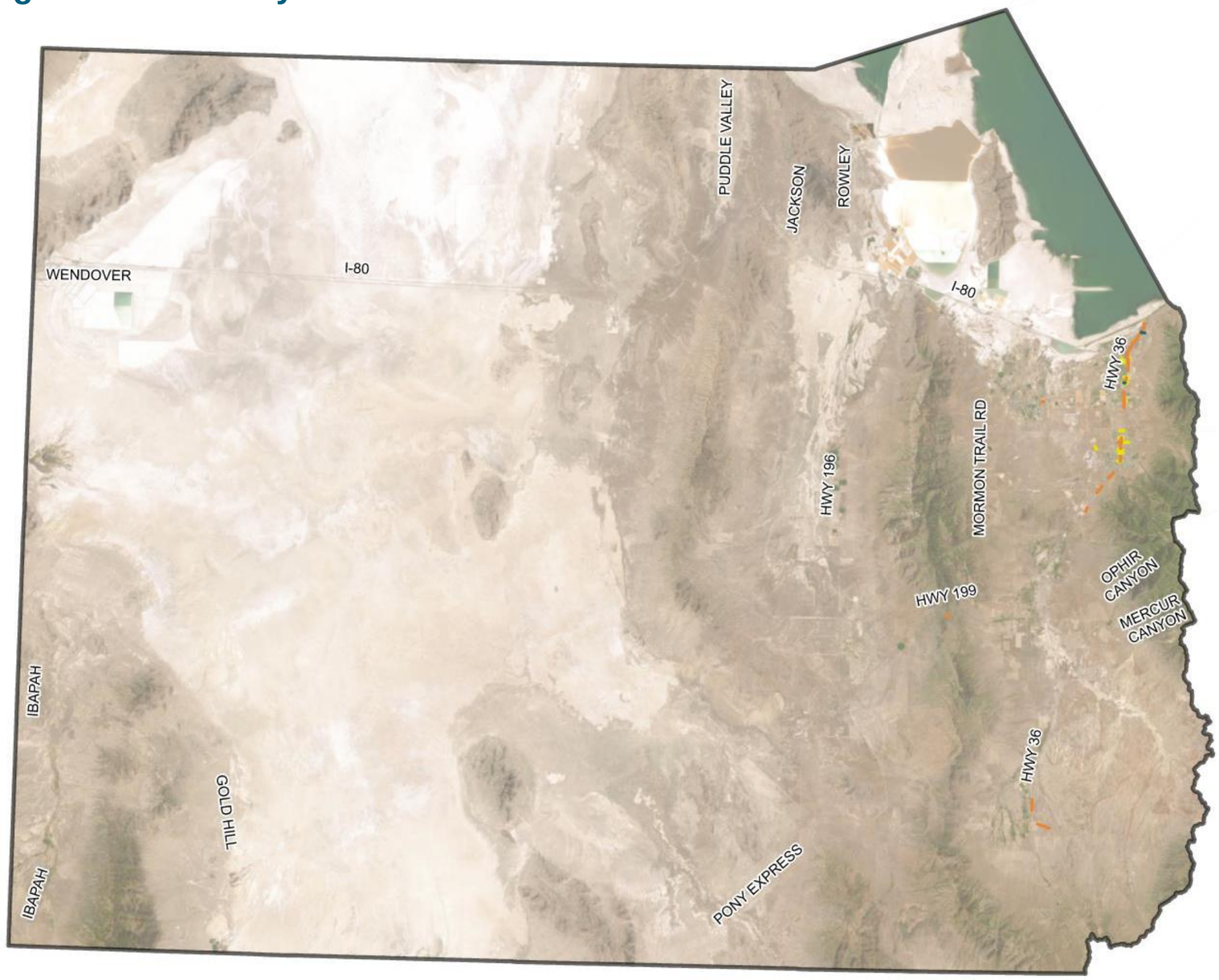
State Route and Federal Aid segments in the **Tooele County GFA** Composite High-Risk Network are listed at left. Each of these segments received a composite risk score of "4" or higher. These segments provide a focus for local jurisdictions or for coordination with UDOT. Each of these segments are shown on the map on page 7.

Local Streets are also listed at left. These segments were identified through a separate analysis that considered factors such as crash location, proximity to schools, and hard braking.

Composite Risk Score

Composite High-Risk Network (Segments)

Composite High-Risk Roadway Network



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

GFA Boundary

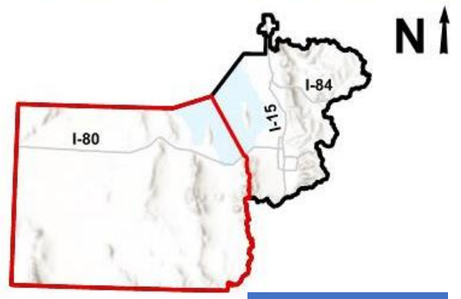
Composite High-Risk Network

State Routes

Federal Aid Routes

Local Streets

Tooele County
Wasatch Front Regional Council Area



Composite Risk Score

Composite High-Risk Network (Segments)

Network Screening - Intersections

Network Screening is one of the inputs to the Composite High Risk Roadway Network. Network screening is based on Critical Crash Rate Differential analysis as documented in the Highway Safety Manual. This analysis identified intersections where historical crash rates exceed those which can be expected for similar facilities**.**

A list of the top 10 intersections on State Routes, Federal Aid Routes, and Local (Non-Federal Aid) Streets in the **Tooele County** GFA are listed at right, along with their associated number of crashes.

For each intersection, the Critical Crash Rate (CCR) Differential and Equivalent Property Damage Only (EDPO) value is listed. These intersections represent those with the highest potential for safety improvements and can be considered as project candidate locations.

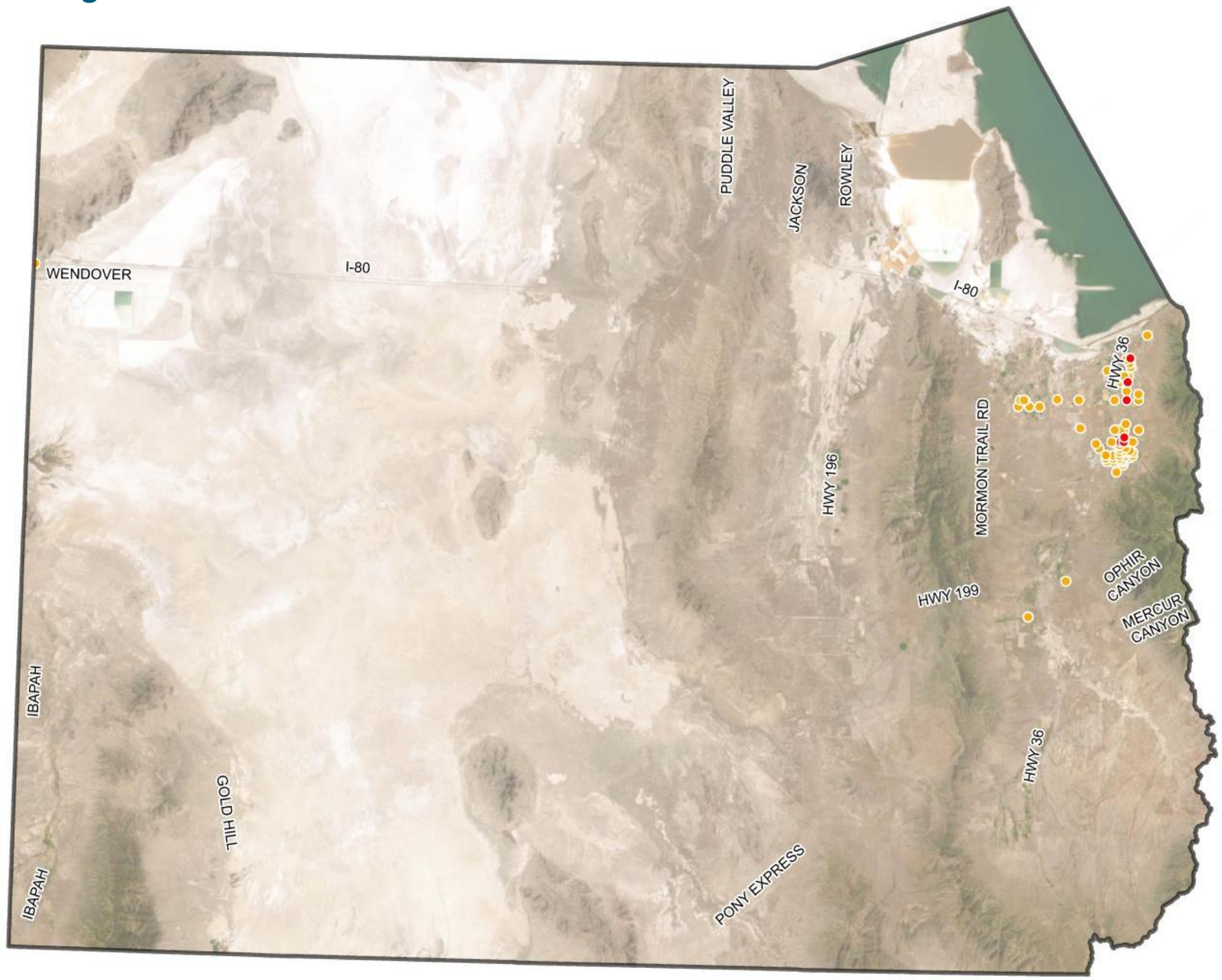
Signalized and unsignalized intersections in the **Tooele County** GFA with a positive Critical Crash Rate Differential (rate exceeds expected rate) are mapped on page 10.

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Parked Vehicle	Single Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
Signalized Intersections																						
Main St & 1000 N	Tooele	128	0.9	1004	0	3	13	31	81	62	43	3	10	0	0	0	3	7	0	3	1	1
200 W & 1000 N	Tooele	34	0.5	380	0	1	8	8	17	21	8	3	1	0	0	0	0	1	0	0	1	1
Hwy 36 & Erda Way	Erda	64	0.1	616	0	3	8	10	43	20	33	3	2	1	0	0	0	5	0	0	0	2
Hwy 36 & Bates Canyon Rd	Unincopr.	61	0.1	1365	1	2	6	10	42	23	26	2	6	1	0	0	1	1	1	0	0	1
Hwy 36 & Hwy 138	Unincopr.	75	0.0	785	0	3	13	15	44	16	47	1	3	1	0	0	2	5	0	0	0	0
Main St & 1280 N	Tooele	78	0.0	729	0	1	16	21	40	36	24	6	7	0	0	0	1	4	0	2	0	3
Hwy 36 & Village Blvd	Unincopr.	51	-0.1	347	0	0	11	6	34	17	27	2	0	0	0	0	1	4	0	0	0	1
Highway 112 & Main St	Grantsville	22	-0.3	178	0	1	2	2	17	13	1	1	5	0	0	0	0	2	0	1	1	1
Hwy 36 & Saddleback Blvd	Lake Point	46	-0.5	585	0	4	5	6	31	13	28	2	1	0	0	0	1	1	0	0	0	0
Main St & 2000 N	Tooele	47	-0.5	441	0	2	2	16	27	3	33	1	5	0	0	0	0	5	0	1	0	1
Unsignalized Intersections																						
Broadway Ave & 1000 N	Tooele	10	2.8	62	0	0	1	3	6	3	5	0	1	0	0	0	0	1	0	0	0	0
100 E & 1000 N	Tooele	12	2.8	53	0	0	0	4	8	3	7	1	0	0	0	0	0	1	0	0	0	0
100 E & 400 N	Tooele	24	1.9	118	0	0	2	5	17	23	1	0	0	0	0	0	0	0	0	1	0	0
100 E & 500 N	Tooele	18	1.9	123	0	0	3	4	11	15	0	0	1	1	0	0	0	1	0	0	0	0
Berra Blvd & 2000 N	Tooele	3	1.8	24	0	0	0	2	1	1	0	0	1	0	0	0	0	1	0	0	0	0
Sheep Ln & Erda Way	Grantsville	12	1.8	149	0	0	4	5	3	10	2	0	0	0	0	0	0	0	0	0	0	0
Gateway Dr & Stansbury Pkwy	Unincopr.	5	1.4	37	0	0	1	1	3	4	1	0	0	0	0	0	0	0	0	0	0	0
520 E & 1000 N	Tooele	5	1.1	48	0	0	2	0	3	1	2	0	2	0	0	0	0	0	0	0	0	1
Mountain View Rd & Sunset Rd	Lake Point	3	1.1	96	0	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0
Cochrane Ln & Erda Way	Erda	3	1.0	13	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

Network Screening - Intersections



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

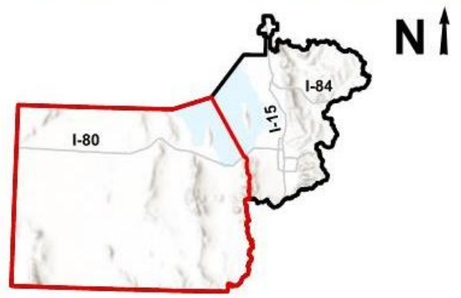
Legend

GFA Boundary

Critical Crash Rate Differential (> 0.0)

- Signalized
- Unsignalized

Tooele County
Wasatch Front Regional Council Area



Network Screening Analysis

- Intersections
- Segments

Supporting Information

High-Risk Roadway Segments (Federal Aid Routes)

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
Rowley Road	North GFA Extents to East Poverty Point Road	Grantsville	X						
Burmester Road	Main Street to I-80	Unincorporated	X	X					
Canyon Road	SR-36 to Center Street	Lake Point	X	X					
Center Street	SR-36 to Mountain View Road	Lake Point	X	X	X				
Mountain View Road	Center Street to Saddleback Blvd	Lake Point	X	X	X				
Saddleback Blvd	SR-36 to Mountain View Road	Tooele	X	X	X				
Village Blvd	SR-138 to Brienne Way	Erda			X				
Village Blvd	Brienne Way to SR-36	Erda		X	X				
Aberdeen Lane	Bates Canyon Road to Village Blvd	Erda	X	X					
Bates Canyon Road	Toms Lane to Strafford Drive	Erda	X	X					
Bates Canyon Road	Strafford Drive to SR-36	Erda	X	X	X				
Bates Canyon Road	SR-36 to Droubay Road	Erda	X	X					
Toms Lane	Church Road to Bates Canyon Road	Erda	X	X					
Church Road	Cochrane Lane to SR-36	Erda	X	X					
Cochrane Lane	Erda Way to Church Road	Erda	X	X					
Bryan Road	SR-36 to Droubay Road	Erda	X	X					
Sheep lane	SR-112 to SR-138	Erda	X	X					
Erda Way	SR-138 to Droubay Road	Erda	X	X					

A list of Federal Aid segments in the **Tooele County GFA** identified from each of the safety analysis methods is listed in the table at left. An “x” is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 16 through 20 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

Facility	Limits	City	RISK TYPE: *usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
Droubay Road	Bates Canyon Road to Bryan Road	Erda	X	X					
Droubay Road	Bryan Road to Whispering Horse Road	Erda	X	X	X				
Droubay Road	Whispering Horse Road to Tanglewood Driv	Erda	X	X					
Droubay Road	Tanglewood Drive to Brookfield Avenue	Erda	X	X	X				
Droubay Road	Brookfield Avenue to Vine Street	Erda	X	X					
Tooele Blvd	340 West to 210 West	Tooele			X				
650 North	Coleman Street to 600 North	Tooele			X				
600 North	650 North to 300 West	Tooele			X				
600 North	150 West to 50 West	Tooele			X				
Industrial Loop Road/B Avenue	F Avenue to Garnet Street	Tooele	X						
Garnet Street	B Avenue to G Avenue	Tooele	X						
Garnet Street	H Avenue to M Avenue	Tooele	X	X	X				
Droubay Road	Skyline Drive to 270 South	Tooele	X	X					
Burmeester Road	Main Street to I-18	Tooele	X	X					
Durfee Street	Durrant Street to Willies Way	Grantsville	X	X	X				
West Street	400 South to Main Street	Grantsville	X						
Cooley Street	400 South to Peach Street	Grantsville	X	X	X				
400 South	West Street to Cooley Street	Grantsville	X	X	X				

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Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

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Federal Aid Routes									
Mormon Trail Road	3,300 Feet South of Willow Canyon Road to 400 So	Rush Valley	X						
Mormon Trail Road/Main Street	SR-199 to 4,300 Feet North of Mountain Road	Rush Valley	X						
Silver Avenue	Main Street to Cactus Rose Drive	Stockton	X						
Faust Road	SR-36 to Depression Road	Unincorporated	X						
Quirk Street	Legrand Drive to Main Street	Grantsville	X	X					
Legrand Drive	Quirk Street to Willow Street	Grantsville	X	X					
Willow Street	Legrand Drive to Nygreen Street	Grantsville	X	X					
Quirk Street	Hollywood Street to Main Street	Grantsville				X			
West Street	400 South to Main Street	Grantsville				X			
Durfee Street	West Street to Willow Street	Grantsville				X			
Faust Road	Barrel Road to Depression Road East	Unincorporated				X			
Rowley Road	East Povert Point Road to Lakeshore Private Road	Grantsville				X			
Burmester Road	Main Street to I-80	Grantsville, Tooele, Un.				X			
Sheep Lane	SR-112 to SR-138	Erda				X			
Droubay Road	Fox Run Drive to Bates Canyon Road	Erda				X			
Bates Canyon Road	SR-36 to Droubay Road	Erda				X			
Erda Way	SR-36 to Droubay Road	Erda				X			
1000 N	Main St to 100 E	Tooele					X	X	

A list of Federal Aid segments in the **Tooele County GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 16 through 20 depict each of these segments identified by the respective analysis.

Composite Risk Score

High-Risk Network

High-Risk Roadway Segments (Federal Aid Routes), Cont'd

Facility	Limits	City	RISK TYPE						
			usRAP- Pedestrian Star Rating	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Federal Aid Routes									
Mormon Trail Rd	Hickman Cyn to Silver Ave	Unincorporated					X	X	
Mormon Trail Rd	Davenport Rd to Willow Wash Rd	Unincorporated					X	X	
Bates Canyon Rd	Cambridge Way to SR-36	Unincorporated					X	X	
Mormon Trail Rd	Tc03482 to Davenport Rd	Unincorporated					X	X	
1280 N	Main St to Pine Canyon Rd	Tooele					X	X	
Mormon Trail Rd	Grantsville Reservoir Rd to Tc03482	Unincorporated					X	X	
1000 N	100 E to 220 E	Tooele					X	X	
400 S	100 W to 50 W	Tooele					X	X	
200 W	Quartz Rd to Sapphire Dr	Tooele					X	X	

A list of Federal Aid segments in the **Tooele County GFA** identified from each of the safety analysis methods is listed in the table at left. An "x" is placed to identify the analysis that flagged the segment:

- **usRAP** Star Ratings (Vehicle, Bicycle, Pedestrian)
- **Crash Profile** Risk Score
- **Network Screening,** applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period)

The maps on page 16 through 20 depict each of these segments identified by the respective analysis.

Network Screening – Segments (Local Streets)

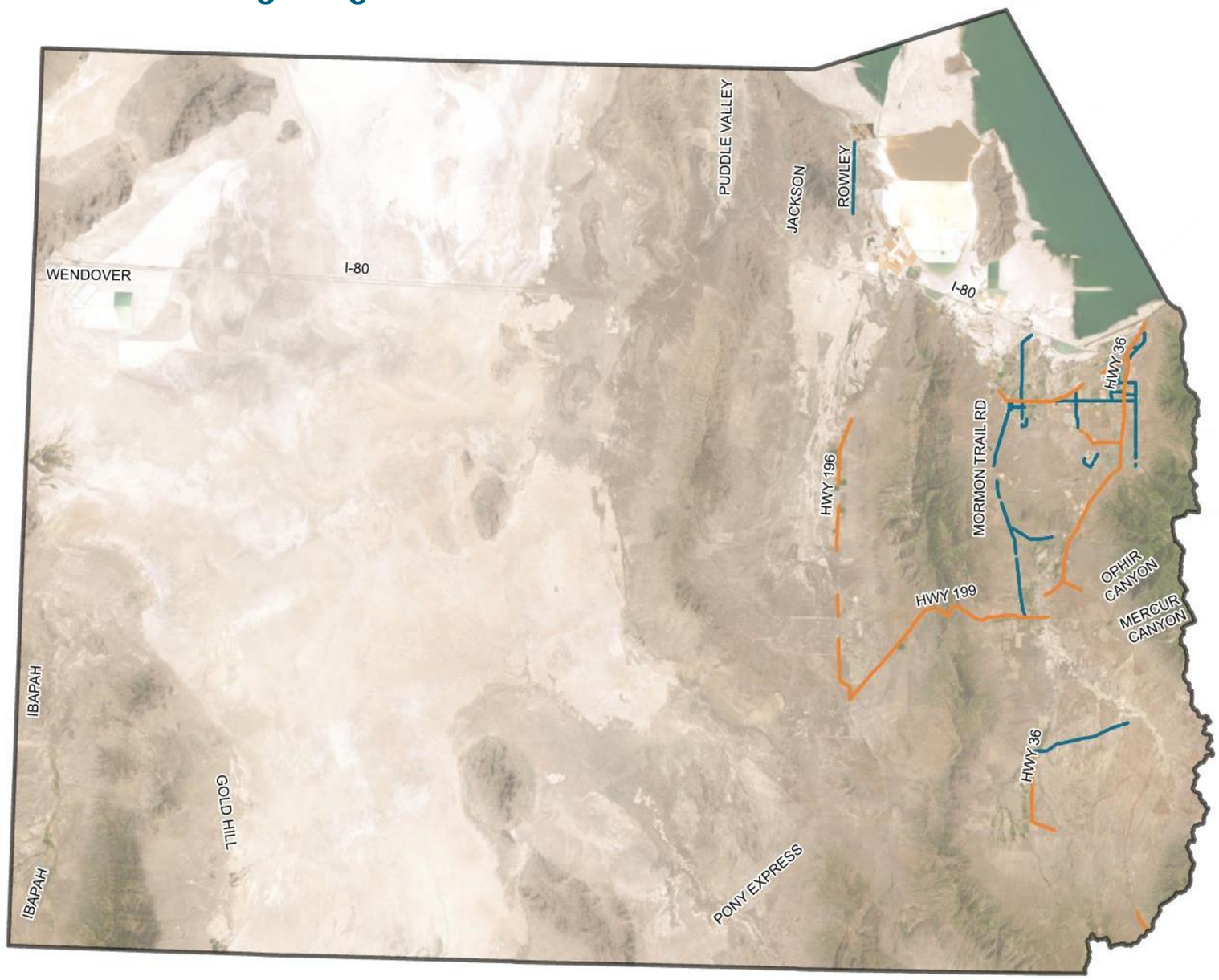
			RISK TYPE						
Facility	Limits	City	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	*Crash Profile Risk Score*	CCR Differential Analysis	Significant Crashes	Local Streets Risk Assessment
Local Streets									
Vernon Reservoir Fishing Rd	Vernon Reservoir to Vernon Reservoir Rd	Unincorporated					X	X	
Davenport Canyon Rd	Tc03442 to Davenport Canyon Rd	Unincorporated					X	X	
Davenport Canyon Rd	Tc03448 to Willow Canyon Rd	Unincorporated					X	X	
2400 N	210 W to SR-36	Tooele					X	X	
100 S	100 E to Russell Ave	Tooele					X	X	
Home Depot Access Road	400 E to Main St	Tooele					X	X	
Wasatch Way	Oquirrh Ave to Deseret Ave	Tooele					X	X	
Cherry St	Harris St to Quirk St	Grantsville					X	X	
Antelope Ave	Oquirrh Ave to Bonneville Way	Tooele					X	X	
Dawson Dr	Clemens Way to Drysdale Way	Tooele					X	X	

A list of Local Street segments in the **Tooele County GFA** identified from Network Screening, applying Critical Crash Rate (CCR) and Significant Crashes (three or more crashes over 5-year period), is shown at left.

Composite Risk Score

High-Risk Network

usRAP Pedestrian Star Rating - Segments



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

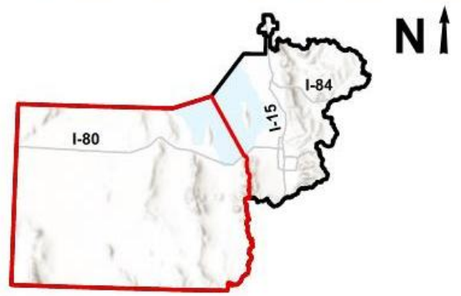
GFA Boundary

Pedestrian Star Rating (1-2)

State Routes

Federal Aid Routes

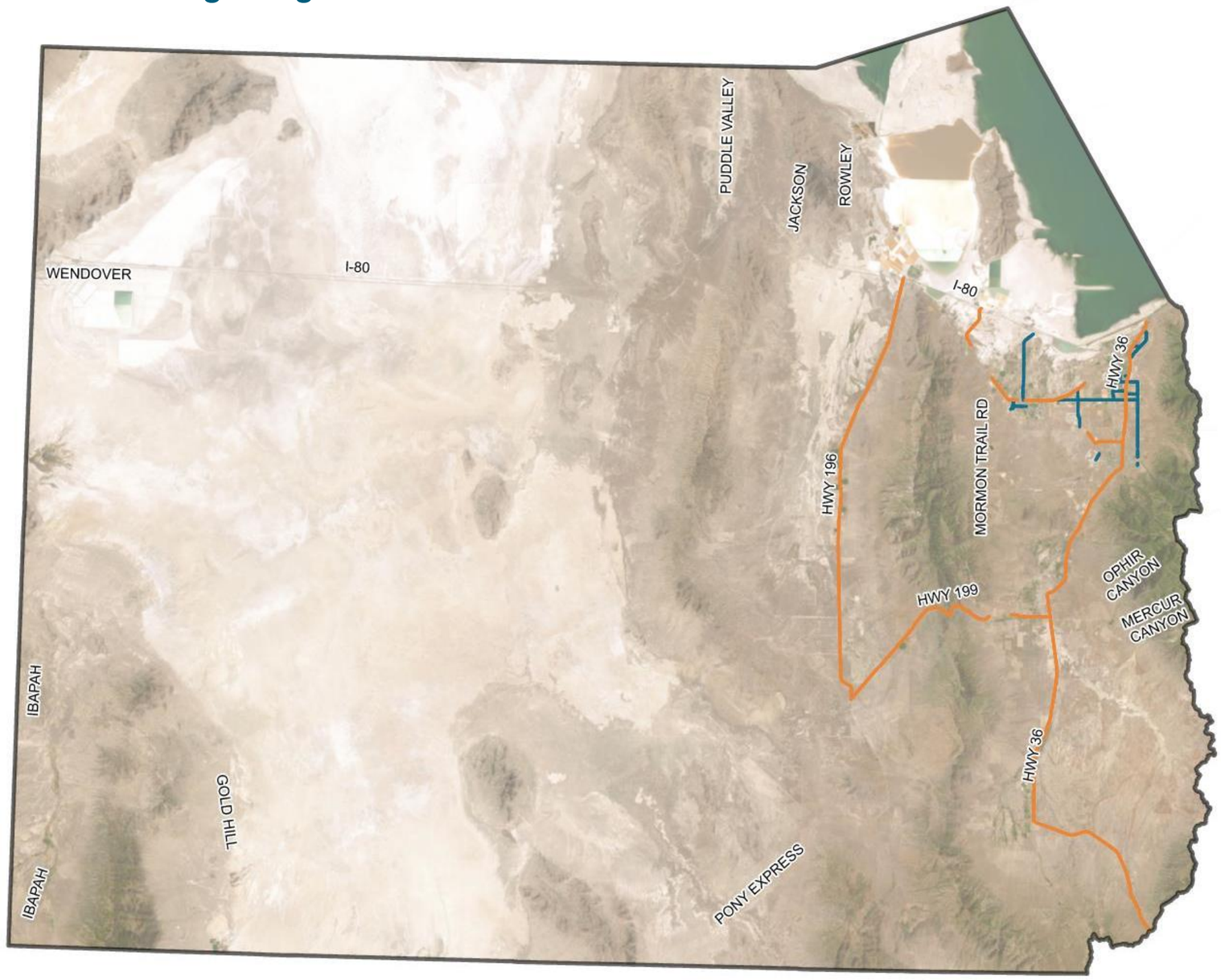
Tooele County
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

usRAP Bicycle Star Rating - Segments



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

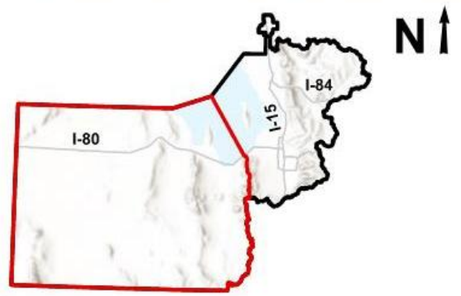
GFA Boundary

Bicycle Star Rating (1-2)

State Routes

Federal Aid Routes

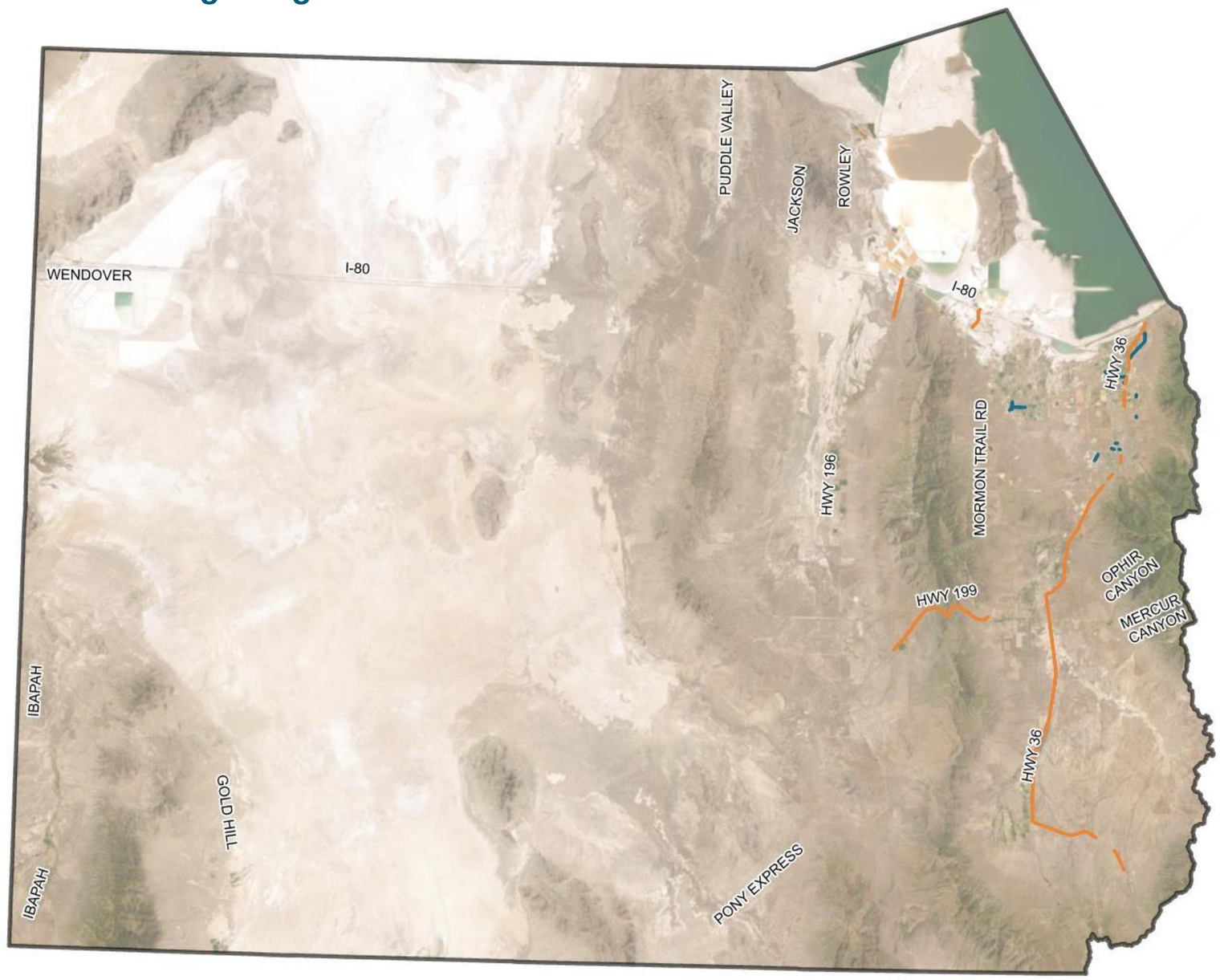
Tooele County
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments | Local Street Segments

usRAP Vehicle Star Rating - Segments



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

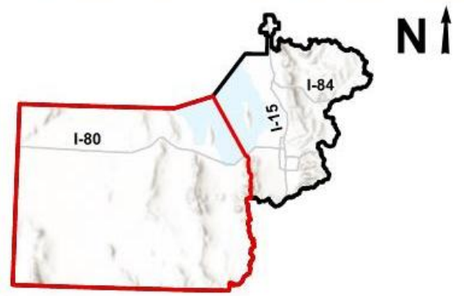
GFA Boundary

Vehicle Star Rating (1-2)

State Routes

Federal Aid Routes

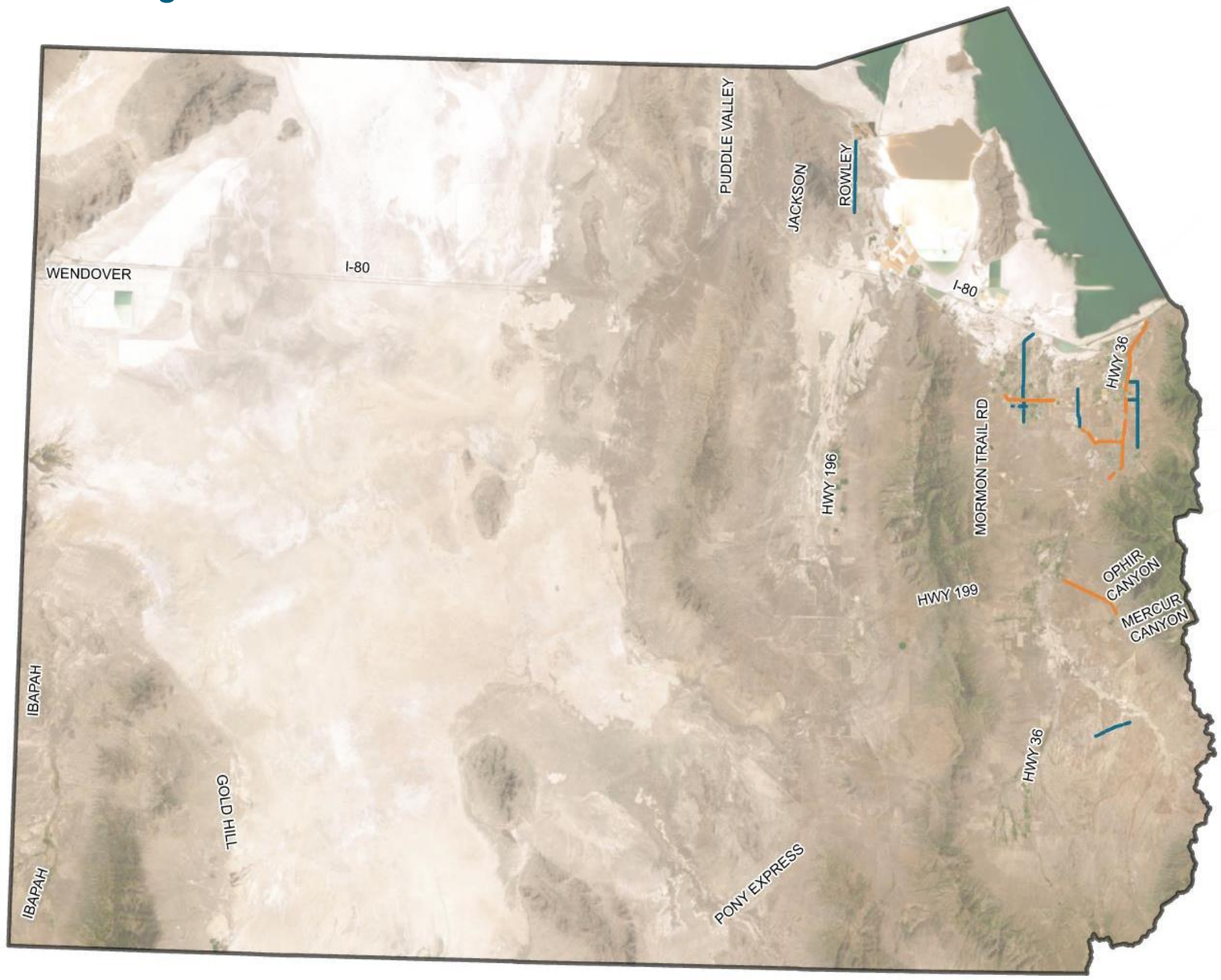
Tooele County
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

Crash Profile Risk - Segments



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

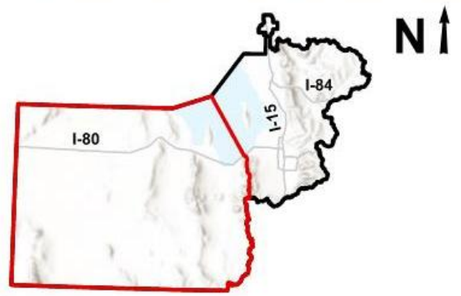
GFA Boundary

Crash Profile Risk (> 20)

State Routes

Federal Aid Routes

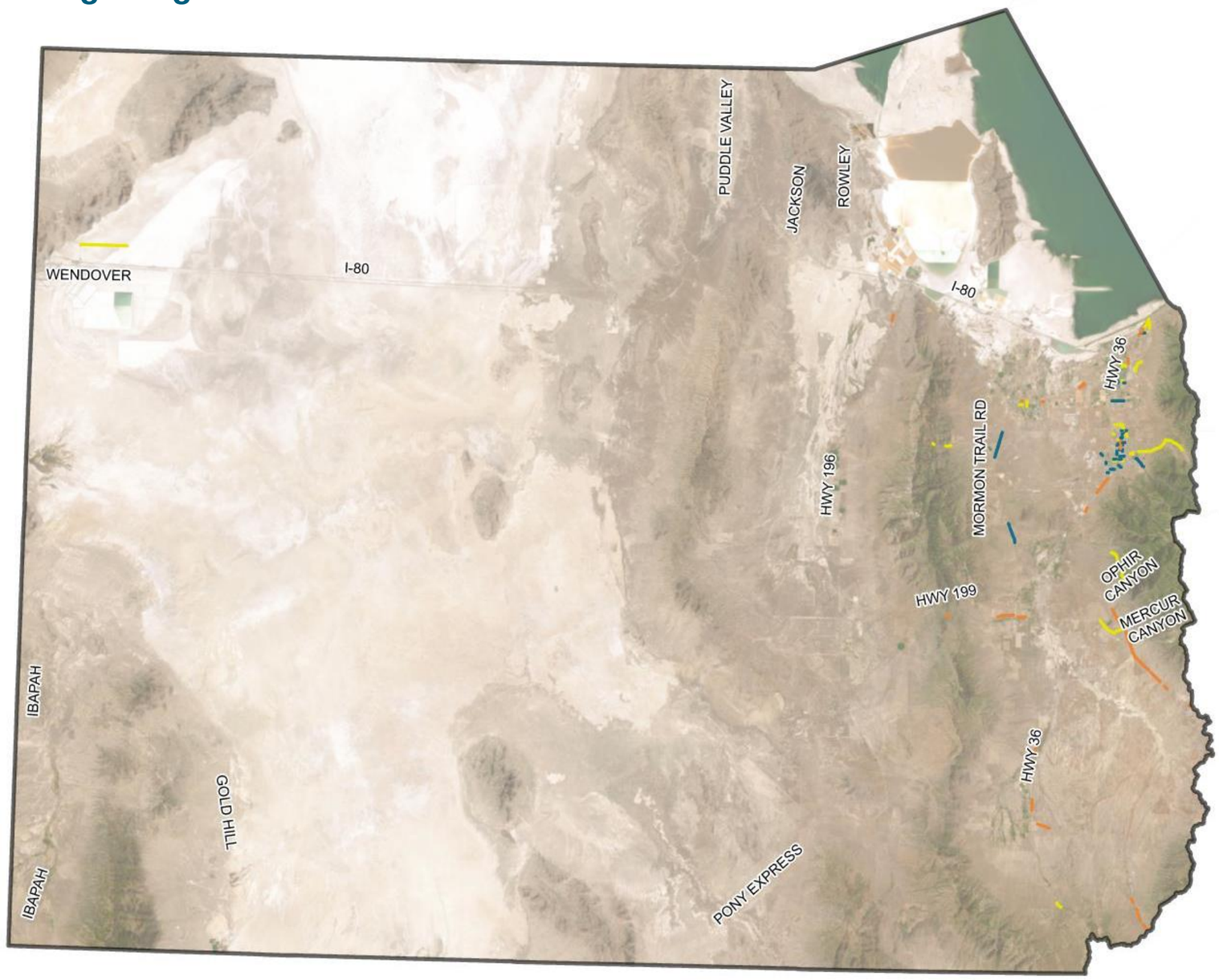
Tooele County
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

Network Screening - Segments



Miles
0 1 2 3 5 6 8 9 11 12 14 15 17 18

N

Legend

GFA Boundary

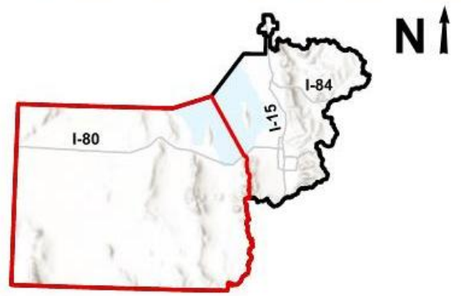
Critical Crash Rate Differential (> 0.0)

State Routes

Federal Aid Routes

Local Streets

Tooele County
Wasatch Front Regional Council Area



High-Risk Network Analysis

State Route and Federal Aid Segments	Local Street Segments

TOOELE COUNTY TECH MEMO #1 SAFETY ANALYSIS

TECHNICAL MEMORANDUM #1

APPENDIX A11 - TOOELE COUNTY GEOGRAPHIC FOCUS AREA ANALYSIS

December 2023

Statutory Notice

23 U.S.C. § 409: US Code - Section 409: Discovery and admission as evidence of certain reports and surveys

Notwithstanding any other provision of law, reports, surveys, schedules, lists, or data compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential accident sites, hazardous roadway conditions, or railway- highway crossings, pursuant to sections 130, 144, and 148 of this title or for the purpose of developing any highway safety construction improvement project which may be implemented utilizing Federal-aid highway funds shall not be subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

File name: Appendix A11 - Tooele County GFA - Safety Analysis

Table of Contents

List of Figures

List of Tables

1. Introduction

Appendix A11 summarizes the safety analysis performed for the Tooele County Geographic Focus Area (GFA) for the Wasatch Front Area Comprehensive Safety Action Plan (CSAP).

The analysis of available safety related data informs identification of a potential project locations that may be further considered in the development of safety related projects and project types.

1.1. Safety Analysis

The following safety analysis methodologies were completed for the Tooele County GFA:

- Strategic Highway Safety Plan (SHSP) Emphasis Area Analysis
- Historical Crash Analysis
- Crash and Network Screening Analysis
- Roadway Characteristic Risk Analysis
  - Crash Profile Risk Assessment
  - usRAP Risk Factors Analysis
  - Local Street Risk Assessment

An overview on the methodologies used to perform these safety analyses are described in Technical Memorandum #1: Safety Analysis Results Summary. **Appendix A11** summarizes the results of the analyses for the Tooele County GFA.

1.2. Appendix Organization

This Appendix is organized into the following sections:

- **Section 1** - Introduction
- **Section 2** - Tooele County GFA Study Area and Roadway Network.
- **Section 3** - Strategic Highway Safety Plan (SHSP) Emphasis Area Analysis.
- **Section 4** - Historical Crash Analysis
- **Section 5** - Crash and Network Screening Analysis based on Highway Safety Manual (HSM).
- **Section 6** - Roadway Characteristic Risk Analysis
- **Section 7** - Common Risk Characteristics and Composite High-Risk Roadway Network

2. Study Area

The CSAP study area includes each jurisdiction within the WFRC area. To organize the large number of jurisdictions within the WFRC area into manageable analysis areas, jurisdictions are organized into Geographic Focus Areas (GFA). The Tooele County GFA (**Figure 2.1**) is located entirely within Tooele County and includes the following agencies and jurisdictions:

- Wendover
- Rush Valley
- Stockton
- Lake Point
- Tooele
- Vernon
- Grantsville
- Erda

The safety analyses presented in this Technical Memorandum are specific to the Tooele County GFA.

Figure 2.2 highlights the roadway network within the Tooele County GFA study area. Roadways within the study area are divided into the following three categories:

- State Routes: UDOT-maintained roads
- Federal Aid Routes: Jurisdiction-maintained roads eligible for federal funding
- Local Streets: Local Jurisdiction-maintained roads that are not Federal Aid routes.

NOTE ON CRASH DATA ANALYSIS: All crash data presented in this Technical Memorandum are specific to the Tooele County, for the years 2018-2022. Crash data was obtained from the Utah Department of Transportation.

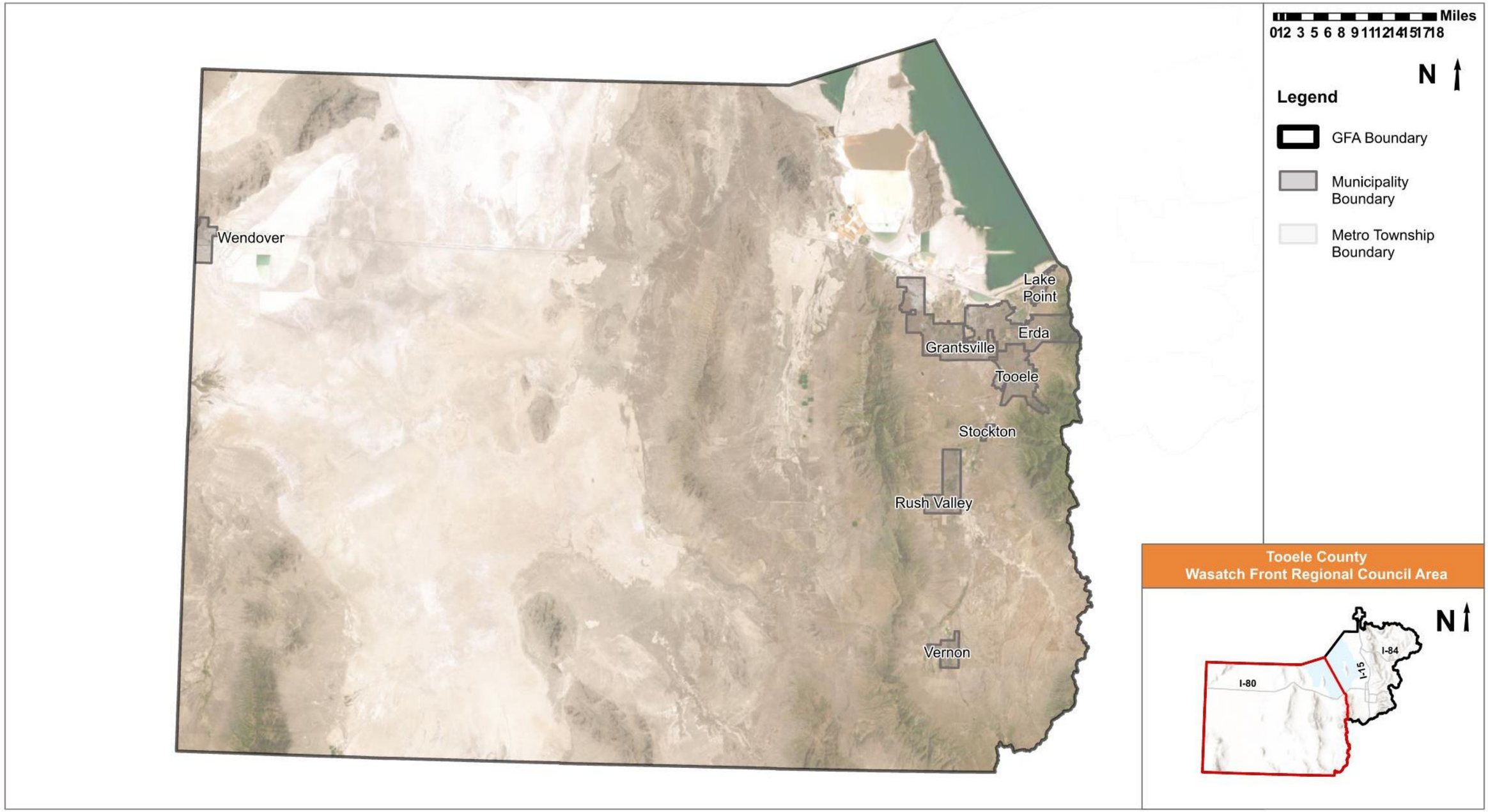


Figure 2.1 – Tooele County GFA Study Area

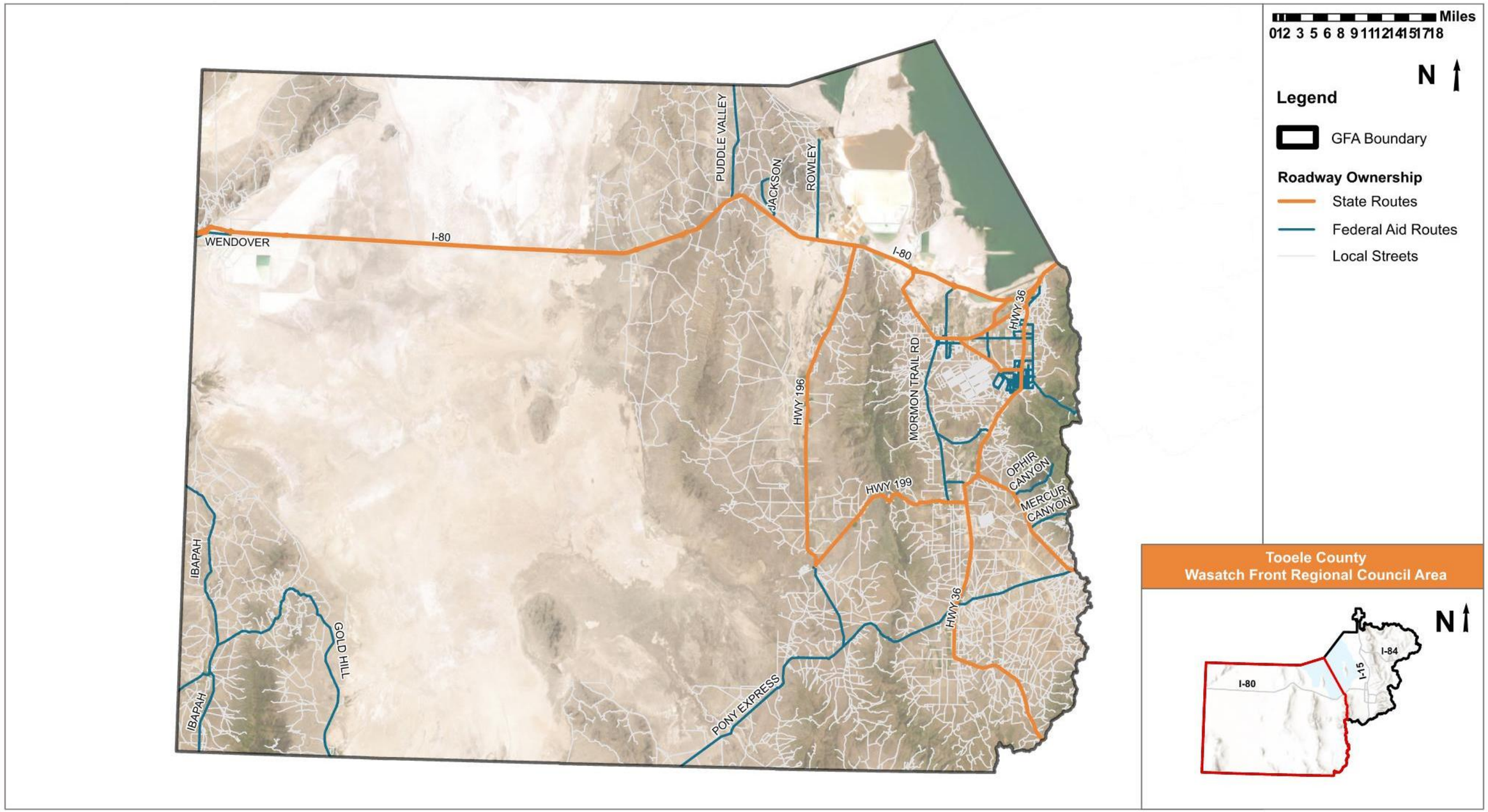


Figure 2.2 – Tooele County GFA Roadway Network

3. SHSP Emphasis Area Analysis

The SHSP emphasis area analysis ranks the frequency of fatal and serious injury crashes in Tooele County GFA for each of the eleven Utah SHSP emphasis areas. The rankings of the emphasis areas are compared for the Tooele County GFA, statewide (all public roads statewide), and the WFRC study area totals. Each reported crash can have more than one emphasis area identified. The results of the SHSP emphasis area analysis are displayed in **Table 3.1**. The top five ranked emphasis areas are highlighted in the table with the top five for the Tooele County GFA listed below:

- Roadway Departure
- Impaired Driving
- Intersections
- Teen Driver
- Speed Related

Table 3.1 – SHSP Emphasis Areas Analysis

Category	Utah SHSP Safety Emphasis Area	Statewide Totals		WFRC Totals		Tooele County Totals		
		Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Fatal and Serious Injury	Rank	Change in Rank From WFRC
Driver	Teen Driver	1,640	**4**	917	5	70	4	1
	Older Driver	1,508	6	523	8	41	8	0
	Speed-Related	2,133	**3**	723	6	66	5	1
	Aggressive Driving	555	11	243	11	15	11	0
	Distracted Driving	718	10	955	4	65	6	-2
	Impaired Driving	1,184	8	1,234	3	97	2	1
	No Safety Restraints	1,542	**5**	347	10	50	7	3
Roadway	Intersection	3,567	**1**	1,975	1	95	3	-2
	Roadway Departure	2,931	**2**	1,503	2	164	1	1
Special Users	Motorcycle	1,457	7	597	7	32	9	-2
	Pedestrian	912	9	452	9	16	10	-1
	Bicycle*	280	12	118	12	0	12	0

**Bicycles are not one of the eleven Utah SHSP emphasis areas but was included as part of the CSAP safety analysis.*

4. Historical Crash Analysis

A historical crash data analysis was conducted for the most recent complete 5-year period from 2018 to 2022. This historical crash analysis is primarily focused on fatal and serious injury crashes.

4.1. Overall Crashes

Table 4.1 provides an overview of overall crashes by severity and roadway ownership within the Tooele County GFA. The data shows the following:

- State Routes recorded 65% of the total crashes in this GFA
- State Routes recorded 42 of 51 fatal crashes in this GFA
- Federal Aid routes recorded 22% of fatal and serious injury crashes in this GFA
- Federal Aid routes recorded eight of 51 fatal crashes in this GFA
- Local Streets (non-Federal Aid) recorded 13% of fatal and serious injury crashes in this GFA
- Local Streets recorded one of 51 fatal crashes in this GFA

Table 4.1 – Crashes by Severity by Roadway Ownership

Route Type	State Route		Federal Aid Route		Local Street		Overall Total		% of WFRC
Crash Severity	Crashes		Crashes		Crashes		Crashes		%
	#	%	#	%	#	%	#	%	
Fatal	42	1%	8	1%	1	0%	**51**	**0.9%**	**0.0%**
Suspected Serious Injury	135	4%	50	4%	53	7%	**238**	**4.1%**	**0.1%**
Suspected Minor Injury	500	13%	144	11%	99	13%	**743**	**12.8%**	**0.4%**
Possible Injury	596	16%	217	17%	91	12%	**904**	**15.5%**	**0.5%**
No Injury / Property Damage Only	2,512	66%	844	67%	529	68%	**3,885**	**66.7%**	**2.2%**
Route Total	**3,785**	**100%**	**1,263**	**100%**	**773**	**100%**	**5,821**	**100%**	**3.2%**

4.2. Fatal and Serious Injury Crashes by Year

Figure 4.1 through **Figure 4.3** provide an overview of fatal and serious injury crashes by year and roadway ownership for the Tooele County GFA. The data shows the following:

- Fatal crashes have increased during the most recent 5-year period (2018-2022), with a high (15 fatal crashes) in 2021
- Serious injury crashes have increased during the most recent 5-year period (2018-2022) with a high (59) in 2021

4.3. Fatal and Serious Injury Crashes by Location

Figure 4.4 shows the locations of the fatal and serious injury crashes within the Tooele County GFA. Crashes are largely focused on State Routes.

Figure 4.5 is a density map of fatal and serious injury crashes within the Tooele County GFA.

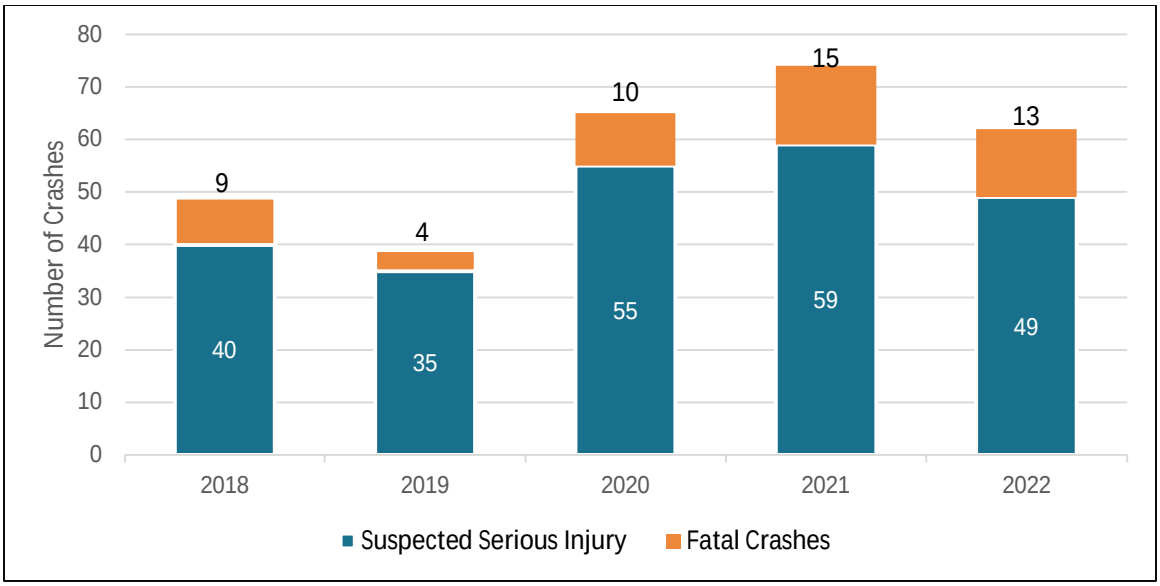


Figure 4.1 – Fatal and Serious Injury Crashes by Year

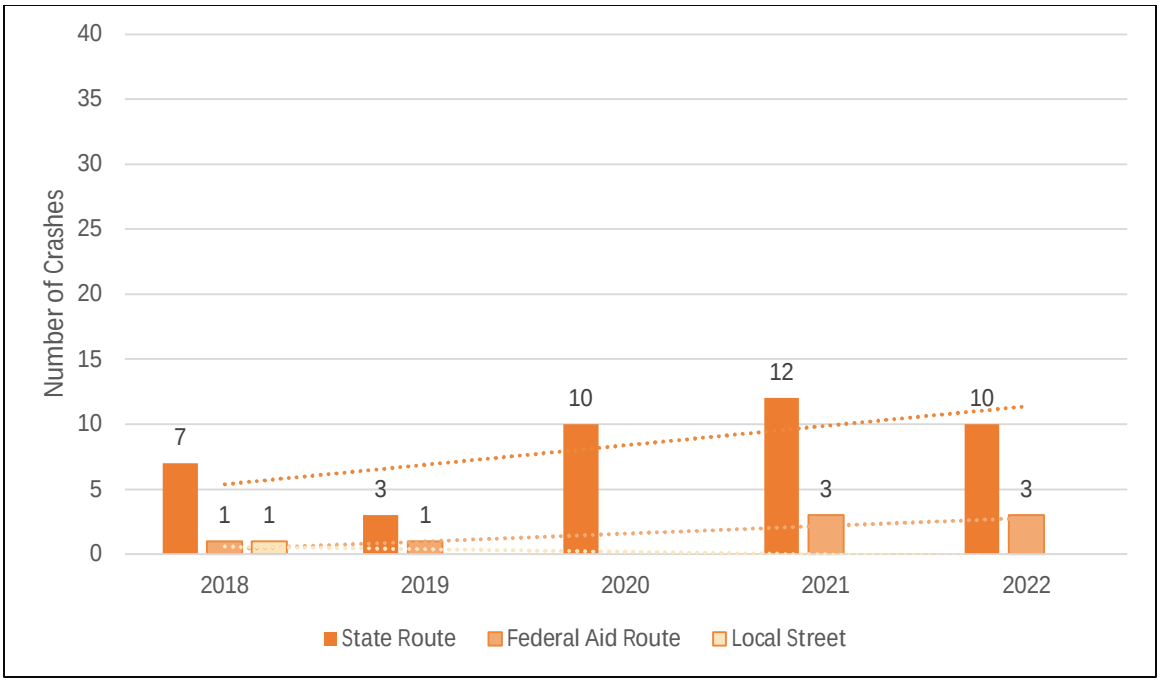


Figure 4.2 – Annual Fatal Crashes by Roadway Ownership

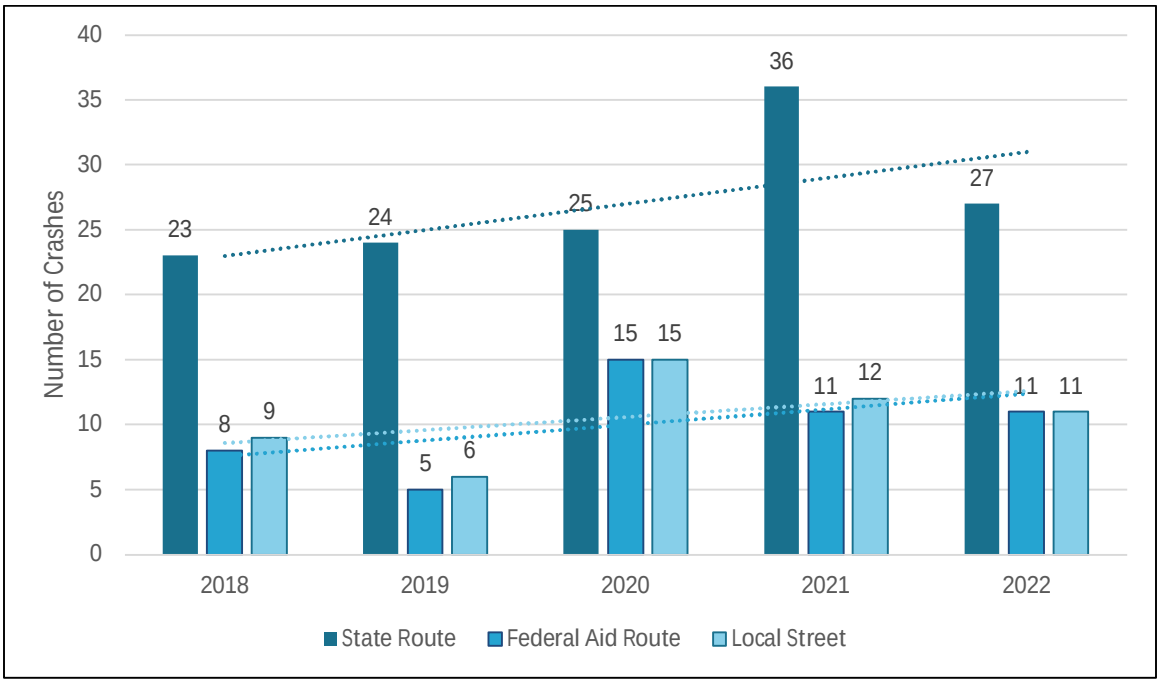


Figure 4.3 – Annual Serious Injury Crashes by Roadway Ownership

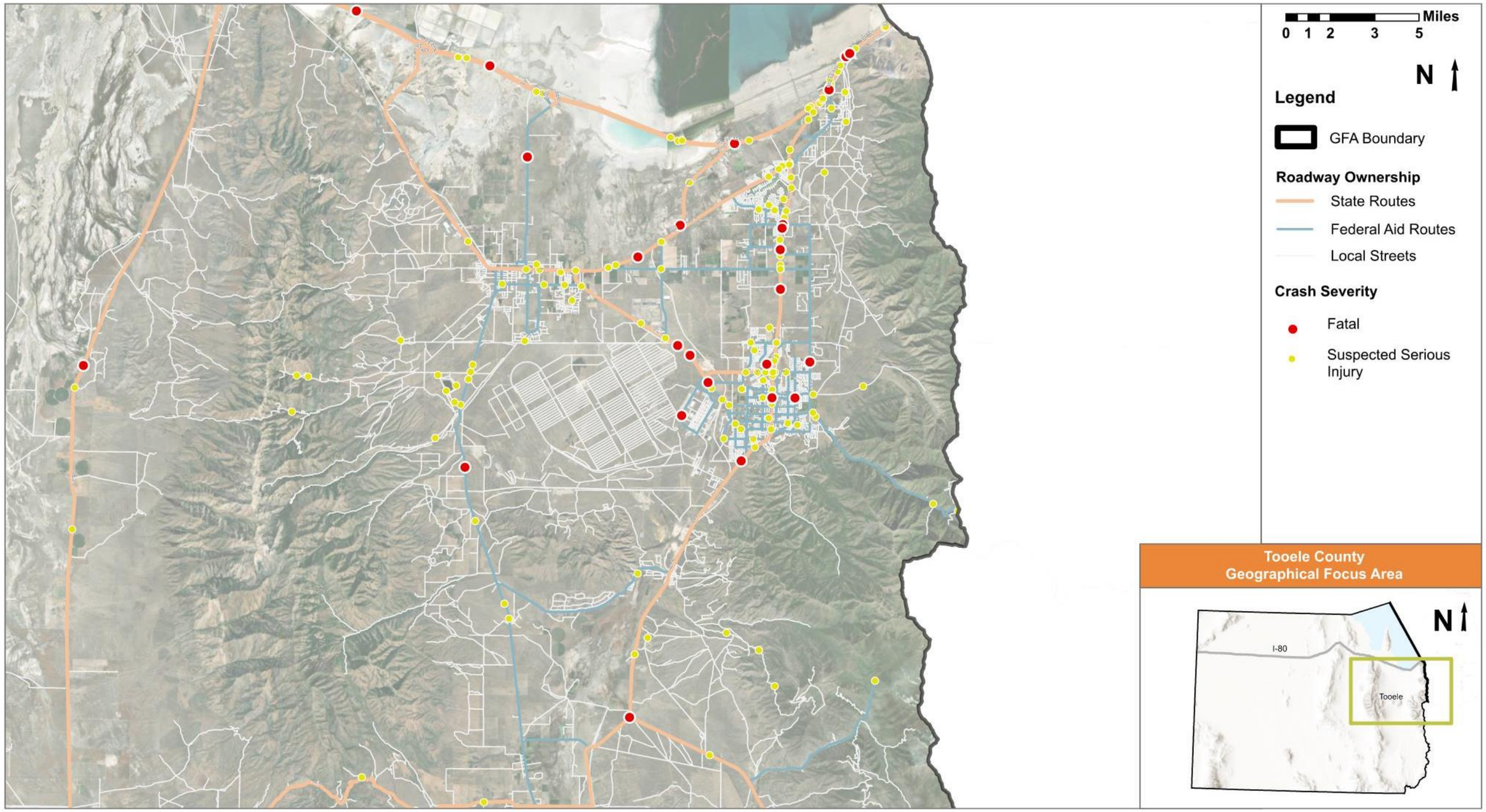


Figure 4.4 – Fatal and Serious Injury Crashes

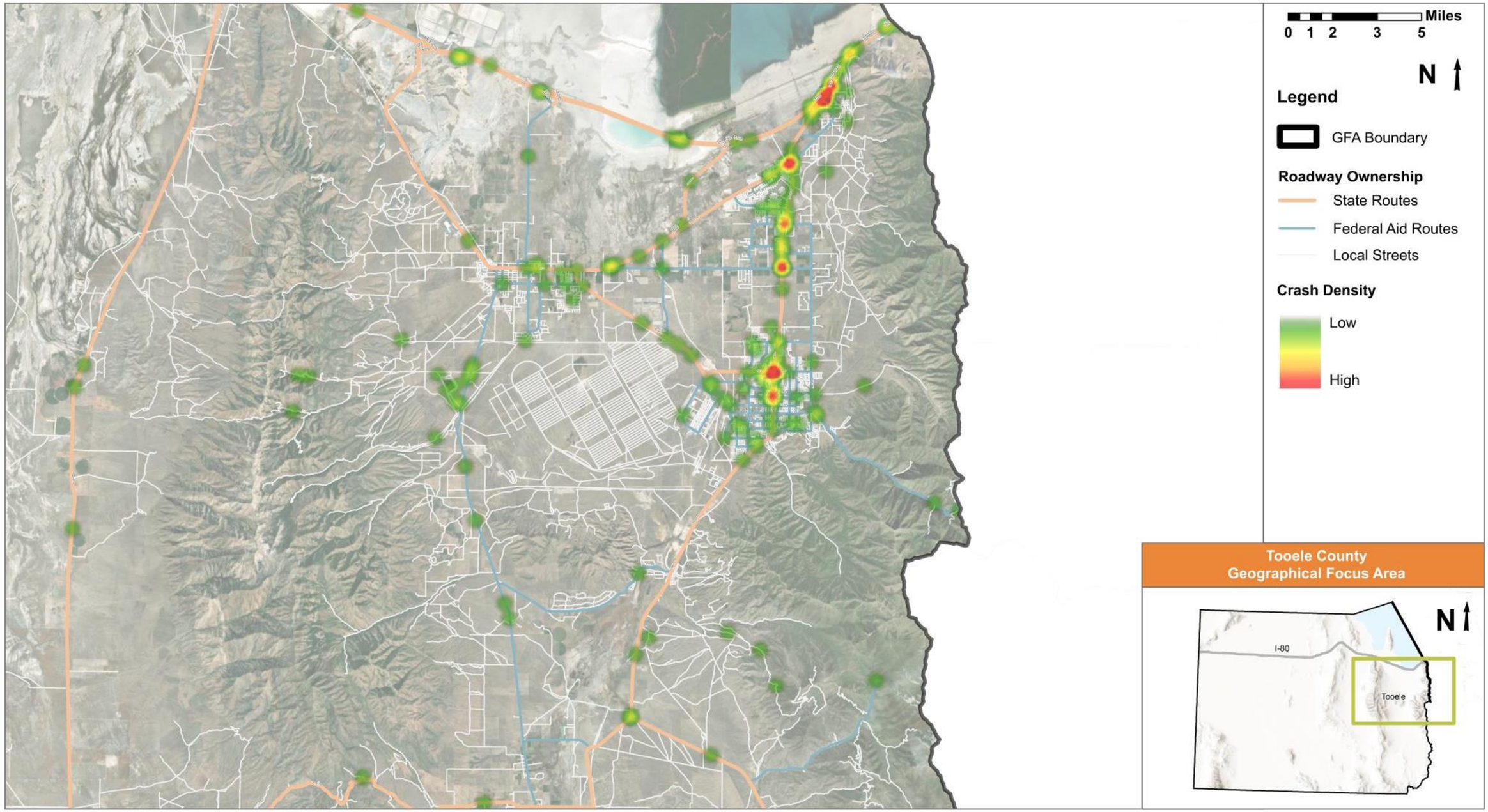


Figure 4.5 – Fatal and Serious Injury Crash Density

4.4. Fatal and Serious Injury Crashes by Crash Type

Figure 4.6 through **Figure 4.8** provide an overview of fatal and serious injury crashes by crash type and roadway ownership for the Tooele County GFA. The data shows the following:

- Roadway Departure crash type has the highest number of total fatal and serious injuries with 121 crashes, 23 of which were fatal crashes

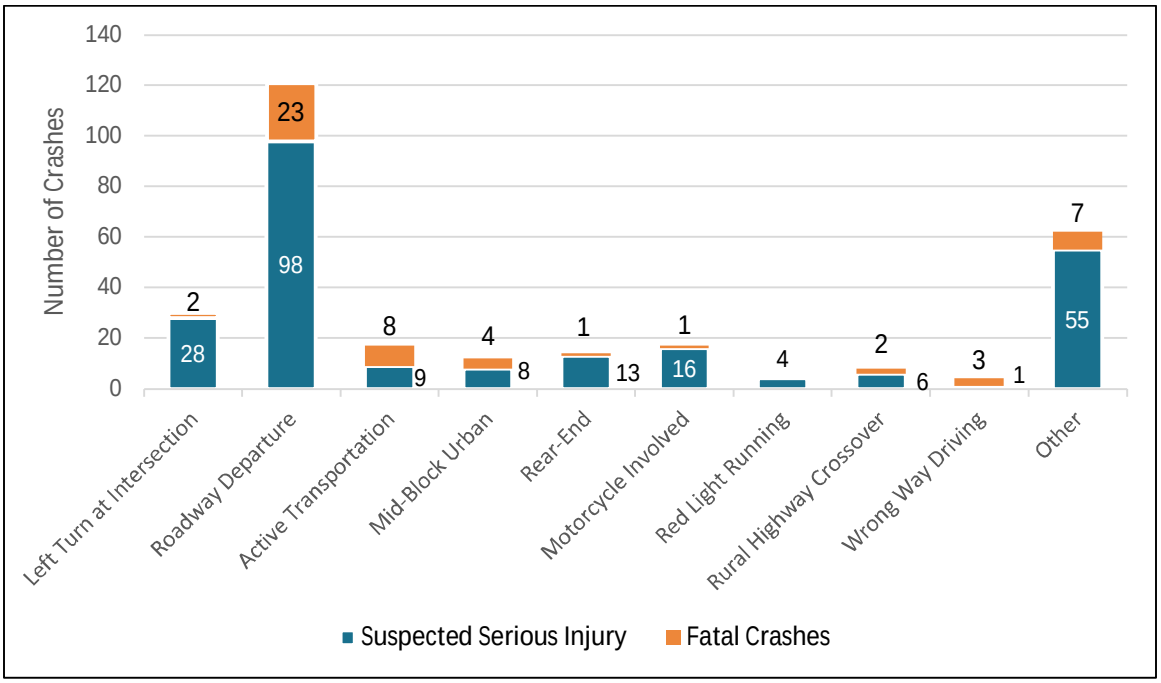


Figure 4.6 – Fatal and Serious Injury Crashes by Crash Type

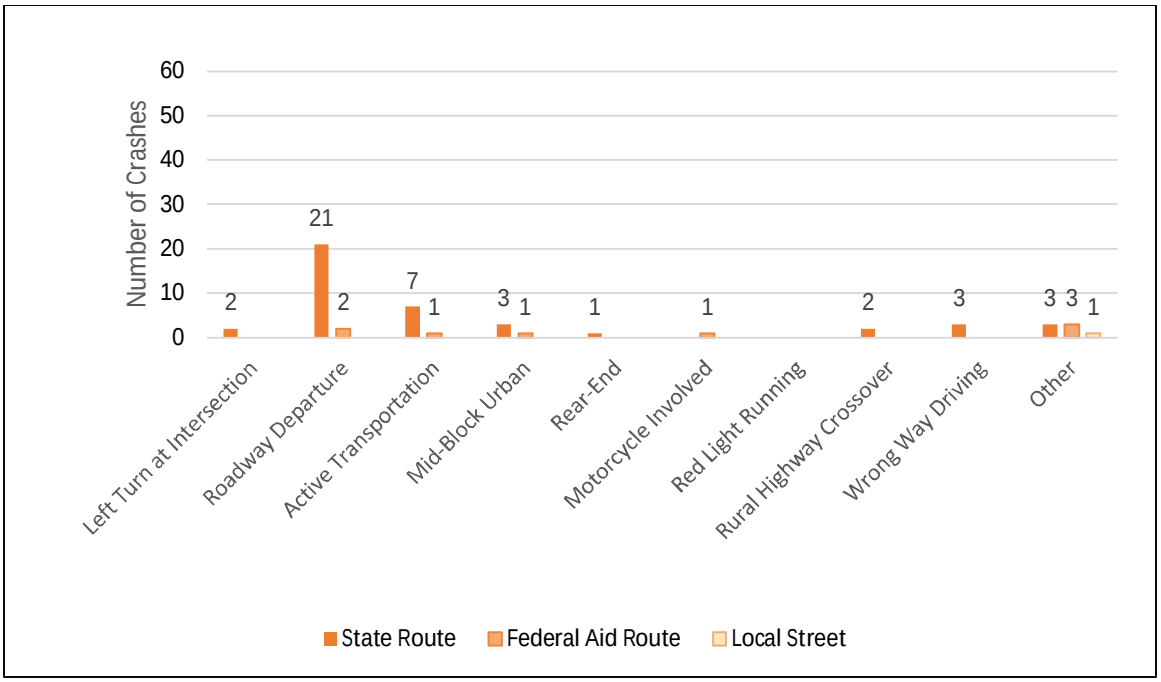


Figure 4.7 – Fatal Crashes by Crash Type and Roadway Ownership

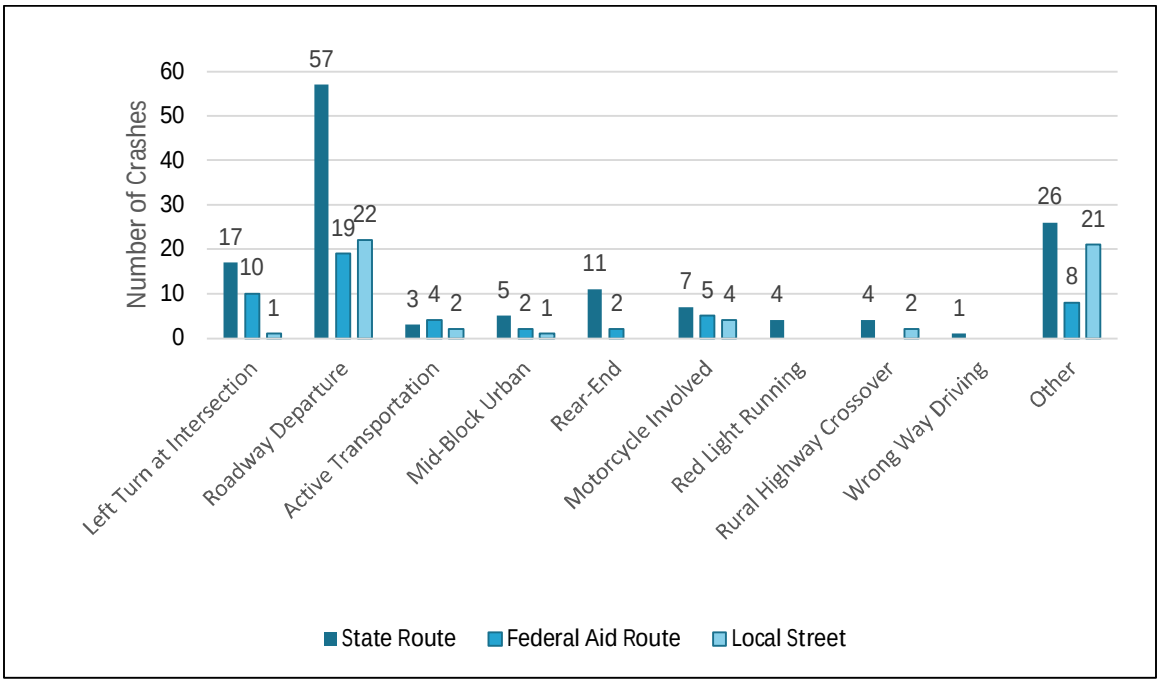


Figure 4.8 – Serious Injury Crashes by Crash Type and Roadway Ownership

4.5. Fatal and Serious Injury Vulnerable User Crashes

Figure 4.9 through **Figure 4.11** provide an overview of fatal and serious injury crashes by vulnerable road user and roadway ownership for the Tooele County GFA. The data shows the following:

- There were 8 pedestrian fatal crashes in the five-year period, seven of which occurred on State Routes
- There were no bicycle fatal crashes in the five-year period
- Motorcycle involved crashes represents the most frequent vulnerable user crash
- Serious injury crashes involving pedestrian and motorcycles were distributed among State Routes and Federal Aid routes

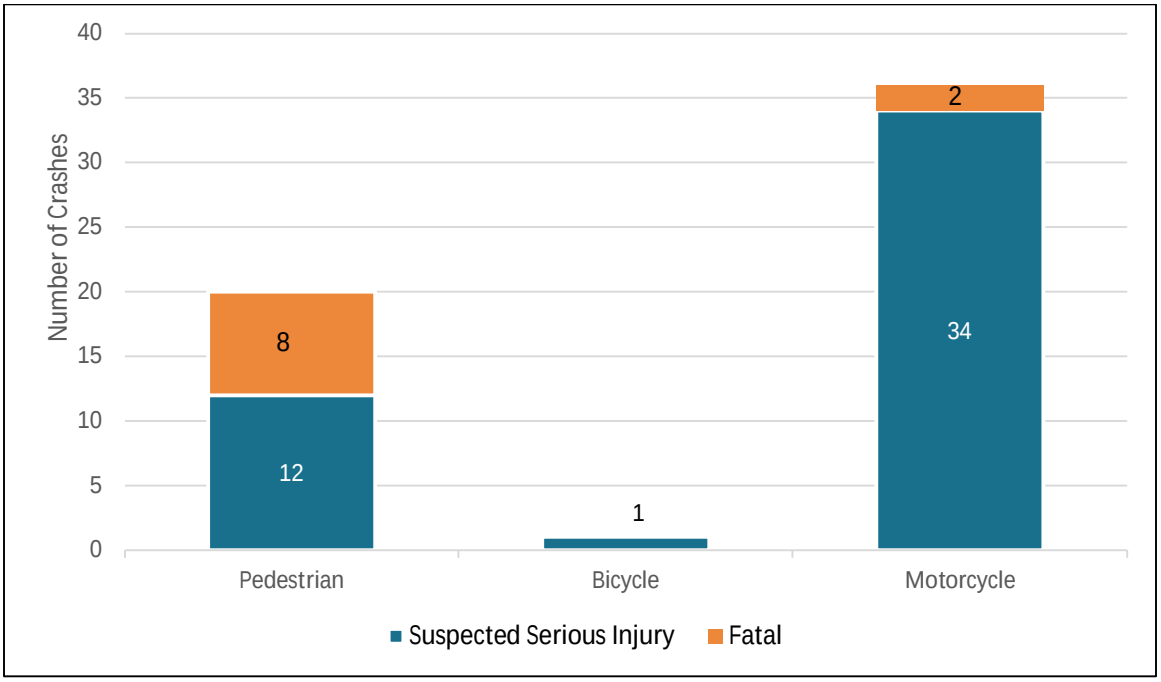


Figure 4.9 – Fatal and Serious Injury Crashes by Vulnerable User

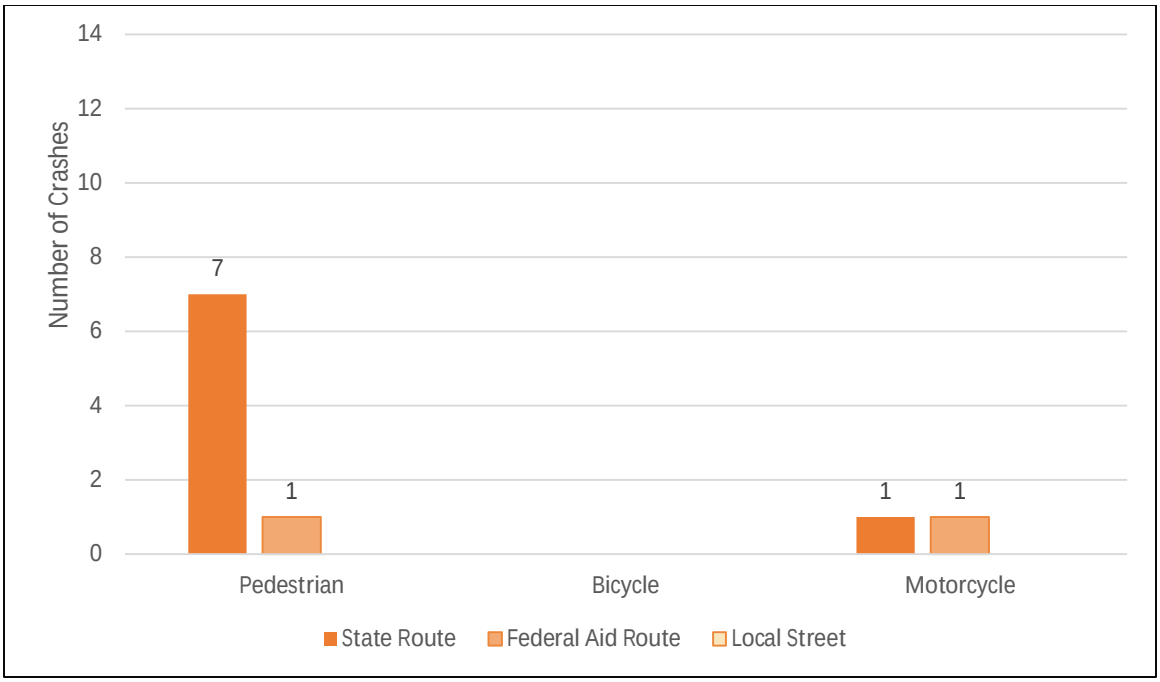


Figure 4.10 – Fatal Crashes by Vulnerable User and Roadway Ownership

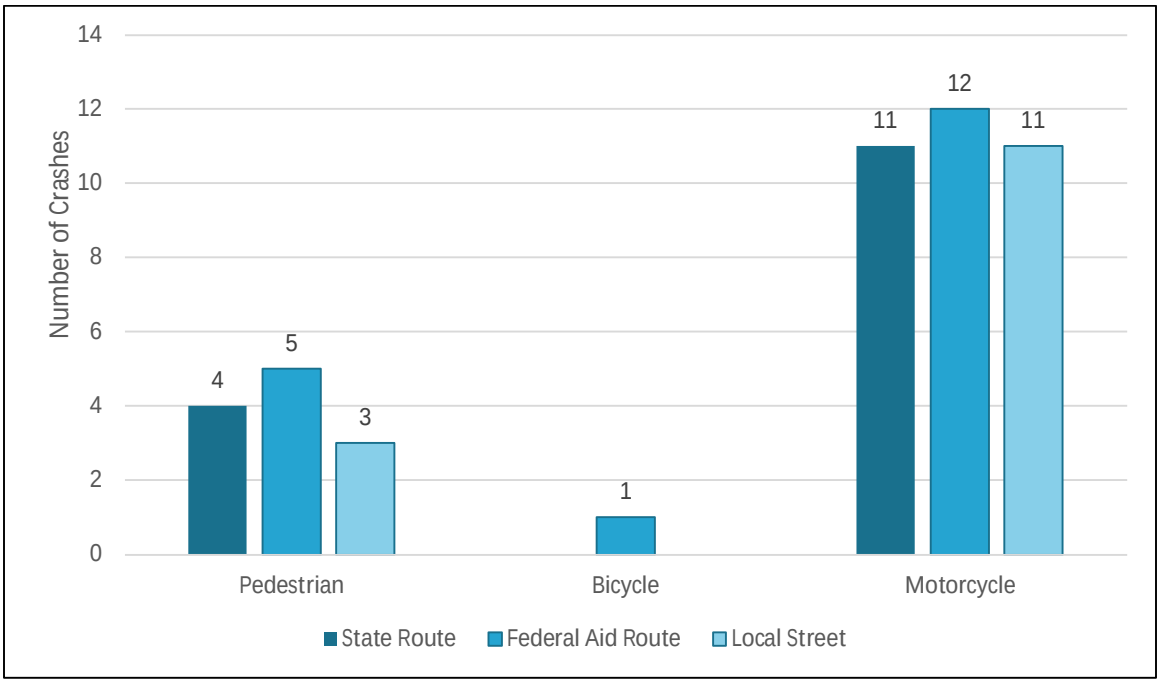


Figure 4.11 – Serious Injury Crashes by Vulnerable User and Roadway Ownership

4.6. Fatal and Serious Injury Crashes by Manner of Collision

Figure 4.12 through **Figure 4.14** provide an overview of fatal and serious injury crashes by manner of collision and roadway ownership for the Tooele County GFA. The data shows the following:

- Single vehicle crashes have the highest number of total fatal and serious injuries with 193 crashes
- No other crash manner of collision exceeded six fatal crashes

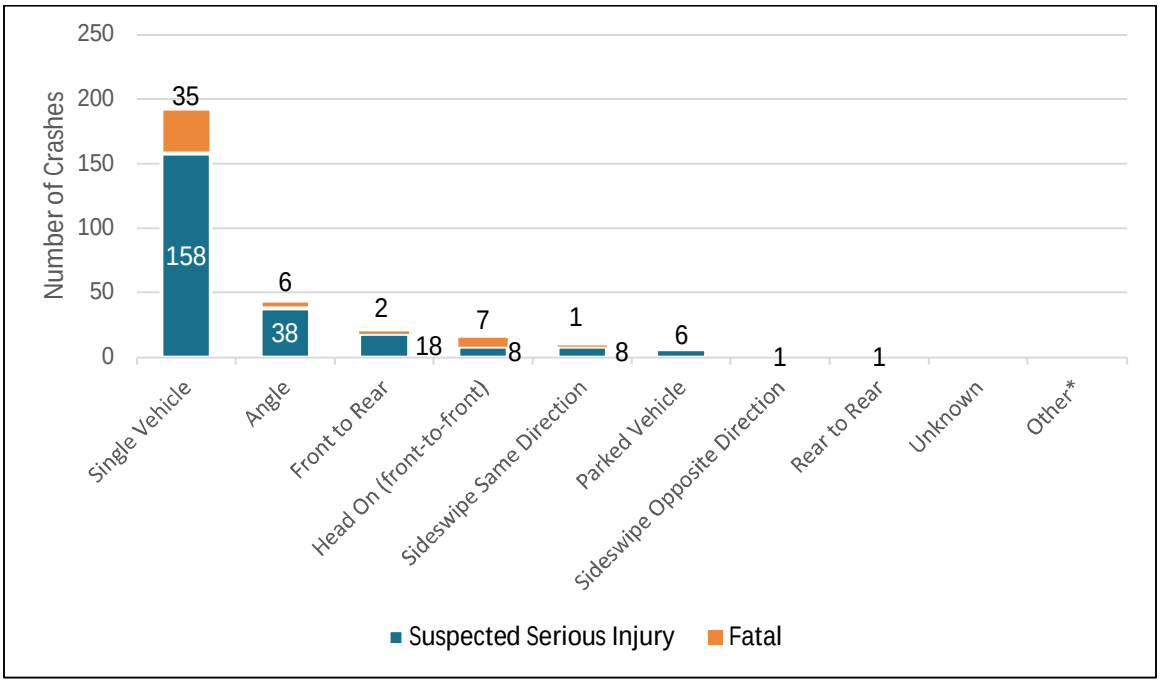


Figure 4.12 – Fatal and Serious Injury Crashes by Manner of Collision

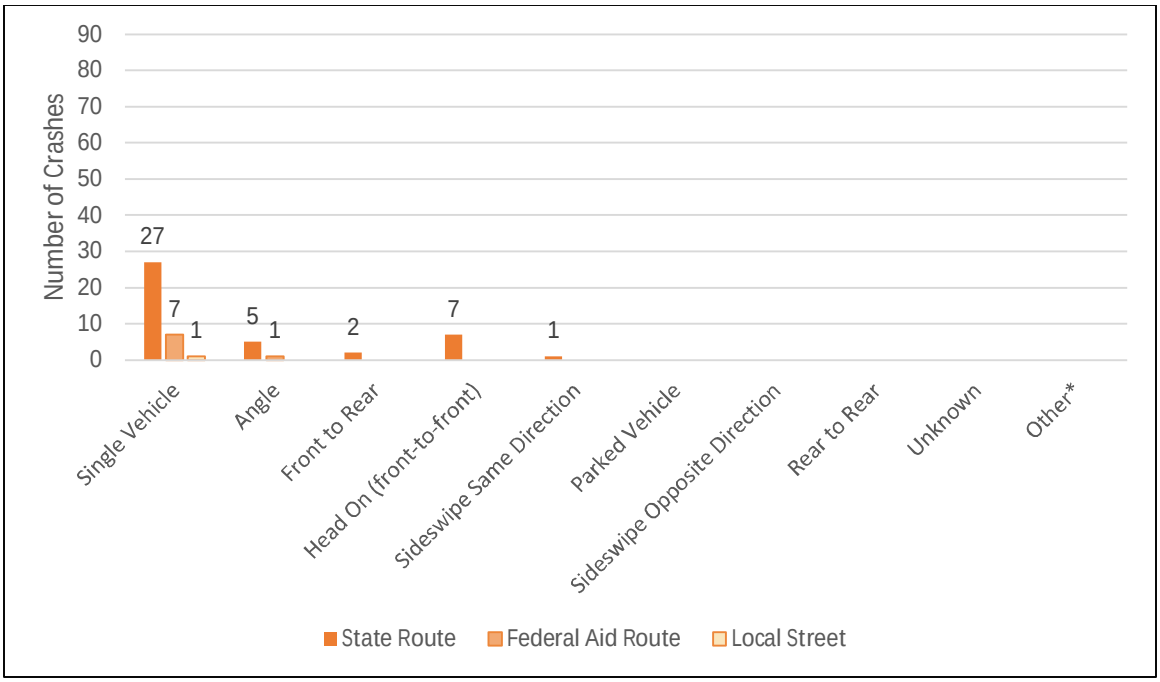


Figure 4.13 – Fatal Crashes by Manner of Collision and Roadway Ownership

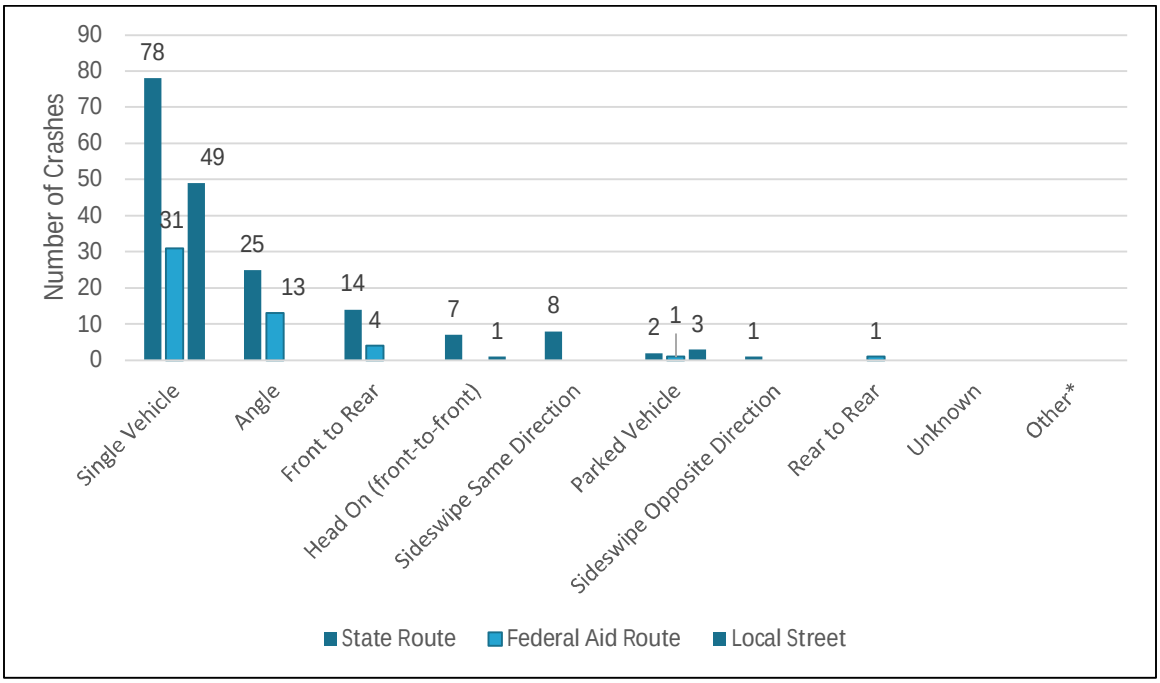


Figure 4.14 – Serious Injury Crashes by Manner of Collision and Roadway Ownership

4.7. Fatal and Serious Injury Intersection Crashes

Figure 4.15 through **Figure 4.17** provide an overview of fatal and serious injury crashes by intersection and roadway ownership for the Tooele County GFA. The data shows the following:

- Most fatal crashes were Not Intersection Involved, and most of these occurred on State Routes
- Local Streets experienced several serious injury Not Intersection Related crashes

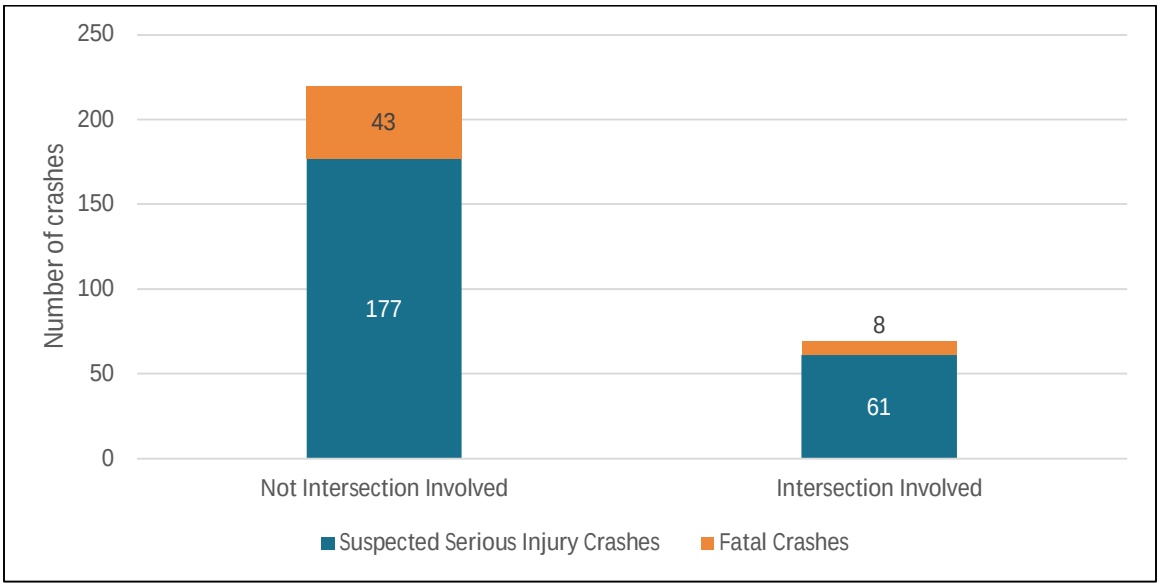


Figure 4.15 – Fatal and Serious Injury Crashes by Intersection

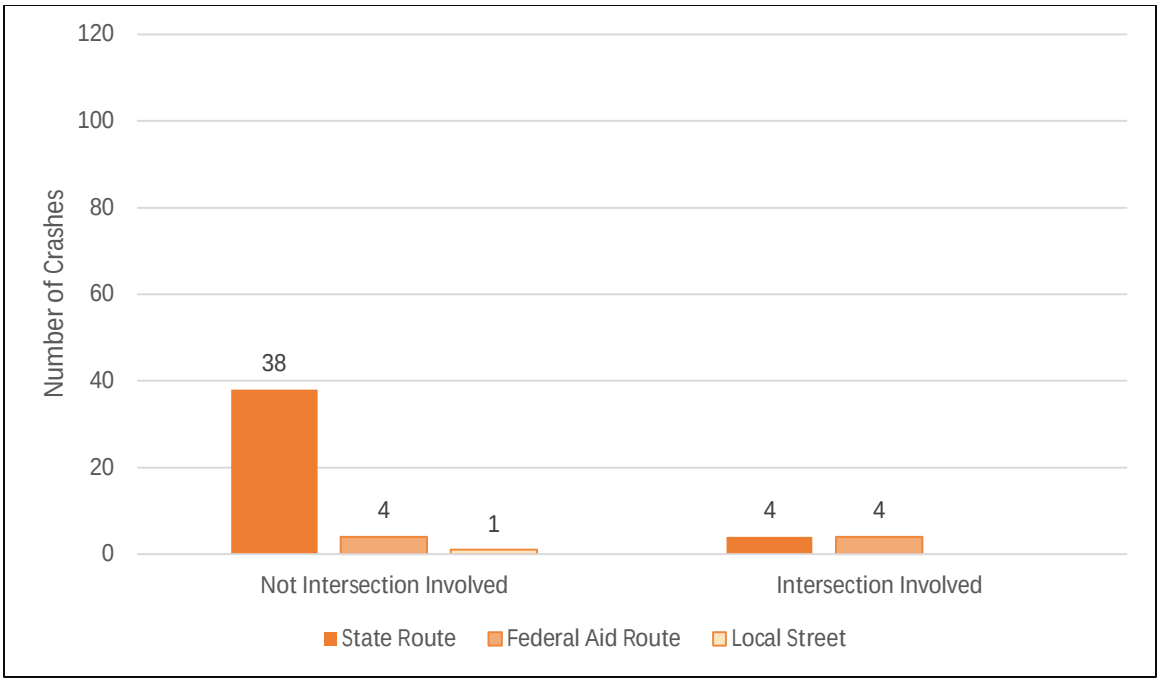


Figure 4.16 – Fatal Crashes by Intersection and Roadway Ownership

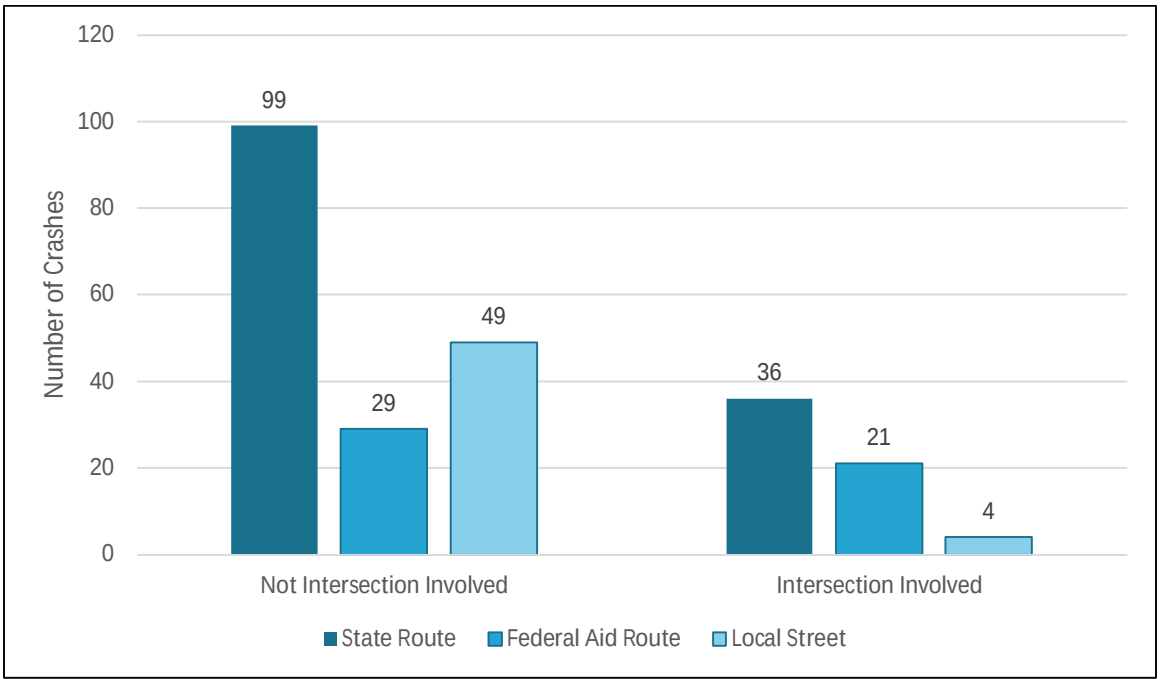


Figure 4.17 – Serious Injury Crashes by Intersection and Roadway Ownership

4.8. Fatal and Serious Injury Crashes by Functional Class

Figure 4.18 through **Figure 4.20** provide an overview of fatal and serious injury crashes by functional class and roadway ownership for the Tooele County GFA. The data shows the following:

- Interstates experienced the highest frequency of fatal crashes, followed by Principal Arterial
- All the Interstate and Principal Arterial crashes are on State Routes

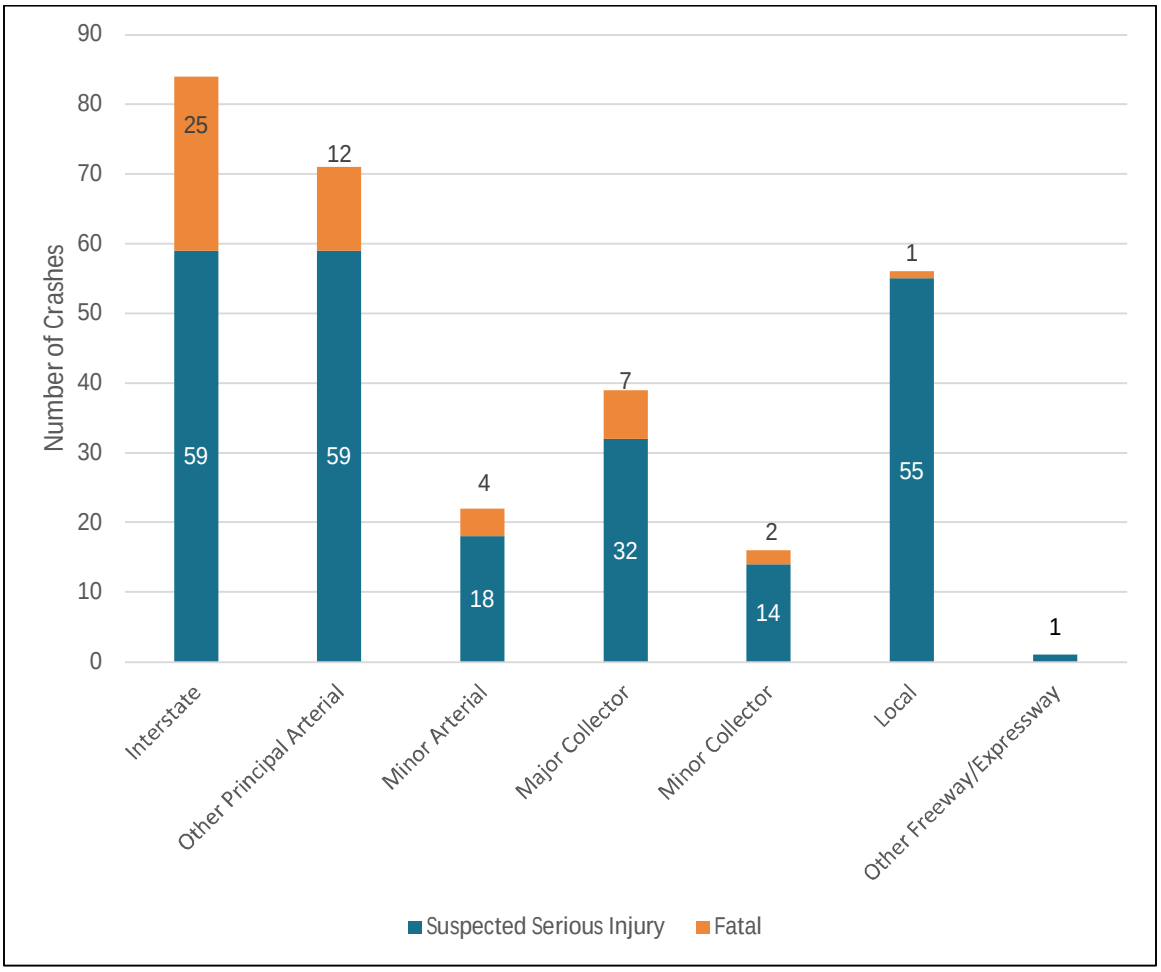


Figure 4.18 – Fatal and Serious Injury Crashes by Functional Class

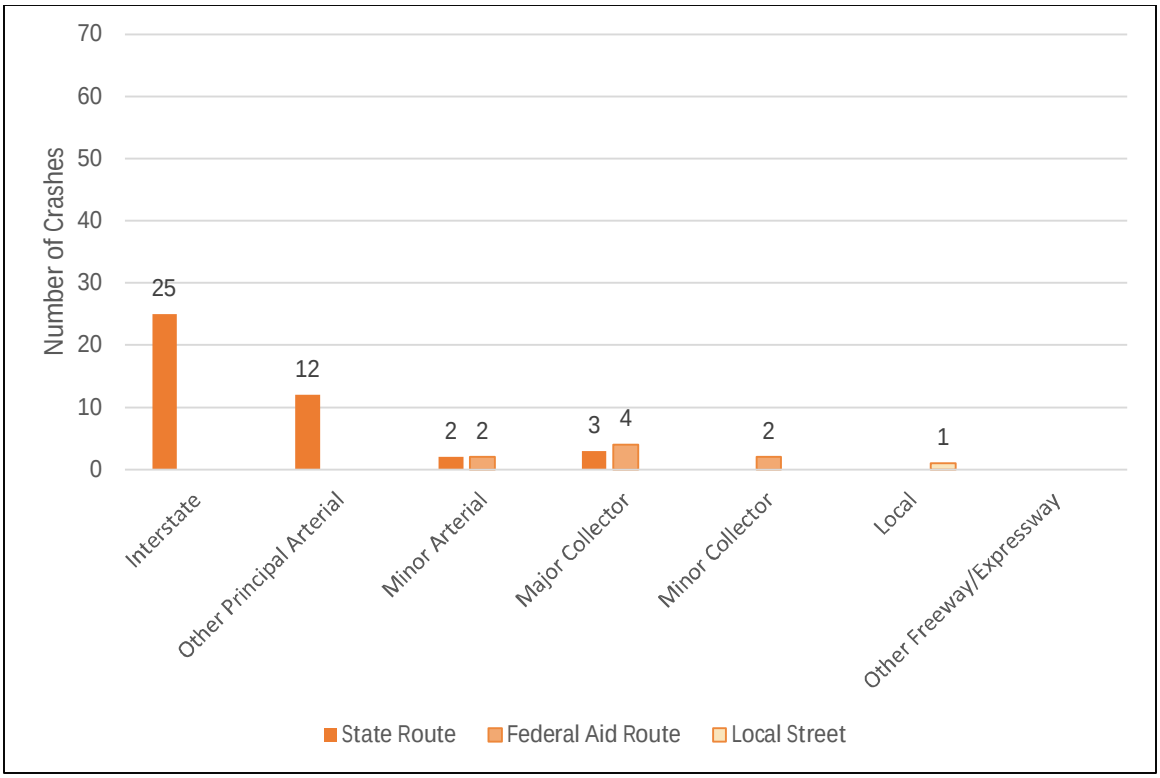


Figure 4.19 – Fatal Injury Crashes by Functional Class and Roadway Ownership

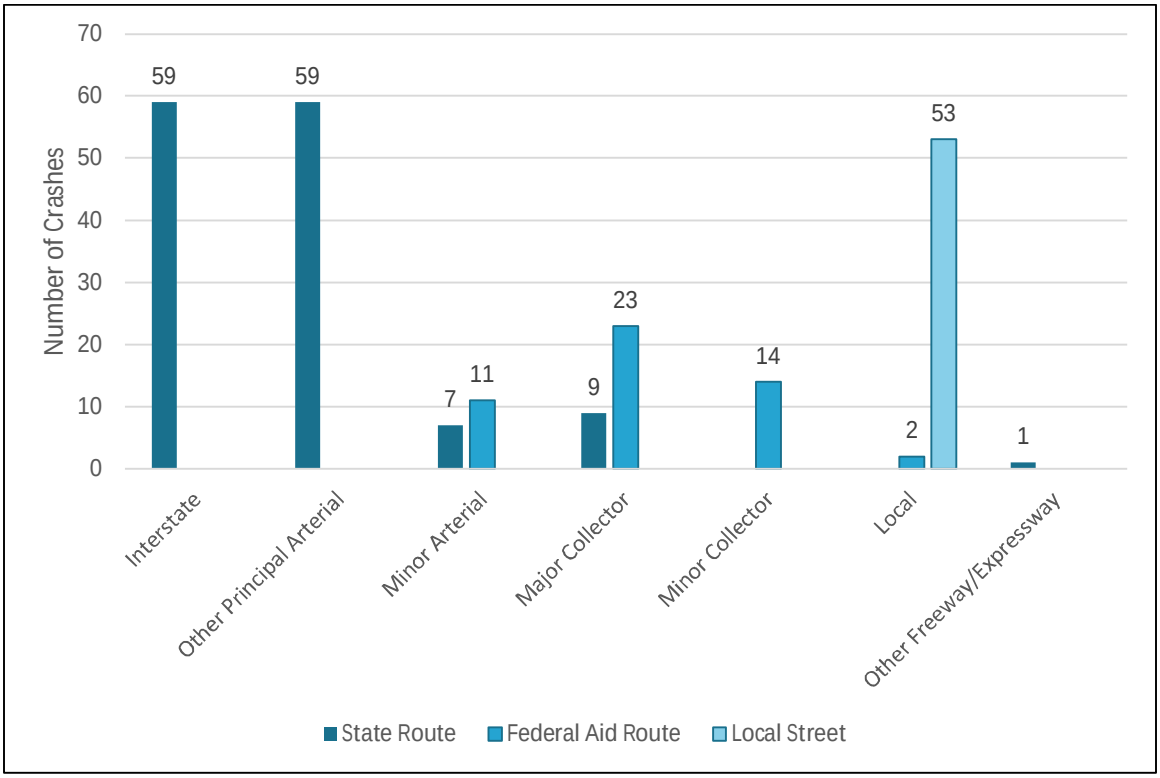


Figure 4.20 – Serious Injury Crashes by Functional Class and Roadway Ownership

4.9. Fatal and Serious Injury Crash Trees Diagrams

Fatal and serious injury crash tree diagrams were generated for the Tooele County GFA. These crash tree diagrams are presented in **Figure 4.23** through **Figure 4.22**.

The crash trees are limited to the top 3 categories for crash type and manner of collision. Each crash tree diagram displays the total fatal and serious injury crashes (T), fatal crashes (K), and serious injury crashes (A). The data shows the following:

- State Routes accounted for 61% of crashes, with 36% in rural areas and 25% in urban areas
- Federal Aid routes accounted for 20% of crashes with 14% urban and 6% rural
- Local Routes accounted for 19% of crashes, with 6% urban and 13% rural

CRASH TYPE

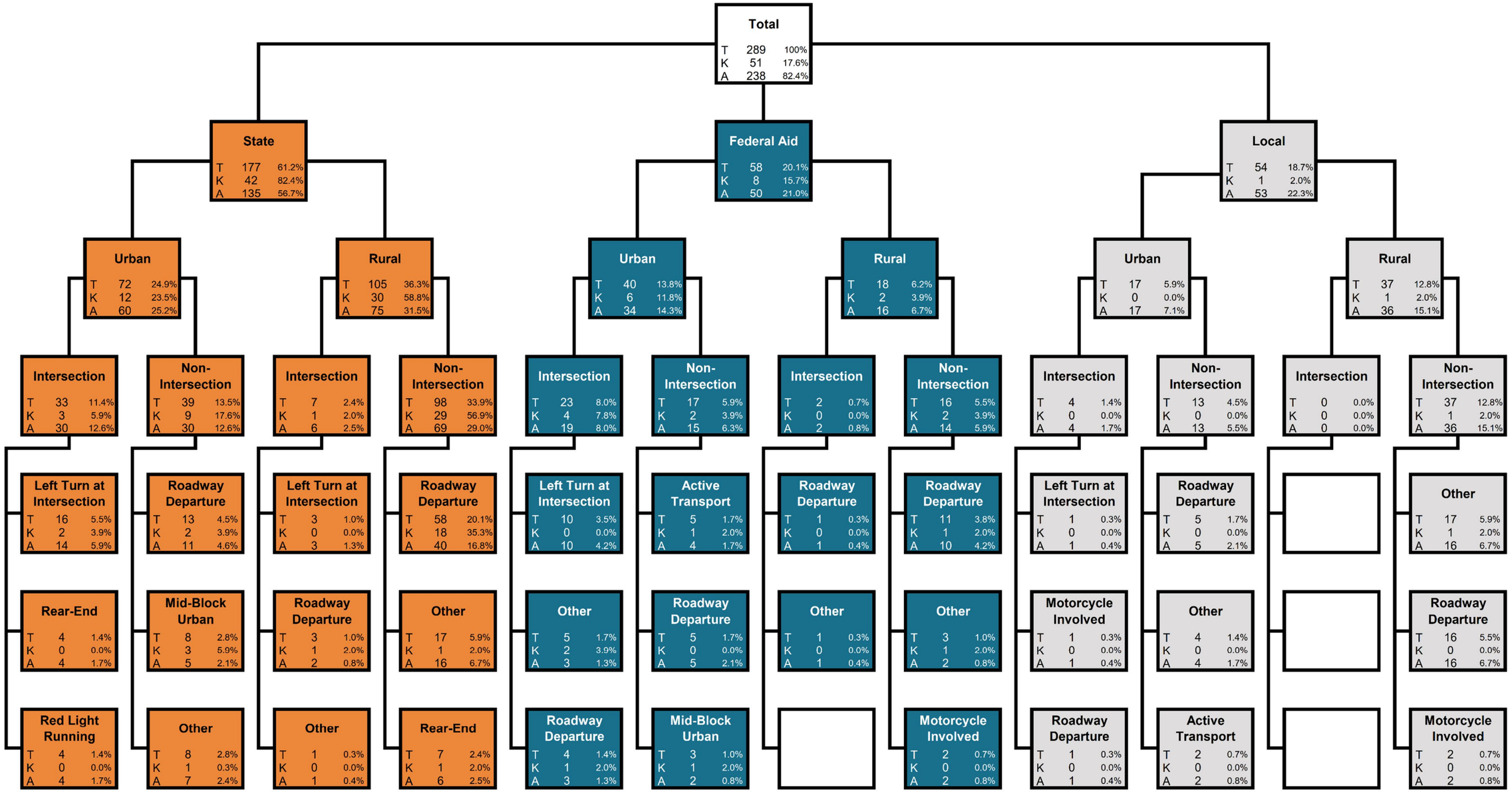


Figure 4.21 – Fatal and Serious Injury Crash Tree Diagram (Crash Type)

MANNER OF COLLISION

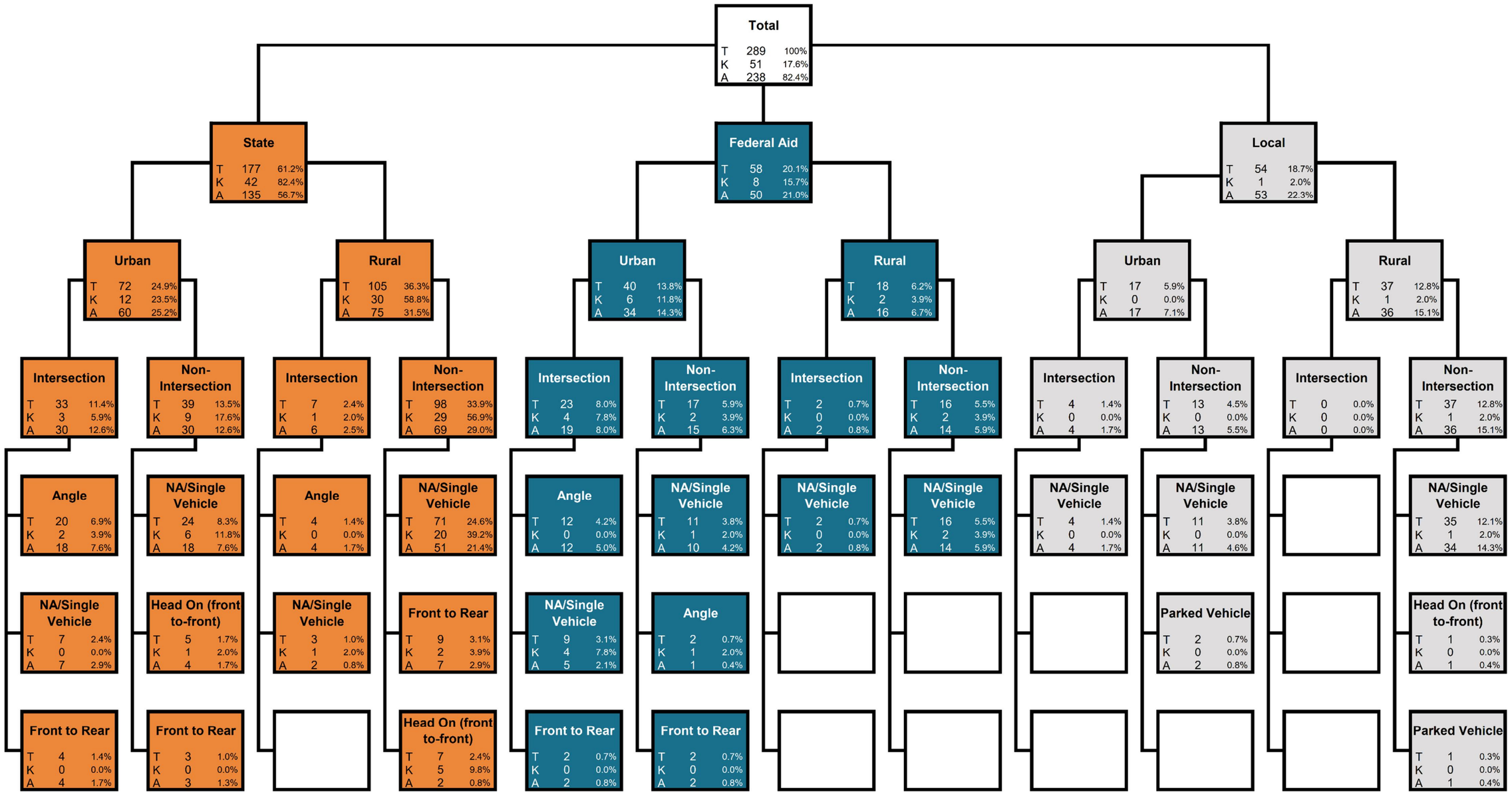


Figure 4.22 – Fatal and Serious Injury Crash Tree Diagram (Manner of Collision)

ACTIVE TRANSPORTATION

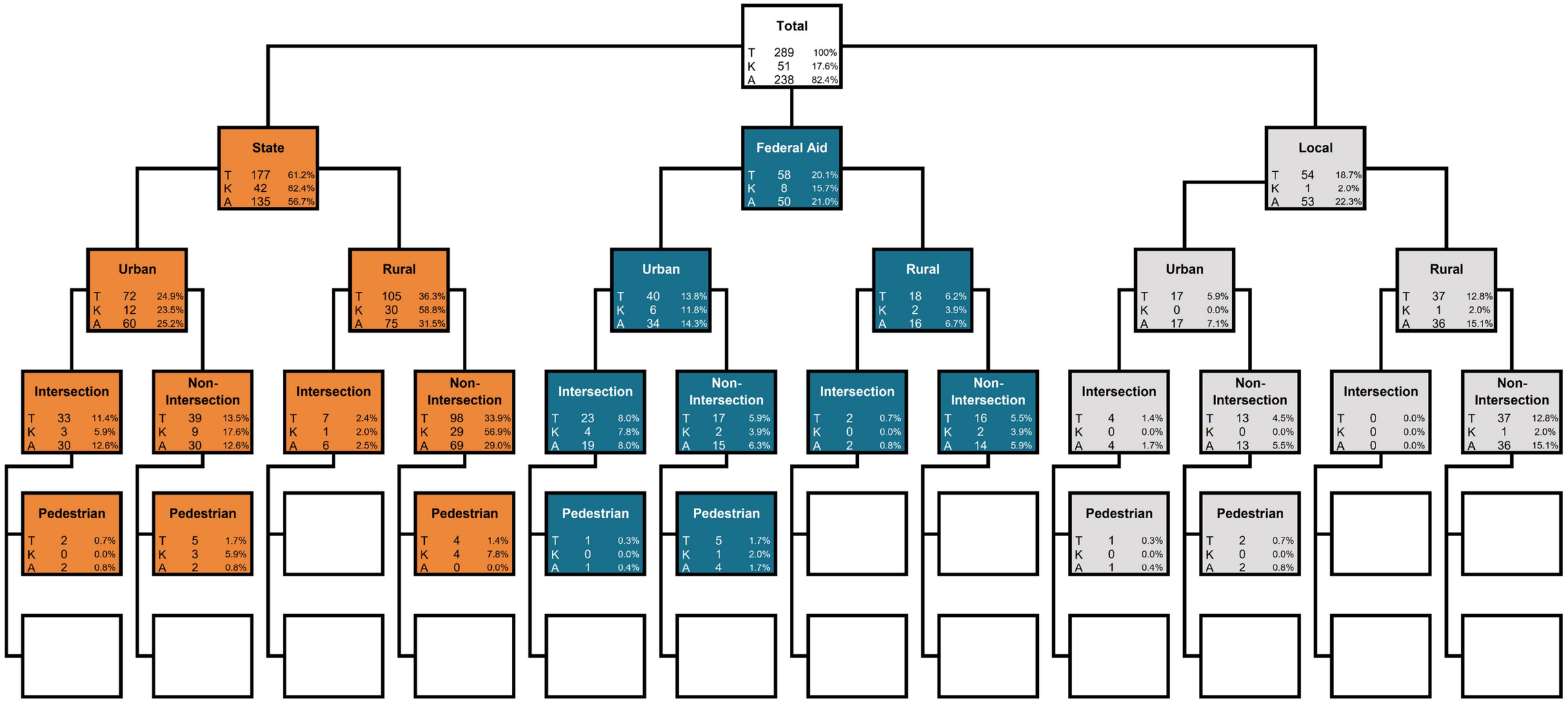


Figure 4.23 – Fatal and Serious Injury Crash Tree Diagram (Active Transportation)

5. Crash and Network Screening Analysis

A crash and network screening analysis was prepared for the Tooele County GFA informed by four sub-analyses:

- Number of Crashes
- Critical Crash Rate (CCR)
- Probability of a Specific Crash Type Exceeding Threshold Proportion
- Equivalent Property Damage Only (EPDO)

CCR Differential by roadway ownership are mapped in the following figures:

- **Figure 5.1** – CCR Differential – Segments (State Routes)
- **Figure 5.2** – CCR Differential – Segments (Federal Aid Routes)
- **Figure 5.3** – CCR Differential – Segments (Local Routes)
- **Figure 5.4** – CCR Differential – Intersections (Signalized)
- **Figure 5.5** – CCR Differential – Intersections (Unsignalized)

A positive Local CCR Differential is an indication of a location with a potential for safety improvement (PSI).

A list of the top 10 CCR Differential segments and intersections for the Tooele County GFA are located in **Table 5.1** and **Table 5.2** along with their associated number of crashes, probability of a specific crash type exceeding threshold proportion, and EPDO analysis results.

These locations represent those with the highest potential for safety improvements and can be considered as project candidate locations.

Figure 5.1 – CCR Differential – Segments (State Routes)

Figure 5.2 – CCR Differential – Segments (Federal Aid Routes)

Figure 5.3 – CCR Differential – Segments (Local Routes)

Table 5.1 – Crash and Network Screening Analysis Results - Segments

Facility	Limits	Functional Classification	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Single Vehicle	Parked Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
State Routes																								
SR-179	WFRC Limits to SR-138	Minor Arterial	Erda	5	17.0	26	0	0	1	0	4	0	0	0	4	0	0	0	0	1	0	0	0	0
SR-73	Faust Rd to Railroad Bed Rd	Other Principal Arterial	Unincorporated	4	3.9	200	0	2	0	1	1	0	0	0	4	0	0	0	0	0	0	0	0	0
SR-73	Prospect Rd to Prospect Rd	Other Principal Arterial	Unincorporated	5	3.8	90	0	0	4	0	1	0	0	0	5	0	0	0	0	0	0	0	0	0
1000 N (SR-112)	200 W to Main St	Other Principal Arterial	Tooele	13	3.4	76	0	0	2	2	9	0	8	0	1	0	0	0	0	4	0	1	0	0
SR-73	Ophir Creek Rd to Lower Ophir Rd	Other Principal Arterial	Unincorporated	6	3.2	6	0	0	0	0	6	0	1	0	5	0	0	0	0	0	0	0	0	0
Main St (SR-36)	1100 N to 1180 N	Other Principal Arterial	Tooele	17	3.0	59	0	0	1	2	14	4	9	1	1	0	0	0	0	2	0	0	0	0
SR-36	Saddleback Blvd to Hardy Rd	Other Principal Arterial	Lake Point	72	2.4	451	0	0	11	14	47	19	33	0	6	1	0	1	2	10	0	0	0	1
SR-36	Benmore Rd to Tc20624	Major Collector	Unincorporated	3	2.0	13	0	0	0	1	2	0	0	0	3	0	0	0	0	0	0	0	0	0
SR-36	Union Pacific Railroad to Range Rd	Major Collector	Unincorporated	4	1.9	14	0	0	0	1	3	0	0	0	4	0	0	0	0	0	0	0	0	0
Main St (SR-36)	Vorwaller Dr to 1000 N	Other Principal Arterial	Tooele	76	1.8	566	0	2	7	15	52	27	26	1	10	0	0	0	1	10	1	1	0	2
Federal Aid Routes																								
1000 N	Main St to 100 E	Minor Arterial	Tooele	19	61.3	143	0	1	1	1	16	8	4	0	3	0	0	0	0	4	0	0	0	1
Mormon Trail Rd	Hickman Cyn to Silver Ave	Major Collector	Unincorporated	4	50.0	25	0	0	1	0	3	0	0	0	4	0	0	0	0	0	0	0	0	0
Mormon Trail Rd	Davenport Rd to Willow Wash Rd	Major Collector	Unincorporated	7	24.1	121	0	1	1	0	5	0	1	0	6	0	0	0	0	0	0	0	0	1
Bates Canyon Rd	Cambridge Way to SR-36	Major Collector	Unincorporated	4	24.0	14	0	0	0	1	3	0	1	0	3	0	0	0	0	0	0	0	0	0
Mormon Trail Rd	Tc03482 to Davenport Rd	Major Collector	Unincorporated	3	22.9	106	0	1	0	1	1	0	0	0	3	0	0	0	0	0	0	0	0	0
1280 N	Main St to Pine Canyon Rd	Minor Collector	Tooele	3	22.5	3	0	0	0	0	3	1	0	0	0	0	0	0	0	1	1	0	0	0
Mormon Trail Rd	Grantsville Reservoir Rd to Tc03482	Major Collector	Unincorporated	5	14.9	108	0	1	0	1	3	0	0	0	5	0	0	0	0	0	0	0	0	0
1000 N	100 E to 220 E	Minor Arterial	Tooele	7	14.5	28	0	0	1	0	6	1	3	1	1	0	0	0	0	1	0	0	0	0
400 S	100 W to 50 W	Major Collector	Tooele	4	11.4	14	0	0	0	1	3	0	0	0	1	3	0	0	0	0	0	0	0	0
200 W	Quartz Rd to Sapphire Dr	Major Collector	Tooele	8	11.1	40	0	0	1	1	6	2	0	0	2	3	0	0	0	1	0	0	0	0
Local Streets																								
Vernon Reservoir Fishing Rd	Vernon Reservoir to Vernon Reservoir R	Local	Unincorporated	4	1787.0	46	0	0	1	2	1	0	0	0	4	0	0	0	0	0	0	0	0	0
Davenport Canyon Rd	Tc03442 to Davenport Canyon Rd	Local	Unincorporated	3	1357.0	127	0	1	1	1	0	0	0	0	3	0	0	0	0	0	0	0	0	0
Davenport Canyon Rd	Tc03448 to Willow Canyon Rd	Local	Unincorporated	3	332.3	56	0	0	2	1	0	0	0	0	3	0	0	0	0	0	0	0	0	1
2400 N	210 W to SR-36	Local	Tooele	3	315.9	96	0	1	0	0	2	0	0	0	2	0	0	0	0	1	0	0	0	1
100 S	100 E to Russell Ave	Local	Tooele	3	139.9	13	0	0	0	1	2	0	0	0	2	1	0	0	0	0	0	0	0	0
Home Depot Access Road	400 E to Main St	Local	Tooele	3	132.6	24	0	0	1	0	2	0	1	0	2	0	0	0	0	0	0	0	0	1
Wasatch Way	Oquirrh Ave to Deseret Ave	Local	Tooele	3	120.5	3	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
Cherry St	Harris St to Quirk St	Local	Grantsville	3	17.3	3	0	0	0	0	3	1	0	0	0	1	0	1	0	0	0	0	0	0
Antelope Ave	Oquirrh Ave to Bonneville Way	Local	Tooele	3	14.4	46	0	0	2	0	1	0	0	0	1	1	0	0	0	1	0	0	0	0
Dawson Dr	Clemens Way to Drysdale Way	Local	Tooele	3	10.9	96	0	1	0	0	2	1	0	0	1	1	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

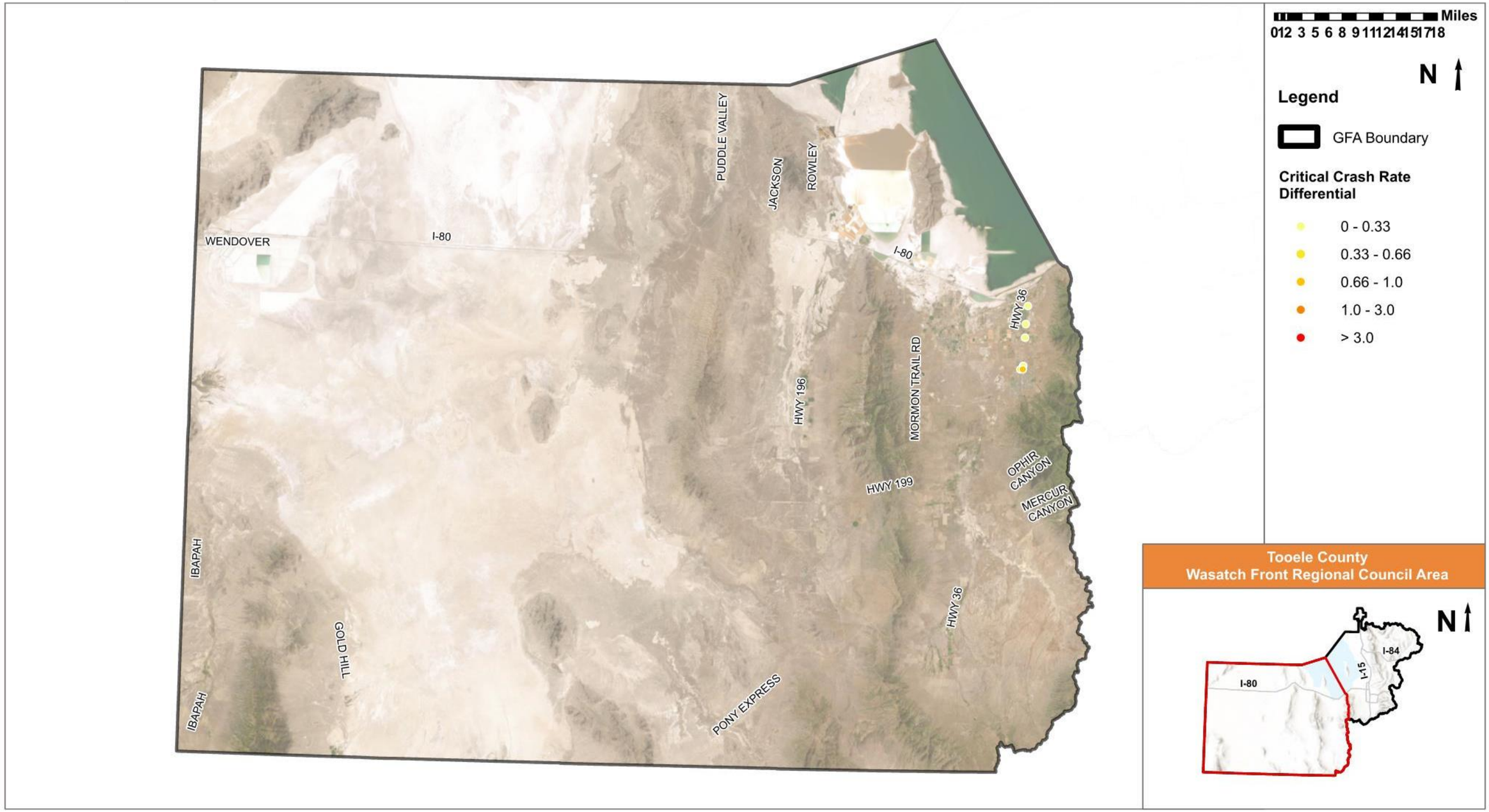


Figure 5.4 – CCR Differential – Intersections (Signalized)

Figure 5.5 – CCR Differential – Intersections (Unsignalized)

Table 5.2 – Crash and Network Screening Analysis Results - Intersections

Intersection	City	Crashes	Critical Crash Rate Differential	EPDO[1]	*Fatal*	*Suspected Serious Injury*	*Suspected Minor Injury*	*Possible Injury*	*No Injury/PDO*	Angle	Front to Rear	Head On	Parked Vehicle	Single Vehicle	Rear to Rear	Rear to Side	Sideswipe (Same Direction)	Sideswipe (opposite Direction)	Other/Unknown	Pedestrian	Bicycle	Motorcycle
Signalized Intersections																						
Main St & 1000 N	Tooele	128	0.9	1004	0	3	13	31	81	62	43	3	10	0	0	0	3	7	0	3	1	1
200 W & 1000 N	Tooele	34	0.5	380	0	1	8	8	17	21	8	3	1	0	0	0	0	1	0	0	1	1
Hwy 36 & Erda Way	Erda	64	0.1	616	0	3	8	10	43	20	33	3	2	1	0	0	0	5	0	0	0	2
Hwy 36 & Bates Canyon Rd	Unincorpora	61	0.1	1365	1	2	6	10	42	23	26	2	6	1	0	0	1	1	1	0	0	1
Hwy 36 & Hwy 138	Unincorpora	75	0.0	785	0	3	13	15	44	16	47	1	3	1	0	0	2	5	0	0	0	0
Main St & 1280 N	Tooele	78	0.0	729	0	1	16	21	40	36	24	6	7	0	0	0	1	4	0	2	0	3
Hwy 36 & Village Blvd	Unincorpora	51	-0.1	347	0	0	11	6	34	17	27	2	0	0	0	0	1	4	0	0	0	1
Highway 112 & Main St	Grantsville	22	-0.3	178	0	1	2	2	17	13	1	1	5	0	0	0	0	2	0	1	1	1
Hwy 36 & Saddleback Blvd	Lake Point	46	-0.5	585	0	4	5	6	31	13	28	2	1	0	0	0	1	1	0	0	0	0
Main St & 2000 N	Tooele	47	-0.5	441	0	2	2	16	27	3	33	1	5	0	0	0	0	5	0	1	0	1
Unsignalized Intersections																						
Broadway Ave & 1000 N	Tooele	10	2.8	62	0	0	1	3	6	3	5	0	1	0	0	0	0	1	0	0	0	0
100 E & 1000 N	Tooele	12	2.8	53	0	0	0	4	8	3	7	1	0	0	0	0	0	1	0	0	0	0
100 E & 400 N	Tooele	24	1.9	118	0	0	2	5	17	23	1	0	0	0	0	0	0	0	0	1	0	0
100 E & 500 N	Tooele	18	1.9	123	0	0	3	4	11	15	0	0	1	1	0	0	0	1	0	0	0	0
Berra Blvd & 2000 N	Tooele	3	1.8	24	0	0	0	2	1	1	0	0	1	0	0	0	0	1	0	0	0	0
Sheep Ln & Erda Way	Grantsville	12	1.8	149	0	0	4	5	3	10	2	0	0	0	0	0	0	0	0	0	0	0
Gateway Dr & Stansbury Pkwy	Unincorpora	5	1.4	37	0	0	1	1	3	4	1	0	0	0	0	0	0	0	0	0	0	0
520 E & 1000 N	Tooele	5	1.1	48	0	0	2	0	3	1	2	0	2	0	0	0	0	0	0	0	0	1
Mountain View Rd & Sunset Rd	Lake Point	3	1.1	96	0	1	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0
Cochrane Ln & Erda Way	Erda	3	1.0	13	0	0	0	1	2	2	1	0	0	0	0	0	0	0	0	0	0	0

1. Equivalent Property Damage Only Crashes

= 90 - 100% probability that crash type is over-represented
= 80 - 90% probability that crash type is over-represented
= 70 - 80% probability that crash type is over-represented

6. Roadway Characteristic Risk Analysis

A roadway characteristic risk analysis was performed using the following three sub-analysis:

- Crash Profile Risk Assessment
- usRAP Risk Assessment
- Local Street Risk Assessment

6.1. Crash Profile Risk Assessment

This risk assessment sub-analysis identifies common roadway characteristics for fatal and serious injury crashes that occurred within the WFRC study area. Based on the scoring of the various roadway characteristic risks identified from analysis of crash reports, a risk score was assigned to all state and federal aid routes within the Tooele County GFA consistent with the methodology described in Tech Memo #1 Section 3.4. The results of the Crash Profile Risk Assessment are mapped in the following figures:

- **Figure 6.1** – Crash Profile Risk Assessment Results (State Routes)
- **Figure 6.2** – Crash Profile Risk Assessment Results (Federal Aid Routes)

Table 6.1 provides an overview of urban and rural segments with the highest risk scoring. Up to ten urban and rural segments are listed if the segment received at least 67% of the overall total risk score.

Table 6.1 – Crash Profile Risk Segments (Federal Aid Routes)

Area Type	Road Segment	Extents	Risk Score
Urban	Quirk Street	Hollywood Street to Main Street	20.6
Urban	West Street	400 South to Main Street	20
Urban	Durfee Street	West Street to Willow Street	20
Rural	Faust Road	Barrel Road to Depression Road East	21.5
Rural	Rowley Road	East Povert Point Road to Lakeshore Private Road	21.5
Rural	Burmester Road	Main Street to I-80	21
Rural	Sheep Lane	SR-112 to SR-138	21
Rural	Droubay Road	Fox Run Drive to Bates Canyon Road	21
Rural	Bates Canyon Road	SR-36 to Droubay Road	21
Rural	Erda Way	SR-36 to Droubay Road	20.8

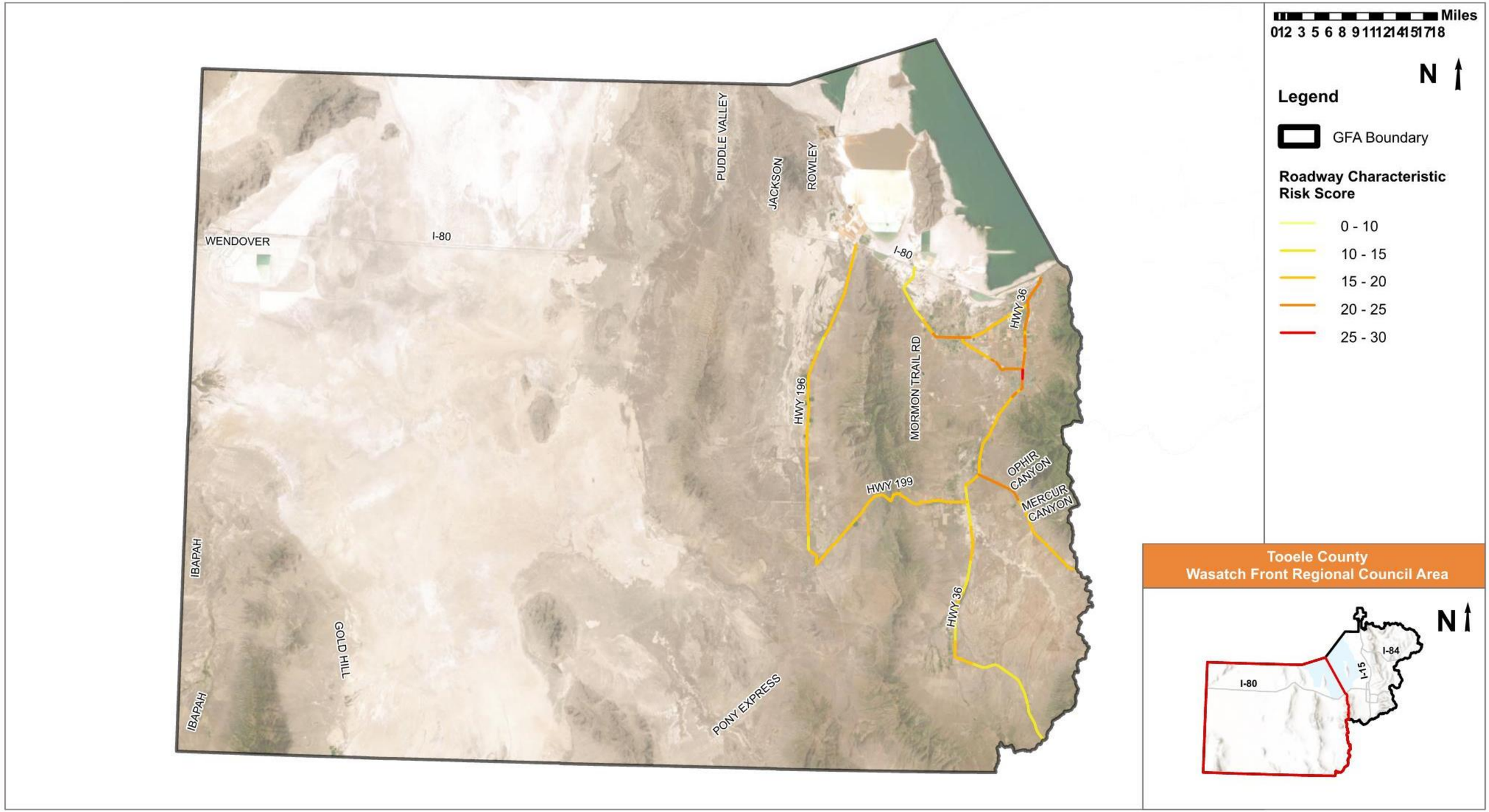


Figure 6.1 – Crash Profile Risk Assessment Results (State Routes)

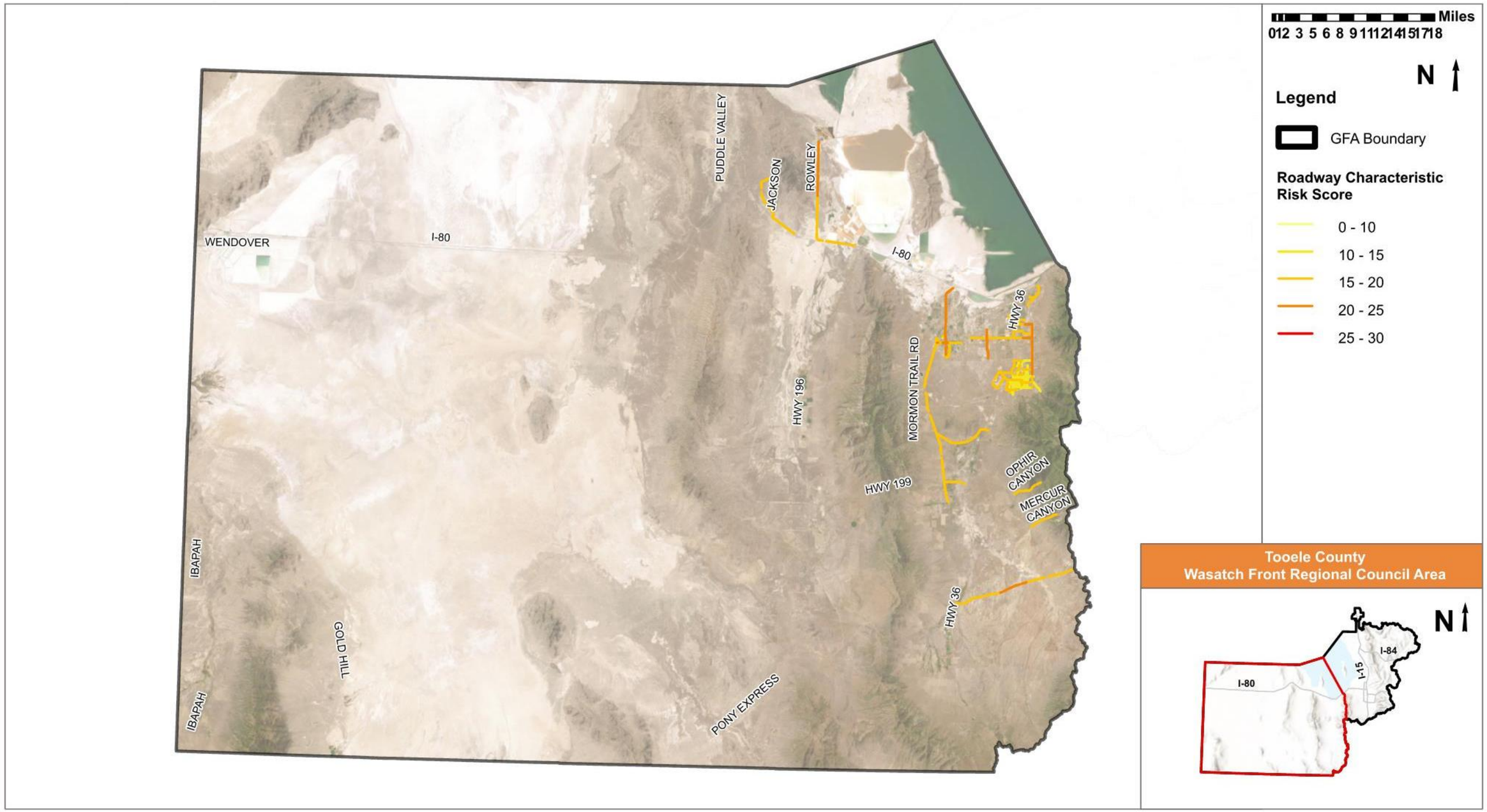


Figure 6.2 – Crash Profile Risk Assessment Results (Federal Aid Routes)

6.2. usRAP Risk Assessment

A roadway characteristic risk assessment was performed using roadway feature data collected for Utah state and federal aid routes. The risk assessment was performed using the usRAP tool. The output of the usRAP tool is a star rating or risk rating for vehicle, pedestrian, and bicyclist features. The results of the usRAP risk assessment by star rating are mapped in the following figures:

- **Figure 6.3** – Vehicle Star Rating (State Routes)
- **Figure 6.4** – Vehicle Star Rating (Federal Aid Routes)
- **Figure 6.5** – Pedestrian Star Rating (State Routes)
- **Figure 6.6** – Pedestrian Star Rating (Federal Aid Routes)
- **Figure 6.7** – Bicycle Star Rating (State Routes)
- **Figure 6.8** – Bicycle Star Rating (Federal Aid Routes)

A summary of the highest risk segments (1-2 Stars) for federal aid routes in the Tooele County GFA are located in **Table 6.2**.

Table 6.2 – usRAP Risk Segments (Federal Aid Route)

Road Segment	Extents	Vehicle Risk	Pedestrian Risk	Bicycle Risk
Rowley Road	North Extents of Rowley Road to East Poverty Point Road		X	
Burmester Road	Main Street to I-18		X	X
Canyon Road	SR-36 to Center Street		X	X
Center Street	SR-36 to Mountain View Road	X	X	X
Mountain View Road	Center Street to Saddleback Blvd	X	X	X
Saddleback Blvd	SR-36 to Mountain View Road	X	X	X
Village Blvd	SR-138 to Brienne Way	X		
Village Blvd	Brienne Way to SR-36	X		X
Aberdeen Lane	Bates Canyon Road to Village Blvd		X	X
Bates Canyon Road	Toms Lane to Strafford Drive		X	X
Bates Canyon Road	Strafford Drive to SR-36	X	X	X
Bates Canyon Road	SR-36 to Droubay Road		X	X
Toms Lane	Church Road to Bates Canyon Road		X	X
Church Road	Cochrane Lane to SR-36		X	X
Cochrane Lane	Erda Way to Church Road		X	X
Bryan Road	SR-36 to Droubay Road		X	X
Sheep lane	SR-112 to SR-138		X	X
Erda Way	SR-138 to Droubay Road		X	X
Droubay Road	Bates Canyon Road to Bryan Road		X	X
Droubay Road	Bryan Road to Whispering Horse Road	X	X	X
Droubay Road	Whispering Horse Road to Tanglewood Drive		X	X
Droubay Road	Tanglewood Drive to Brookfield Avenue	X	X	X
Droubay Road	Brookfield Avenue to Vine Street		X	X
Tooele Blvd	340 West to 210 West	X		
650 North	Coleman Street to 600 North	X		
600 North	650 North to 300 West	X		
600 North	150 West to 50 West	X		
Industrial Loop Road/B Avenue	F Avenue to Garnet Street		X	

Road Segment	Extents	Vehicle Risk	Pedestrian Risk	Bicycle Risk
Garnet Street	B Avenue to G Avenue		X	
Garnet Street	H Avenue to M Avenue	X	X	X
Droubay Road	Skyline Drive to 270 South		X	X
Burmeester Road	Main Street to I-18		X	X
Durfee Street	Durrant Street to Willies Way	X	X	X
West Street	400 South to Main Street		X	
Cooley Street	400 South to Peach Street	X	X	X
400 South	West Street to Cooley Street	X	X	X
Mormon Trail Road	3,300 Feet South of Willow Canyon Road to 400 South		X	
Mormon Trail Road/Main Street	SR-199 to 4,300 Feet North of Mountain Road		X	
Silver Avenue	Main Street to Cactus Rose Drive		X	
Faust Road	SR-36 to Depression Road		X	
Quirk Street	Legrand Drive to Main Street		X	X
Legrand Drive	Quirk Street to Willow Street		X	X
Willow Street	Legrand Drive to Nygreen Street		X	X

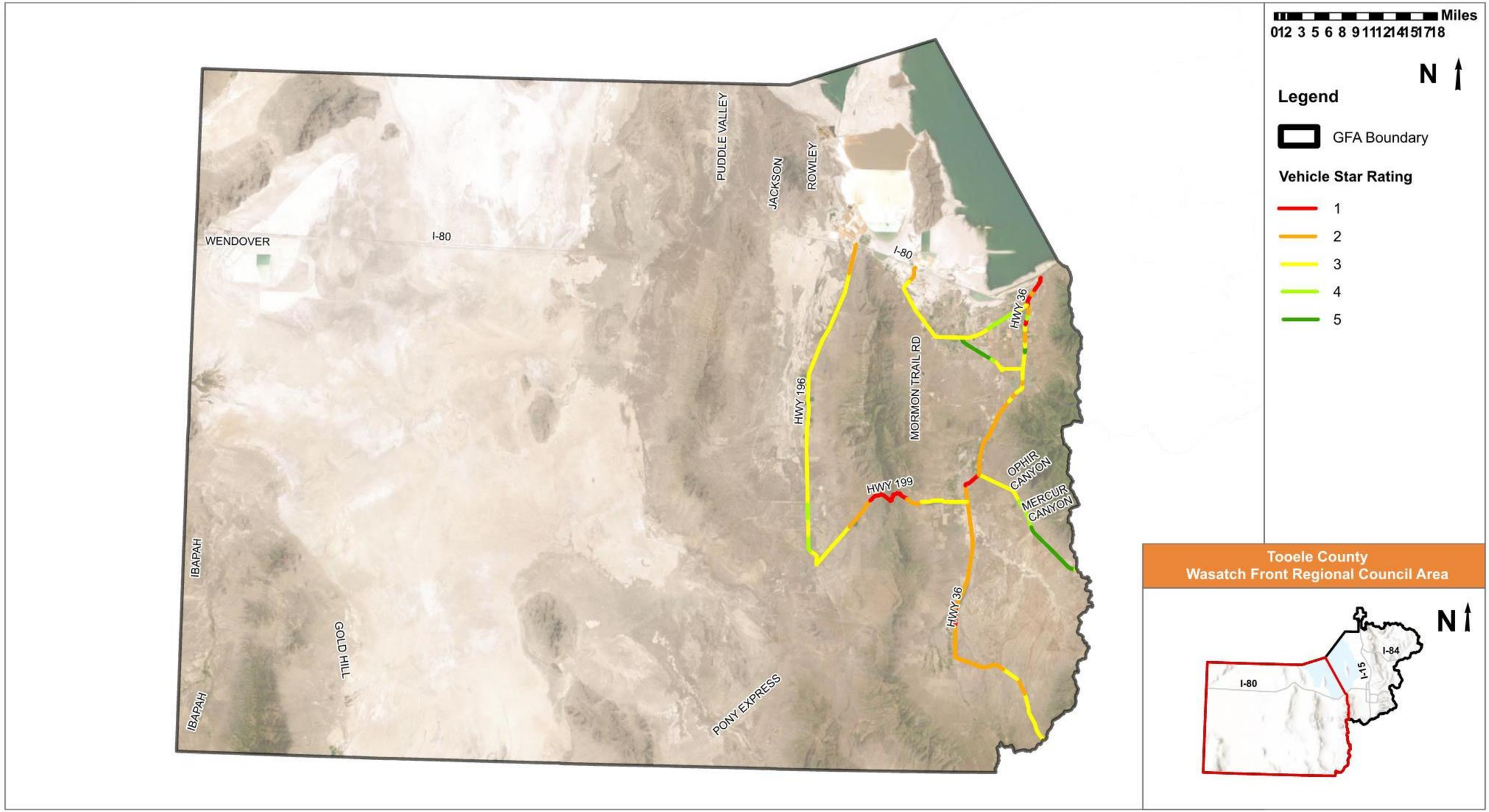


Figure 6.3 – Vehicle Star Rating (State Routes)

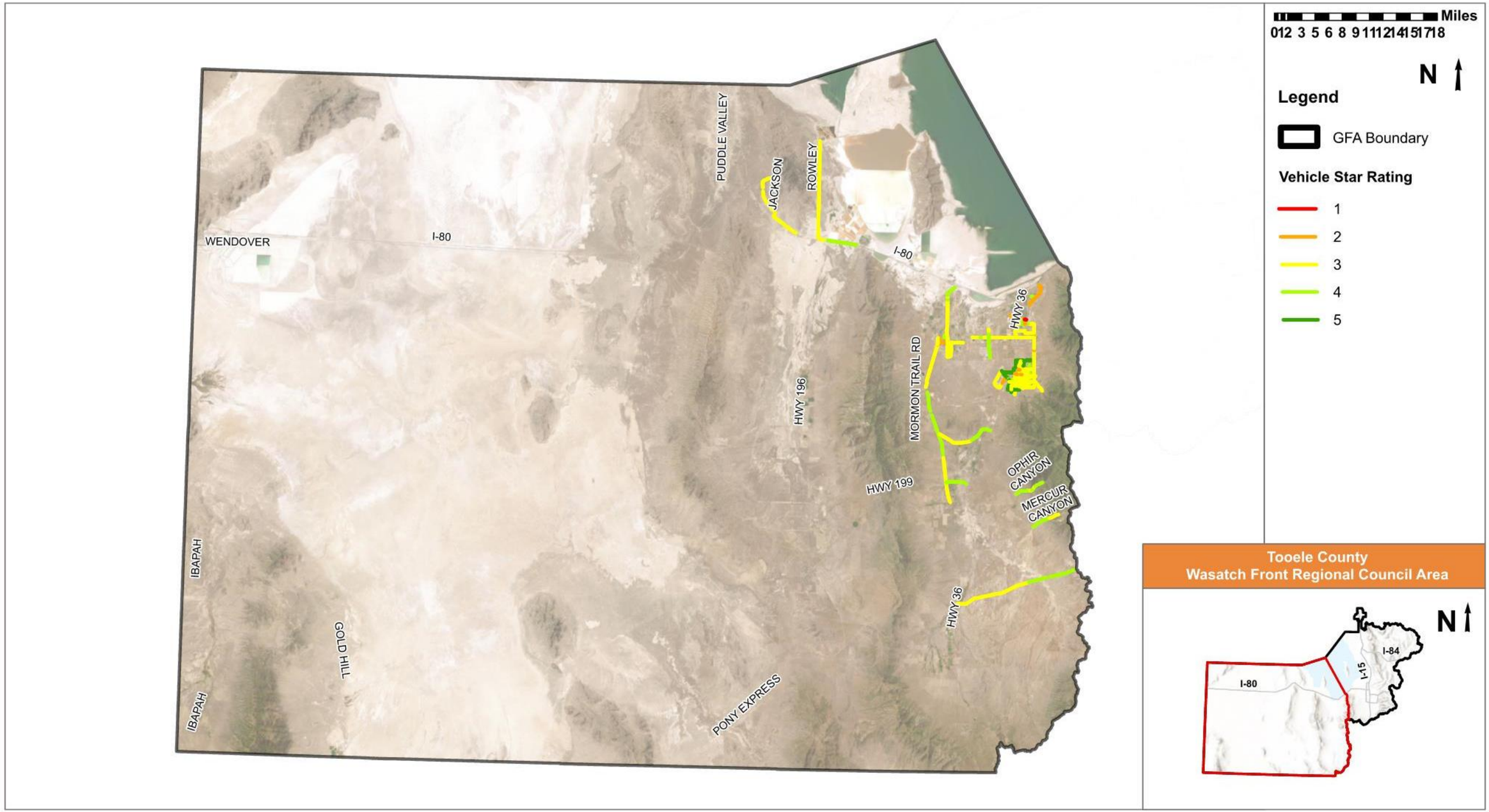


Figure 6.4 – Vehicle Star Rating (Federal Aid Routes)

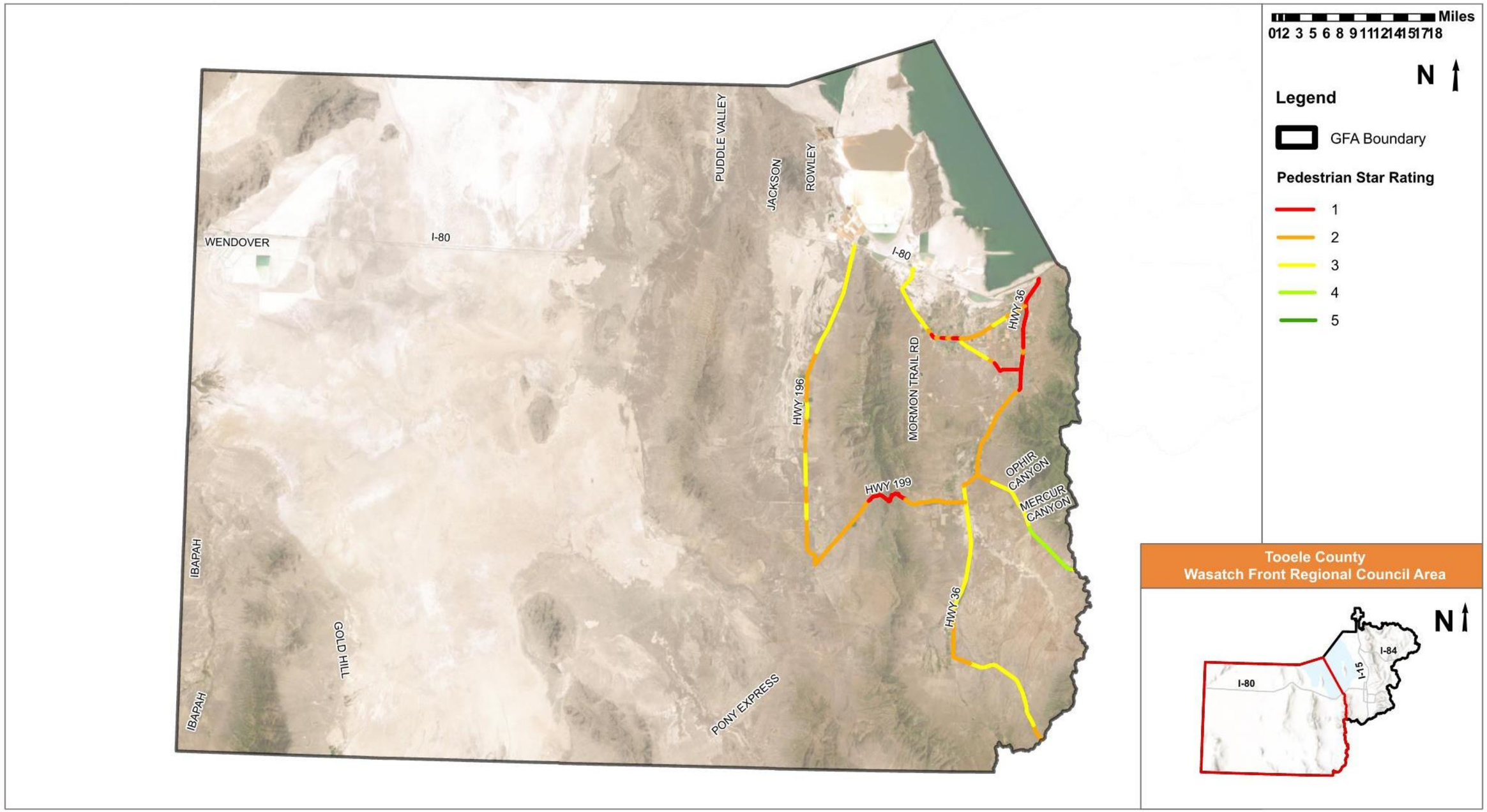


Figure 6.5 – Pedestrian Star Rating (State Routes)

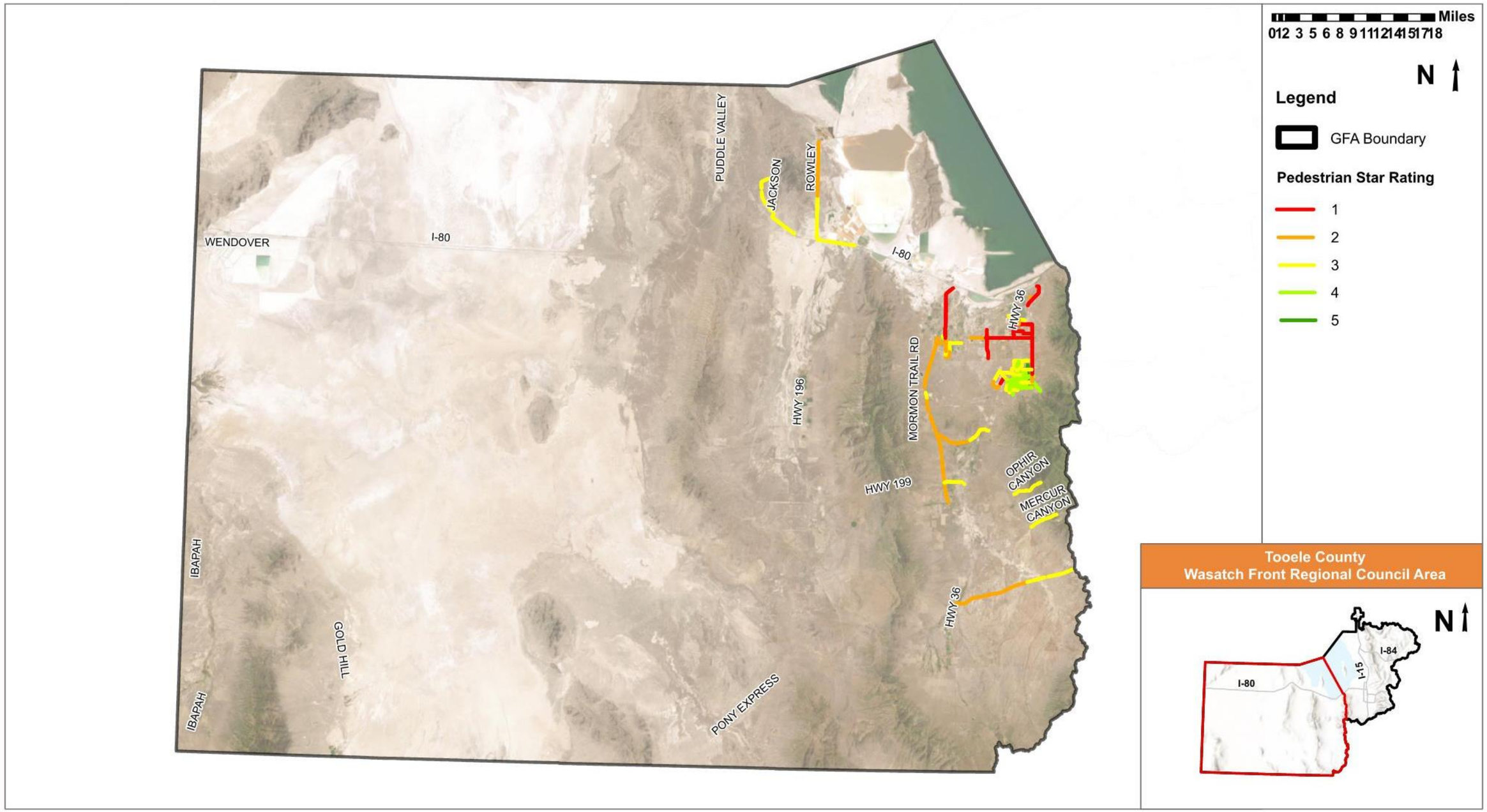


Figure 6.6 – Pedestrian Star Rating (Federal Aid Routes)

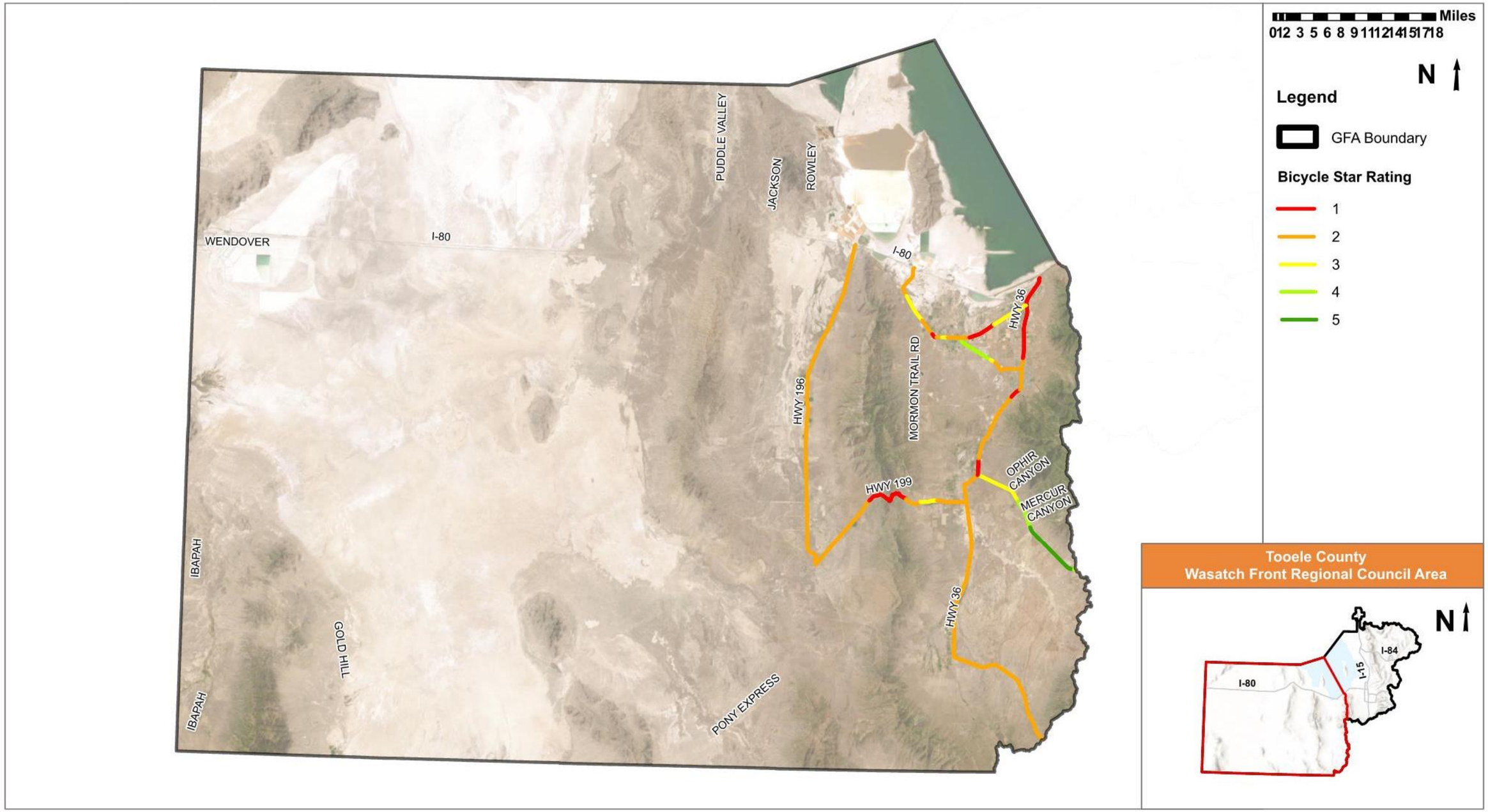


Figure 6.7 – Bicycle Star Rating (State Routes)

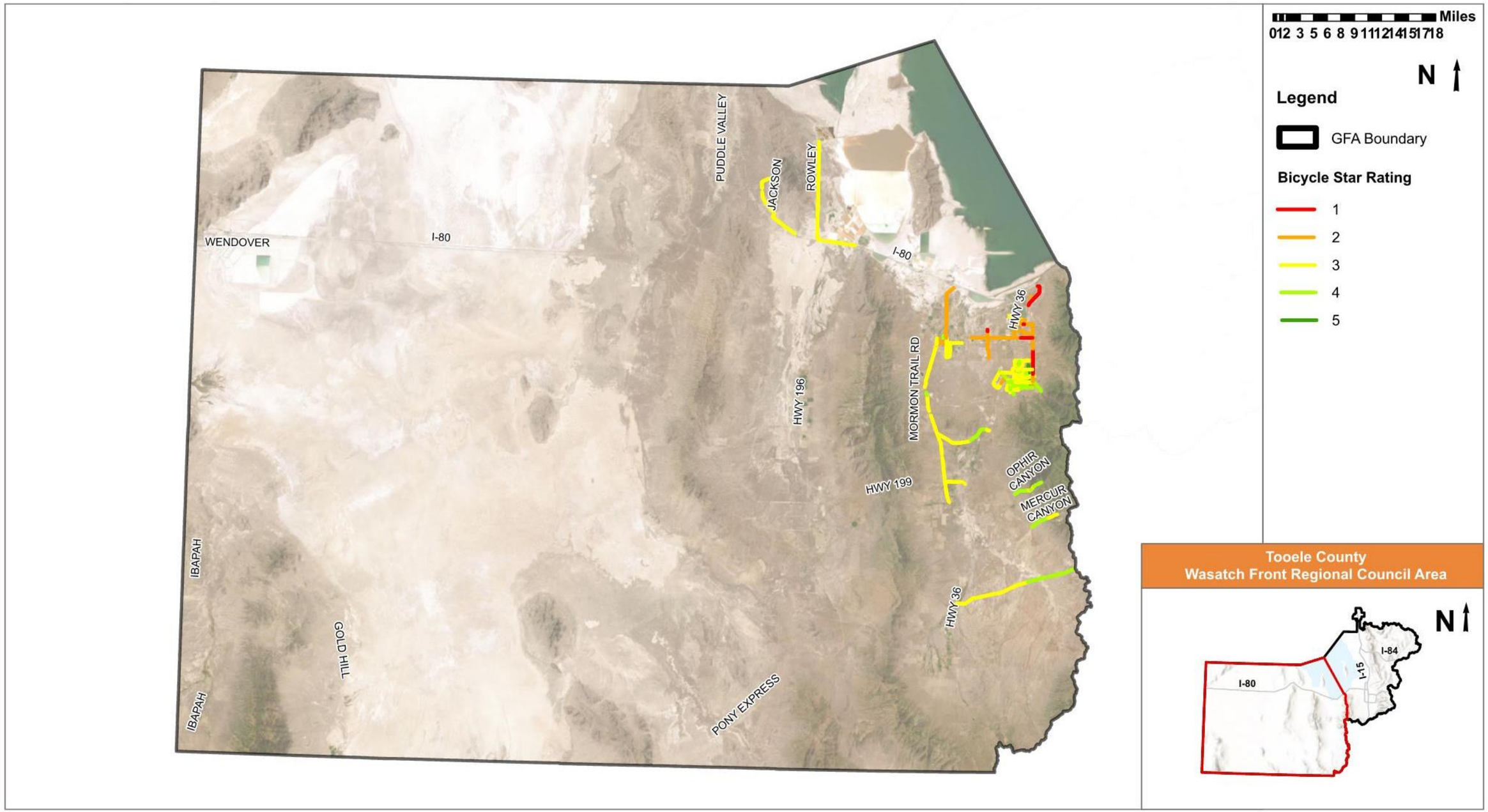


Figure 6.8 – Bicycle Star Rating (Federal Aid Routes)

6.3. Local Street Risk Assessment

A local street risk assessment was performed for all local roads within WFRC that are not included in the usRAP network. The results of the local street risk assessment are summarized in **Table 6.3** and **Figure 6.9**. Mapped segments include the top 5% risk segments within the WFRC study area and the top 10 segments or high priority segments within the Tooele County GFA.

Table 6.3 – Local Street High Priority Segments

Road Segment	Extents
1000 North	SR-36 – 400 East
400 North	Landmark Drive – Droubay Road
Bates Canyon Road	Tom's Lane – August Street
700 West/1280 North	670 North – 80 East
600 North	50 West – 100 East
2000 North	400 East – Berra Boulevard
Village Boulevard	Mast Lane - Droubay Road
Utah Avenue	Coleman Drive – 1000 North
100 South	200 West – SR-36
Stansbury Parkway	Brigham Road – SR-36

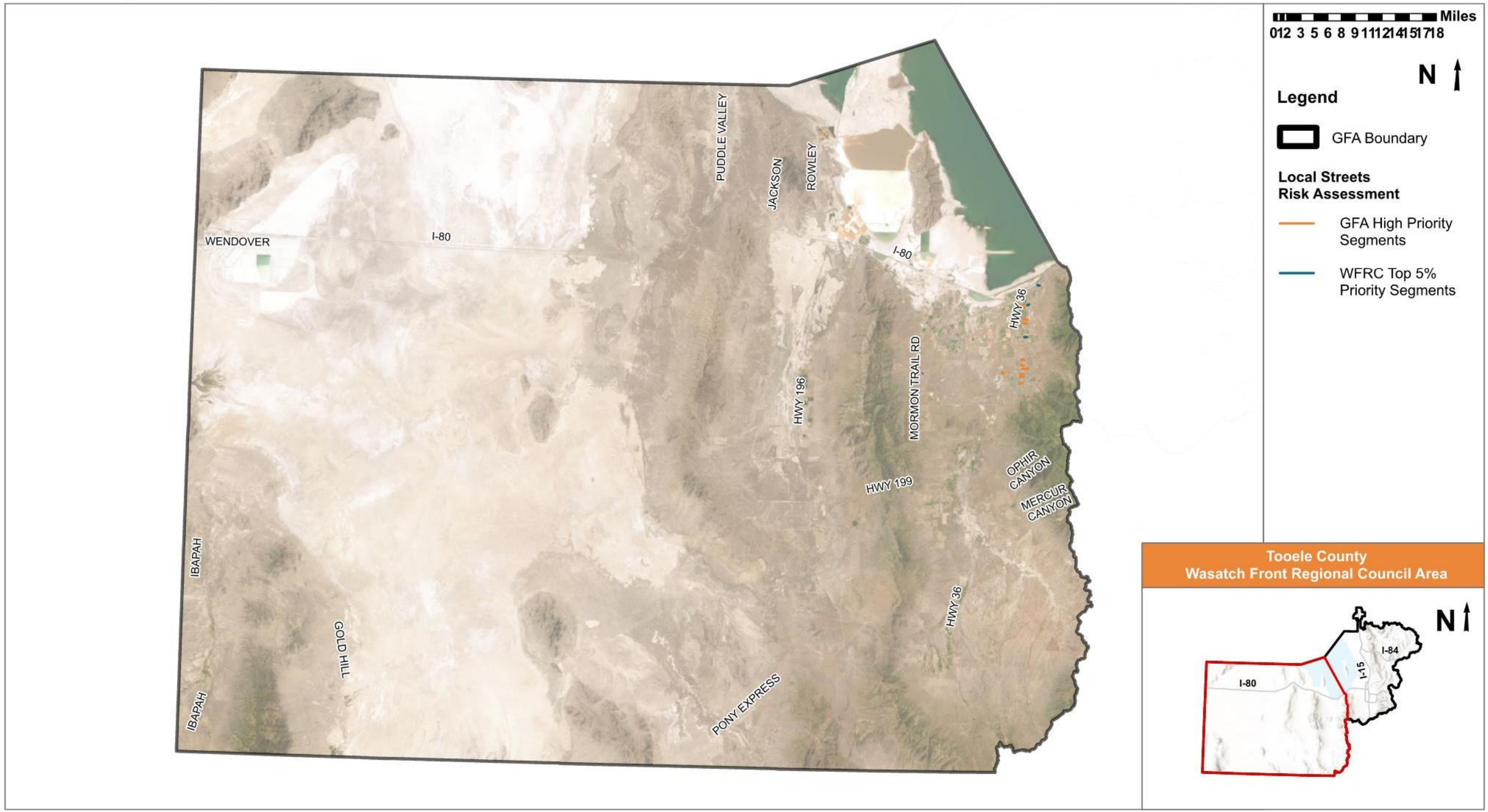


Figure 6.9 – Local Street Risk Assessment Results

7. Safety Analysis Summary

This section summarizes the safety analysis performed for the Tooele County GFA by identifying common risk characteristics and a composite high-risk roadway network.

7.1. Common Risk Characteristics

Based on the SHSP Emphasis Area Analysis and the Historical Crash Analysis summarized above, the following are common risk characteristics that should be considered when developing safety improvement projects specific to the Tooele County GFA.

- Roadway Departure
  - 42.5% of all fatal and serious injuries
  - 41.9% of all fatal and serious injury crashes
- Intersections
  - 25.1% of all fatal and serious injuries
- Speed Related
  - 24.5% of all fatal and serious injuries
- Impaired Driving
  - 18.0% of all fatal and serious injuries
- No Safety Restraints
  - 18.0% of all fatal and serious injuries
- Active Transportation
  - 5.9% of all fatal and serious injury crashes
- Left Turn at Intersection
  - 10.4% of all fatal and serious injury crashes

7.2. Composite High-Risk Roadway Network

Each of the safety analysis methodologies completed identified segments that can be improved to reduce fatalities and serious injuries.

To identify an overall high-risk roadway network and provide focused information for jurisdictional decisions regarding prioritization of safety improvements, an analysis was performed to identify overlapping segments from each of the analysis methodologies. A composite score, from zero to five, was determined using the approach in **Table 7.1**.The high-risk roadway network is a composite of the various risks as presented in **Section 4** through **Section 6** of Tech Memo #1. The top 10% of roadway segments for the entire WFRC area are included in the Composite High-Risk Network. These segments have a composite risk value of four or higher.

The Tooele County GFA Composite High-Risk Network for Federal Aid routes is summarized in **Table 7.2**.

The results are also mapped in **Figure 7.1** (State Routes) and **Figure 7.2** (Federal Aid Routes).

Table 7.1 – Composite High-Risk Roadway

Analysis	Risk Type	Approach	Value
Historical Crash Analysis	Historical Crash Risk	5-Year Crash Totals ≥ 3 Crashes	1
Crash and Network Screening Analysis	Systemic Crash Risk	Positive Local CCR Differential	1
WFRC Risk Assessment	Roadway Risk	Risk Score ≥ 20	1
usRAP Risk Assessment	Vehicle Risk	Vehicle Star Rating = 1-2 Stars	1
usRAP Risk Assessment	Pedestrian Risk	Pedestrian Star Rating = 1-2 Stars	0.5
usRAP Risk Assessment	Bicycle Risk	Bicycle Star Rating = 1-2 Stars	0.5
		Total Possible Composite Risk Score	**5**

The greater the overlap the higher the likelihood that the segment has risk factors that should be addressed to reduce and/or eliminate fatal and serious injury crashes at that location. The top 10% of roadway segments for the entire WFRC area are considered high-risk segments. These segments have a composite risk value of four or higher. A summary of the composite high-risk roadway network for federal aid routes is summarized in **Table 7.2**. The results are also mapped in **Figure 7.1** and **Figure 7.2**.

Table 7.2 – Tooele County High-Risk Roadway Network (State Routes and Federal Aid Routes)

					RISK TYPE						
Facility	Limits	Functional Classification	City	Length (miles)	*usRAP- Pedestrian Star Rating*	*usRAP - Bicycle Star Rating*	*usRAP- Vehicle Star Rating*	Crash Profile Risk Score	CCR Differential Analysis	Significant Crashes	Local Street Risk Assessment
State Route											
SR-36	I-80 to Cimmarron Way	Other Principal Arterial	Lake Point, Erda	7.5	X	X	X	X		X	
Main Street (SR-36)	1280 North to 100 South	Other Principal Arterial	Tooele	2.0	X	X		X	X	X	
SR-36	900 South to Gravel Site Road	Other Principal Arterial	Tooele	4.5	X	X	X	X		X	
Federal Aid Routes											
Bates Canyon Rd	Cambridge Way to SR-36	Major Collector	Unincorporated	0.1	X	X	X		X	X	
Saddleback Blvd	UT-36 to Mountain View Rd	Major Collector	Lake Point	0.4	X	X	X		X	X	

Figure 7.1 – Tooele County High-Risk Roadway Network (State Routes)

Figure 7.2 – Tooele County High-Risk Roadway Network (Federal Aid Routes)

ATTACHMENT A

TOOELE COUNTY CASE STUDY PROJECT INFORMATION SHEETS

Tooele County

Project ID	Jurisdictions	Project Name
11.58.1	Erda	SR 36 from Bates Canyon Road to Cimmarron Way
11.58.2	Erda	Bates Canyon Road from Stratsford Drive to Droubay Road
11.58.3	Erda	Erda Way from 400 West to Droubay Road
11.59.1	Grantsville	Sheep Lane & Erda Way
11.59.2	Grantsville	Sheep Lane from SR 138 to SR 112
11.59.3	Grantsville	Willow Street from Main Street to Durfee Street
11.60.1.1	Lake Point, Tooele, Erda	SR 36 from I-80 to Bates Canyon Road
11.61.1	Rush Valley	SR 199 from Stookey Lane to SR 36
11.61.2	Rush Valley	Main Street/Mormon Trail Road from Meadow Lane to SR 199
11.62.1	Stockton	SR 36 from Ben Harrison Road to Honerine Avenue
11.63.1.1	Tooele, Erda	SR 36 from Cimmarron Way to Mountain Road
11.63.2	Tooele	Vine Street, 200 South, 100 South from Coleman Street to 200 West
11.63.3	Tooele	600 North, 400 North, Utah Avenue, Vine Street, & 100 South from West to East
11.64.1	Vernon	SR 36 from Mule Skinner Road to Country Road 20337
11.65.1	Wendover	1st Street & Wendover Boulevard Intersection Improvements
11.64.1	Vernon	SR 36 from Mule Skinner Road to Country Road 20337
11.64.1	Vernon	SR 36 from Mule Skinner Road to Country Road 20337

Project Information Sheet

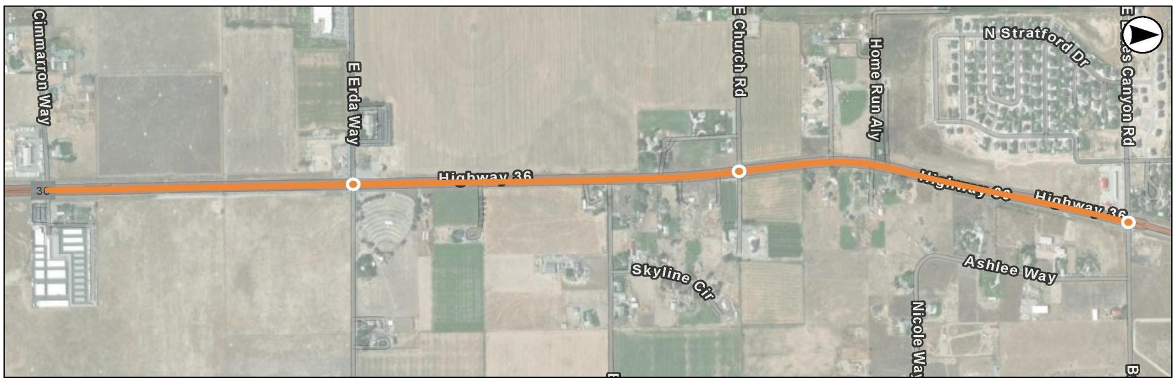
GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**SR 36 from Bates Canyon Road to Cimmarron Way**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Erda**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium, Low**		

Location Description

Roadway:	SR 36	**Key Intersection Locations:**
From:	Bates Canyon Road	Erda Way
To:	Cimmarron Way	Church Road
Length:	2.11 miles	Bates Canyon Road

Project Location Map

Map ID: 11.58.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.11**
Average Daily Traffic (vehicles per day)	**23,284**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**2**
Suspected Serious Injury Crashes (A)	**3**
Suspected Minor Injury Crashes (B)	**12**
Possible Injury Crashes (C)	**13**
No Injury/PDO Crashes (O)	**70**
Total Crashes	**100**
Total EPDO Crashes	**2,543**

What Crash Types are Over-Represented?			
Fatal	✓	Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Erda Way & SR 36	✓	0	3	10	43	20	76	1,013				✓				
Church Road & SR 36		0	0	2	7	4	13	128				✓		✓		
Bates Canyon Road & SR 36	✓	1	2	10	42	23	78	1,799	✓					✓		

Project Description/How is safety improved?

This project improves vehicle and pedestrian safety on SR 36 by addressing an overrepresentation of front to rear crashes and fatal and serious injury crashes. Improvements for pedestrians include changes to signalized intersections: changing permitted type left-turn signals to flashing yellow arrow (FYA) type signals (Bates Canyon Rd and Erda Way), installing pedestrian crossing signals, sidewalks, and crosswalks at The Bates Canyon Road intersection connecting schools on the west side of SR 36 to homes on the east side. This connection will require additional sidewalk on the local streets. Segment improvements include refreshing edgeline rumble strips and installing driver feedback speed limit signs.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Crosswalk Visibility Enhancements


Walkways


Longitudinal Rumble Strips and Stripes on Two-Lane Roads

Appropriate Speed Limits for All Road Users

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	2.11	MILE	$ 9,000	$ 18,990
Install Sidewalk or Walkways	NA	Pedestrian	0.20	MILE	$ 634,000	$ 126,800
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	2.00	XING	$ 36,000	$ 72,000
Add Sidewalk	0.2	Pedestrian	1.00	INT	$ 4,500	$ 4,500
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	2.00	INT	$ 8,000	$ 16,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 278,290
*Mobilization: (% +/-)**	*10%*	$ 27,830
Traffic Control: (% +/-)	*5%*	$ 13,915
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 83,487
Estimated Construction Cost:		$ 403,522

Local Match†: 20% $ 102,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 48,423
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 60,528
Estimated Project Total:		$ 513,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Evaluate signalization at warranted intersections
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Bates Canyon Road from Stratsford Drive to Droubay Road**	**Prepared By:**	**MA**
Jurisdiction(s):	**Erda**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium, Low**		

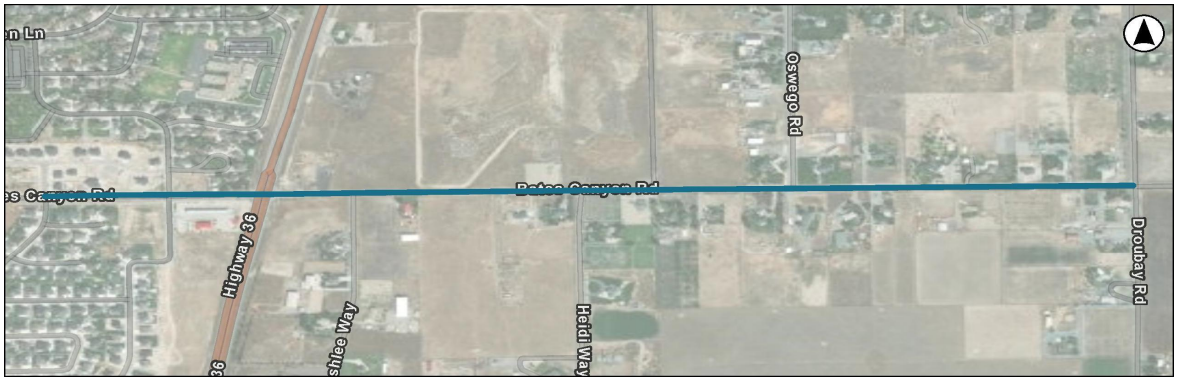
Location Description

Roadway: Bates Canyon Road
From: Stratsford Drive
To: Droubay Road
Length: 1.14 miles

Key Intersection Locations:

Project Location Map

Map ID: 11.58.2



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.14**
Average Daily Traffic (vehicles per day)	**1,740**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**4**
Total Crashes	**5**
Total EPDO Crashes	**15**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS

Project Description/How is safety improved?

This project recommends the following safety improvements on Bates Canyon Road from Stratsford Drive to Droubay Road to adjust to recently constructed and near-term planned developments: lower speed limit from 35 mph to 25 mph; sidewalks where not existing; high-visibility crosswalk on all four legs at the intersection of Highway 36 and Bates Canyon Road; narrowing of travel lanes along segment; street-level lighting; reflective object markers for utility poles and other fixed objects adjacent to the roadway.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Crosswalk Visibility Enhancements


Lighting


Walkways


Wider Edge Lines

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	1.14	MILE	$ 298,000	$ 339,720
Install Sidewalk or Walkways	NA	Pedestrian	2.28	MILE	$ 634,000	$ 1,445,520
Install High-Visibility Crosswalk at Midblock Locations	0.6 - 0.75	Pedestrian	4.00	XING	$ 36,000	$ 144,000
Traffic Calming - Lane Narrowing	0.68	All Crashes	1.14	MILE	$ 39,000	$ 44,460
Provide Highway Lighting	0.72	Nighttime	1.14	MILE	$ 300,000	$ 342,000
Install Post-Mounted Delineators	0.85	Run Off Road	1.14	MILE	$ 4,000	$ 4,560
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,320,260
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 116,013
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 696,078
Estimated Construction Cost:		$ 3,207,351

Local Match†: 20% $ 814,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 384,882
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 481,103
Estimated Project Total:		$ 4,074,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/13/2024**
Project Name:	**Erda Way from 400 West to Droubay Road**	**Prepared By:**	**MA**
Jurisdiction(s):	**Erda**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium, Low**		

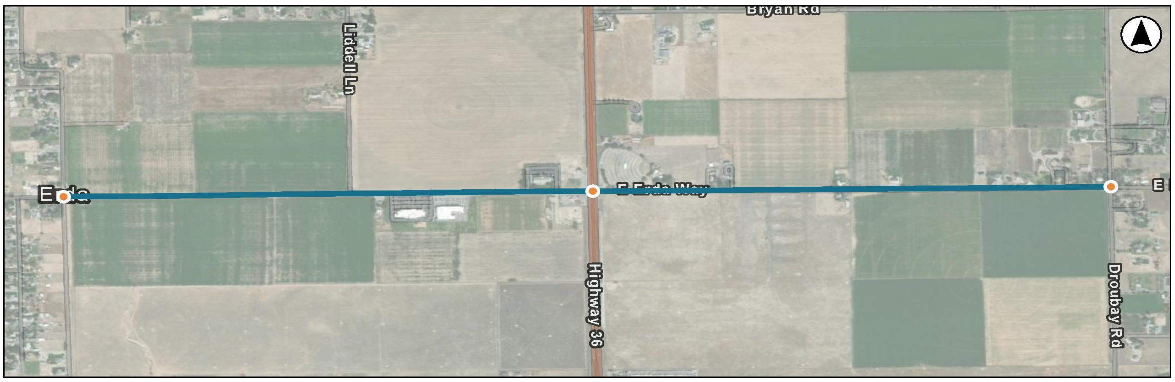
Location Description

Roadway:	Erda Way	
From:	400 West	
To:	Droubay Road	
Length:	2.01	miles

Key Intersection Locations:
Droubay Road
400 West
SR 36

Project Location Map

Map ID: 11.58.3



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.01**
Average Daily Traffic (vehicles per day)	**1,430**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**3**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**9**
Total Crashes	**13**
Total EPDO Crashes	**76**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Droubay Road & Erda Way		0	0	2	3	4	9	83			✓					
400 West & Erday Way		0	0	1	2	2	5	47			✓					
SR 36 & Erda Way	✓	0	3	10	43	20	76	1,013				✓				

Project Description/How is safety improved?

This project recommends the following safety improvements on Erda Way from 400 West to Droubay Road to address an overrepresentation of single vehicle collisions (road departures and fixed object collisions): 2-ft shoulder; edge and center line rumble strips; street-level lighting; lower speed limit from 45 mph to 35 mph. The following intersection improvements are also recommended: Droubay Road & Erda Way, intersection control evaluation for roundabout with an emphasis of farm equipment/freight mobility; 400 West/Erda Way, intersection control evaluation for roundabout with an emphasis of farm equipment/freight mobility; SR 36 & Erda Way, dynamic advanced warning signage on north and south approaches.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Lighting


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Wider Edge Lines

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes		MILE	$ 298,000	$ -
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury		MILE	$ 9,000	$ -
Provide Highway Lighting	0.72	Nighttime		MILE	$ 300,000	$ -
Install Centerline Rumble Strips	0.36 - 0.56	Head-on (FI)		MILE	$ 5,000	$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	2.00	INT	$ 225,000	$ 450,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	2.00	INT	$ 2,500,000	$ 5,000,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 5,469,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 273,450
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,640,700
Estimated Construction Cost:		$ 7,458,150

Local Match†: **20%** **$ 1,894,400**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 894,978
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 1,118,723
Estimated Project Total:		$ 9,472,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Sheep Lane & Erda Way**	**Prepared By:**	**MA**
Jurisdiction(s):	**Grantsville**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Low**		

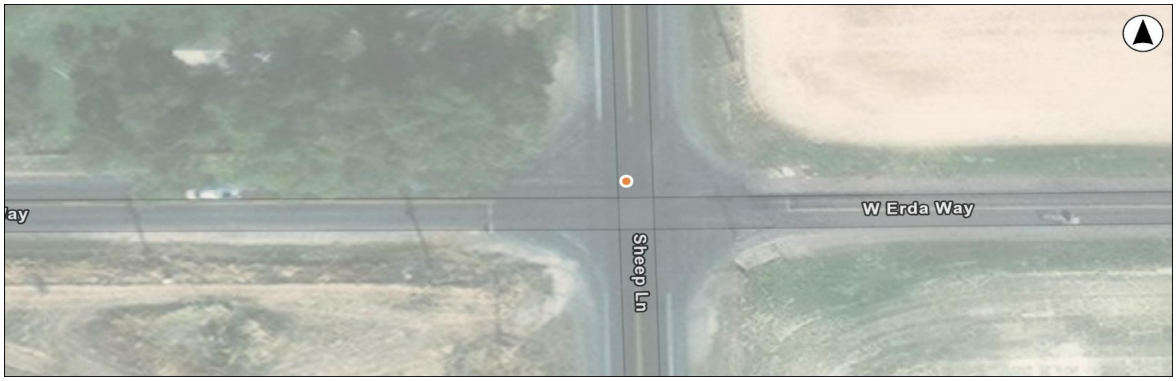
Location Description

Roadway:	NA
From:	NA
To:	NA
Length:	NA

Key Intersection Locations:
Sheep Lane

Project Location Map

Map ID: 11.59.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**NA**
Average Daily Traffic (vehicles per day)	**NA**
Functional Classification	**NA**
Roadway Ownership	**NA**
Urban/Rural Designation	**NA**
Number of Key Intersections	**NA**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	
Critical Crash Rate Differential	
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**NA**
Suspected Serious Injury Crashes (A)	**NA**
Suspected Minor Injury Crashes (B)	**NA**
Possible Injury Crashes (C)	**NA**
No Injury/PDO Crashes (O)	**NA**
Total Crashes	**NA**
Total EPDO Crashes	**NA**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Sheep Lane & Erda Way		0	0	5	3	10	18	155			✔					

Project Description/How is safety improved?

This project recommends the following improvements at the Sheep Ln/Erda Way intersection to address an overrepresentation of angle collisions: sight distance, advanced warning (for north and south approaches) and lighting improvements at the intersection, and an intersection control evaluation to assess the potential for a roundabout at this location.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Roundabouts

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1.00	INT	$ 2,500,000	$ 2,500,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1.00	INT	$ 225,000	$ 225,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
Install Intersection Lighting	0.62 - 0.67	Nighttime	1.00	INT	$ 31,000	$ 31,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 2,775,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 138,750
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 832,500
Estimated Construction Cost:		$ 3,821,250

Local Match†: 20% $ 970,600

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 458,550
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 573,188
Estimated Project Total:		$ 4,853,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

WASATCH FRONT REGIONAL COUNCIL
Comprehensive Safety Action Plan

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Sheep Lane from SR 138 to SR 112**	**Prepared By:**	**MA**
Jurisdiction(s):	**Grantsville**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Low**		

Location Description

Roadway: Sheep Lane
From: SR 138
To: SR 112
Length: 3.30 miles

Key Intersection Locations:
Sheep Lane
SR 112

Project Location Map

Map ID: 11.59.2

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**3.30**
Average Daily Traffic (vehicles per day)	**2,426**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**7**
Total Crashes	**10**
Total EPDO Crashes	**52**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Sheep Lane & Erda Way		0	0	5	3	10	18	155			✓					
SR 112 & Sheep Lane		0	1	3	4	10	18	216								

Project Description/How is safety improved?

This project recommends the following segment improvements along Sheep Lane between SR 112 and SR 138: center and edge line rumble strips; lower speed limit from 55 to 45 mph; lane narrowing. The following intersection improvements are also recommended: Sheep Ln/Erda Way, sight distance, advanced warning (for north and south approaches) and lighting improvements at the intersection, and an intersection control evaluation to assess the potential for a roundabout at this location; Sheep Ln/SR 112, intersection lighting, advance warning for east/west approaches, and intersection control evaluation for potential roundabout.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users

Longitudinal Rumble Strips and Stripes on Two-Lane Roads

Roundabouts

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Centerline Rumble Strips	0.36 - 0.56	Head-on (FI)	3.30	MILE	$ 5,000	$ 16,500
Install 6" Edge line (Both Sides of Road)	0.64 - 0.88	All Crashes	3.30	MILE	$ 7,000	$ 23,100
Traffic Calming - Lane Narrowing	0.68	All Crashes	3.30	MILE	$ 39,000	$ 128,700
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	2.00	INT	$ 31,000	$ 62,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2.00	INT	$ 19,000	$ 38,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	2.00	INT	$ 225,000	$ 450,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	2.00	INT	$ 2,500,000	$ 5,000,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 5,718,300
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 285,915
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,715,490
Estimated Construction Cost:		$ 7,794,705

Local Match†: 20% $ 1,980,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 935,365
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 1,169,206
Estimated Project Total:		$ 9,900,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Willow Street from Main Street to Durfee Street**	**Prepared By:**	**MA**
Jurisdiction(s):	**Grantsville**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway: Willow Street
From: Main Street
To: Durfee Street
Length: 0.52 miles

Key Intersection Locations:
Durfee Street

Project Location Map

Map ID: 11.59.3

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**0.52**
Average Daily Traffic (vehicles per day)	**802**
Functional Classification	**Local**
Roadway Ownership	**Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**2**
No Injury/PDO Crashes (O)	**5**
Total Crashes	**7**
Total EPDO Crashes	**28**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	✓
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Durfee Street & Willow Street		0	0	1	4	4	9	72			✓					

Project Description/How is safety improved?

This project includes the following segment improvements along Willow Street to address an overrepresentation of parked vehicle and sideswipe crashes: 2-ft paved shoulders, updated striping, roadway lighting, speed feedback signs. The following intersection improvements are also recommended at Durfee St/Willow St to address angle crashes: Intersection control evaluation for roundabout, high visibility crossings.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Crosswalk Visibility Enhancements


Lighting


Roundabouts

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.52	MILE	$ 298,000	$ 154,960
Provide Highway Lighting	0.72	Nighttime	0.52	MILE	$ 300,000	$ 156,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1.00	INT	$ 2,500,000	$ 2,500,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1.00	INT	$ 225,000	$ 225,000
Install High Visibiity Crosswalk Markings	0.6	Pedestrian	4.00	XING	$ 2,500	$ 10,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 3,085,960
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 154,298
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 925,788
Estimated Construction Cost:		$ 4,241,046

Local Match†: 20% $ 1,077,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 508,926
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 636,157
Estimated Project Total:		$ 5,387,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**SR 36 from I-80 to Bates Canyon Road**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Lake Point**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium, Low**		

Location Description

Roadway: SR 36
From: I-80
To: Bates Canyon Road
Length: 5.51 miles

Key Intersection Locations:
Bates Canyon Road
SR 138

Project Location Map

Map ID: 11.60.1.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**5.51**
Average Daily Traffic (vehicles per day)	**28,633**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**2**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**10**
Suspected Minor Injury Crashes (B)	**40**
Possible Injury Crashes (C)	**54**
No Injury/PDO Crashes (O)	**243**
Total Crashes	**347**
Total EPDO Crashes	**2,685**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	✓
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Bates Canyon Road & SR 36	✓	1	2	10	42	23	78	1,799	✓					✓		
SR 138 & SR 36	✓	0	3	15	44	16	78	1,131				✓				

Project Description/How is safety improved?

This project improves vehicle and pedestrian safety on SR 36 by addressing an overrepresentation of front to rear and head on/sideswipe crashes. Improvements for pedestrians include changes to signalized intersections: changing permitted type left-turn signals to flashing yellow arrow (FYA) type signals (Bates Canyon Rd and Village Blvd), installing pedestrian crossing signals, sidewalks, and crosswalks at the Bates Canyon Road and Pole Canyon Road intersections, connecting schools on the west side of SR 36 to homes on the east side. Segment improvements include refreshing edgeline rumble strips, installing driver feedback speed limit signs, and extending the existing raised concrete barrier from Sunset Rd to the gore.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
Install Concrete Median Barriers on Divided Highways	0.03	Cross Median	0.90	MILE	$ 1,913,000	$ 1,721,700
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	5.51	MILE	$ 9,000	$ 49,590
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	2.00	INT	$ 8,000	$ 16,000
Install Pedestrian Signal Heads	0.75	Pedestrian	2.00	INT	$ 7,000	$ 14,000
Install High Visibility Crosswalk Markings	0.6	Pedestrian	8.00	XING	$ 2,500	$ 20,000
Upgrade pedestrian push buttons to Audible Pedestrian Signals (APS)	NA	Pedestrian	5.00	INT	$ 4,000	$ 20,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,881,290
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 94,065
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 564,387
Estimated Construction Cost:		$ 2,614,742

Local Match†: 20% $ 664,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 313,769
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 392,211
Estimated Project Total:		$ 3,321,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Evaluate signalization at warranted intersections
Additional Improvements #2: Set Appropriate Speed Limits for All Road Users
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**SR 199 from Stookey Lane to SR 36**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Rush Valley**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway: SR 199
From: Stookey Lane
To: SR 36
Length: 4.00 miles

Key Intersection Locations:
Main Street

Project Location Map

Map ID: 11.61.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**4.00**
Average Daily Traffic (vehicles per day)	**1,224**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**1**
No Injury/PDO Crashes (O)	**22**
Total Crashes	**25**
Total EPDO Crashes	**78**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	✓
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Main Street & SR 199		0	0	0	3	1	4	35						✓		

Project Description/How is safety improved?

This project is focused on improving rural, high-speed, two-lane roadway safety along the corridor to address the historic crashes and risks of the roadway. Improvements include centerline and edgeline rumble strips, installation of a safety edge, and wider shoulders where there are existing shoulders (from Main Street to SR 36), installing shoulders where missing (Stookey Lane to Main Street), and installing curve signage for curves on the corridor.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Roadside Design Improvements at Curves


SafetyEdge™

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Shoulder Widening on Rural Roads	0.771	All Crashes	1.90	MILE	$ 32,000	$ 60,800
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	4.00	MILE	$ 121,000	$ 484,000
Install and/or Upgrade Curve Signage to Enhanced Delineations	0.4 - 0.852	All Crashes	4.00	CURVE	$ 2,000	$ 8,000
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injur	4.00	MILE	$ 5,000	$ 20,000
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	4.00	MILE	$ 9,000	$ 36,000
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	2.10	MILE	$ 298,000	$ 625,564
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,234,364
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 61,718
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 370,309
Estimated Construction Cost:		$ 1,741,392

Local Match†: 20% $ 442,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 208,967
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 261,209
Estimated Project Total:		$ 2,212,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Main Street/Mormon Trail Road from Meadow Lane to SR 199**	**Prepared By:**	**MA**
Jurisdiction(s):	**Rush Valley**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway: Main Street/Mormon Trail Road
From: Meadow Lane
To: SR 199
Length: 2.22 miles

Key Intersection Locations:
SR 199

Project Location Map

Map ID: 11.61.2

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**2.22**
Average Daily Traffic (vehicles per day)	**371**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**1**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**0**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**3**
Total Crashes	**3**
Total EPDO Crashes	**3**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
SR 199 & Main Street		0	0	0	3	1	4	35						✓		

Project Description/How is safety improved?

This project includes the following segment improvements along Main Street between Meadow Lane and SR 199: edge line rumble strips, clear striping, roadway lighting, speed feedback signs. The following intersection improvements are also recommended at Main St/SR 199 to address an overrepresentation of angle crashes: intersection control evaluation to address intersection offset, including potential roundabout; advance warning for east/west approaches.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Lighting


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Roundabouts

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install 6" Edge line (Both Sides of Road)	0.64 - 0.88	All Crashes	2.22	MILE	$ 7,000	$ 15,540
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	2.22	MILE	$ 298,000	$ 661,560
Provide Highway Lighting	0.72	Nighttime	2.22	MILE	$ 300,000	$ 666,000
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	1.00	INT	$ 2,500,000	$ 2,500,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1.00	INT	$ 225,000	$ 225,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 4,127,100
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 206,355
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 1,238,130
Estimated Construction Cost:		$ 5,646,585

Local Match†: 20% $ 1,434,400

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 677,590
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 846,988
Estimated Project Total:		$ 7,172,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Targeted Enforcement and Deterrence
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/13/2024**
Project Name:	**SR 36 from Ben Harrison Road to Honerine Avenue**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Stockton**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway: SR 36
From: Ben Harrison Road
To: Honerine Avenue
Length: 1.79 miles

Key Intersection Locations:

Project Location Map

Map ID: 11.62.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.79**
Average Daily Traffic (vehicles per day)	**6,840**
Functional Classification	**Other Principal Arterial**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**2**
Possible Injury Crashes (C)	**0**
No Injury/PDO Crashes (O)	**14**
Total Crashes	**16**
Total EPDO Crashes	**59**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS

Project Description/How is safety improved?

This project is focused on improving rural, high-speed, two-lane roadway safety along the corridor to address the composite safety score and historic crashes. Improvements include centerline and edgeline rumble strips for the length of the corridor (outside the 3-lane section in Stockton). Traffic calming countermeasures are proposed through town to reduce vehicle speeds including lane narrowing, wider lane lines, and driver feedback speed limit signs. A buffered bicycle lane through town is also proposed. It is recommended that shoulder widening occur south of Silver Avenue. An ICE study has been requested at the intersectionof Silver Avenue and SR 36.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Bicycle Lanes


Wider Edge Lines


SafetyEdge™

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	1.42	MILE	$ 9,000	$ 12,782
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injur	1.42	MILE	$ 5,000	$ 7,101
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	0.30	MILE	$ 298,000	$ 89,400
Traffic Calming - Lane Narrowing	0.68	All Crashes	0.45	MILE	$ 39,000	$ 17,550
Traffic Calming - Wider Lane Lines	0.68	All Crashes	0.45	MILE	$ 21,000	$ 9,450
Install Buffered Bicycle Lane	NA	Bicycle	0.45	MILE	$ 26,000	$ 11,700
Install Driver Feedback Speed Limit Signs	NA	All Crashes	2.00	EACH	$ 10,000	$ 20,000
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	1.42	MILE	$ 121,000	$ 171,820
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	1.00	INT	$ 225,000	$ 225,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 564,803
*Mobilization: (% +/-)**	*10%*	$ 56,490
Traffic Control: (% +/-)	*5%*	$ 28,240
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 169,441
Estimated Construction Cost:		$ 818,973

Local Match†: 20% $ 208,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 98,277
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 122,846
Estimated Project Total:		$ 1,041,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**SR 36 from Cimmarron Way to Mountain Road**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Tooele, Erda**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium, Low**		

Location Description

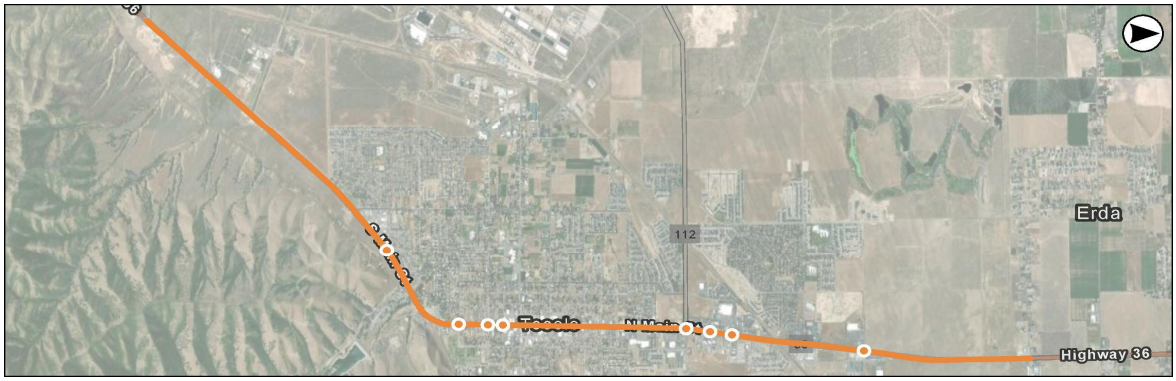
Roadway:	SR 36
From:	Cimmarron Way
To:	Mountain Road
Length:	8.34 miles

Key Intersection Locations:

900 South	1180 North	2400 North
200 South	1000 North	400 South
100 South	1280 North	

Project Location Map

Map ID: 11.63.1.1



Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**8.34**
Average Daily Traffic (vehicles per day)	**19,175**
Functional Classification	**Other Principal Arteria**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**8**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	✓
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**4**
Suspected Minor Injury Crashes (B)	**29**
Possible Injury Crashes (C)	**68**
No Injury/PDO Crashes (O)	**282**
Total Crashes	**384**
Total EPDO Crashes	**2,964**

What Crash Types are Over-Represented?			
Fatal	✓	Head On (HO)	✓
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	✓
Motorcycle		Rear to Side (RS)	
Angle	✓	Sideswipe (SS)	✓
Front to Rear (FR)	✓	Other/Unknown	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
900 South & SR 36		0	1	4	8	10	23	284			✓					
200 South & SR 36		0	0	1	8	1	10	114				✓				✓
100 South & SR 36		0	0	5	7	6	18	197		✓						
1180 North & SR 36		0	0	5	11	7	23	243		✓						
1000 North & SR 36	✓	0	3	31	81	62	177	1,954			✓					
1280 North & SR 36	✓	0	1	21	40	36	98	1,052			✓		✓	✓		
2400 North & SR 36	✓	0	0	13	31	16	60	658				✓				
400 South & SR 36		0	1	1	3	4	9	154	✓		✓		✓			

Project Description/How is safety improved?

This project improves vehicle and pedestrian safety on SR 36 by addressing an overrepresentation of pedestrian and bicycle crashes and angle related crashes. Improvements for pedestrians include changes to signalized intersections: changing doghouse type signals to flashing yellow arrow (FYA) type signals (Vine St, Utah Ave), changing permitted only signal types to FYA (2400 N, 600 N, 400 N), upgrading existing pedestrian crossing to high-visibility with RRFBs and pedestrian refuge island (Midblock N of Vine, 100 South), installing a midblock crossing (between 400 N and Utah Ave), installing pedestrian crossing signals sidewalks, and crosswalks at 2400 North in anticipation of the new high school completion. Segment improvements include refreshing edgeline and centerline rumble strips.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Medians and Pedestrian Refuge Islands in Urban & Suburban Areas


Rectangular Rapid Flashing Beacons (RRFB)


Crosswalk Visibility Enhancements


Longitudinal Rumble Strips and Stripes on Two-Lane Roads

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Driver Feedback Speed Limit Signs	NA	All Crashes	4.00	EACH	$ 10,000	$ 40,000
Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	0.6 - 0.75	Pedestrian	2.00	XING	$ 37,000	$ 74,000
Install High-Visibility Crosswalk at Midblock Locations	0.6 - 0.75	Pedestrian	1.00	XING	$ 36,000	$ 36,000
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	4.85	MILE	$ 9,000	$ 43,650
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injur	1.70	MILE	$ 5,000	$ 8,500
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Change a 5-section "Doghouse" to Flashing Yellow Arrow	0.75 - 0.93	Left-Turn	2.00	INT	$ 8,000	$ 16,000
Change a permissive only to Flashing Yellow Arrow	0.5 - 0.6	Left-Turn	3.00	INT	$ 8,000	$ 24,000
Upgrade pedestrian push buttons to Audible Pedestrian Signals (APS)	NA	Pedestrian	8.00	INT	$ 4,000	$ 32,000
Install Pedestrian Refuge Island	0.54	Pedestrian	3.00	EACH	$ 30,000	$ 90,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	3.00	XING (2)	$ 15,000	$ 45,000
Install Pedestrian Signal Heads	0.75	Pedestrian	1.00	INT	$ 7,000	$ 7,000
Add Sidewalk	0.2	Pedestrian	1.00	INT	$ 4,500	$ 4,500
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	4.00	XING	$ 36,000	$ 144,000
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 564,650
*Mobilization: (% +/-)**	*10%*	$ 56,470
Traffic Control: (% +/-)	*5%*	$ 28,233
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 169,395
Estimated Construction Cost:		$ 818,748

Local Match†: **20%** **$ 208,000**

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 98,250
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 122,812
Estimated Project Total:		$ 1,040,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Re-Evaluate Speed Based on Roadway Context, Built Environment, and Existing Road Users
Additional Improvements #3: Evaluate signalization at warranted intersections
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**Vine Street, 200 South, & 100 South from Coleman Street to 200 West**	**Prepared By:**	**MA**
Jurisdiction(s):	**Tooele**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway:	Vine Street, 200 South, & 100 South	**Key Intersection Locations:**	
From:	Coleman Street	Coleman Street	100 West
To:	200 West	200 West	
Length:	1.95 miles	Coleman Street	

Project Location Map

Map ID: 11.63.2

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**1.95**
Average Daily Traffic (vehicles per day)	**2,491**
Functional Classification	**Major Collector**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**4**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**0**
Suspected Minor Injury Crashes (B)	**1**
Possible Injury Crashes (C)	**8**
No Injury/PDO Crashes (O)	**30**
Total Crashes	**39**
Total EPDO Crashes	**143**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury		Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
Coleman Street & 200 South		0	0	1	5	3	9	82								✓
200 West & Vine Street		0	0	4	7	4	15	173		✓			✓		✓	✓
Coleman Street & Vine Street		0	0	0	12	9	21	145			✓		✓			
100 West & 100 South		0	0	0	3	3	6	37								

Project Description/How is safety improved?

This project includes the following segment improvements at multiple segments near Tooele High School to address an overrepresentation of rear-end and parked vehicle crashes: Buffalo Blvd/2nd S St, clear striping, high visibility striping at all crossings; Vine St, narrow travel lanes, high visibility raised crossing, RRFB and bulbout at marked crossing and 270 W, speed limit to 25 mph; S Coleman St, narrow travel lanes; 200 S, narrow travel lanes, RRFB, raised crossing, high visibility and bulbouts at both Jr High Access and high school access; 200 W, narrow travel lanes, raised crossing, high visibility and bulbouts at 100 S/200 W, tech building to RRFB with raised crossing, bulbouts and high visibility. For all identified intersections, provide high visibility, raised crossings with bulbouts, and intersection control evaluations for roundabouts.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Appropriate Speed Limits for All Road Users


Crosswalk Visibility Enhancements


Rectangular Rapid Flashing Beacons (RRFB)


Roundabouts


Wider Edge Lines

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Upgrade Crosswalk to High-Visibility Crosswalk at Midblock	0.6 - 0.75	Pedestrian	9.00	XING	$ 37,000	$ 333,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	2.00	MILE	$ 21,000	$ 42,000
Traffic Calming - Bulbouts	0.68	All Crashes	18.00	EACH	$ 36,000	$ 648,000
Install Raised Crosswalk	NA	Pedestrian	6.00	EACH	$ 71,000	$ 426,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	5.00	XING (2)	$ 15,000	$ 75,000
Traffic Calming - Lane Narrowing	0.68	All Crashes	2.00	MILE	$ 39,000	$ 78,000
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Raised Intersection/Raised Crossing	0.64	All Crashes	12.00	EACH	$ 30,000	$ 360,000
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	4.00	INT	$ 225,000	$ 900,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
Install High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	12.00	XING	$ 36,000	$ 432,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	4.00	INT	$ 2,500,000	$ 10,000,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 13,313,000
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 665,650
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 3,993,900
Estimated Construction Cost:		$ 18,047,550

Local Match†: 20% $ 4,584,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 2,165,706
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 2,707,133
Estimated Project Total:		$ 22,921,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Safe Routes to School
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

Disclaimer: The cost estimates provided in this document are for comparison purposes only. Actual project costs will vary. The recommended safety improvement strategies were based on available data and reasonable engineering judgment and a more detailed assessment may suggest additional safety strategies that could be considered.

Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**600 North, 400 North, Utah Avenue, Vine Street, & 100 South from West to East**	**Prepared By:**	**MA**
Jurisdiction(s):	**Tooele**	**Checked By:**	**EMF**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway:	600 North, 400 North, Utah Avenue, Vine Street, & 100 South	**Key Intersection Locations:**			
From:	Varies	200 West	100 East	Seventh Street	
To:	Varies	1100 West	Coleman Street	1100 West	
Length:	10.25 miles	Coleman Street	200 West	50 West	

Project Location Map

Map ID: 11.63.3

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**10.25**
Average Daily Traffic (vehicles per day)	**3,635**
Functional Classification	**Minor Arterial**
Roadway Ownership	**Federal Aid - Local**
Urban/Rural Designation	**Urban**
Number of Key Intersections	**17**

Why Was This Location Identified?	
Composite Safety Score	
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	✓

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**1**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**8**
Possible Injury Crashes (C)	**17**
No Injury/PDO Crashes (O)	**88**
Total Crashes	**115**
Total EPDO Crashes	**1,441**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	✓
Serious Injury	✓	Parked Vehicle (PV)	✓
Pedestrian (Ped)		Single Vehicle	✓
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)	✓	Other/Unknown	✓

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
200 West & Vine Street		0	0	4	7	4	15	173		✓			✓		✓	✓
1100 West & Vine Street		0	0	1	2	2	5	47			✓					
Coleman Street & Vine Street		0	0	0	12	9	21	145			✓		✓			
100 East & Utah Avenue		0	0	1	2	1	4	46								✓
Coleman Street & Utah Avenue		0	0	4	6	8	18	165			✓					
200 West & Utah Avenue		0	0	3	19	16	38	299		✓	✓					
Seventh Street & Utah Avenue		0	0	0	4	1	5	46								✓
1100 West & Utah Avenue		0	1	0	8	1	10	186	✓			✓				✓
50 West & 400 North		0	0	0	3	2	5	36			✓					
Broadway Avenue & 400 North		0	0	0	9	6	15	108			✓					
100 East & 400 North		0	0	5	17	23	45	328			✓					
200 West & 400 North		0	1	0	3	3	7	131	✓		✓					
200 West & 600 North		0	0	1	4	5	10	73			✓					✓
Seventh Street & 100 North		1	0	3	0	2	6	957	✓							
Main Street & 100 South		0	0	5	7	6	18	197		✓						
100 West & 100 South		0	0	0	3	3	0	37								

Project Description/How is safety improved?

This project represents proposes a wide range of countermeasures to address multimodal safety in the City of Tooele, addressing overrepresentation of serious injury, angle, rear-end, head-on, parked vehicle, and ped-bike collisions at intersections and along segments. These recommendations include: edge line rumble strips and 2-ft shoulders on more rural roadways within the City, and updated lane striping, narrowing of travel lanes, lighting, speed feedback signs and sidewalks where not existing on all roadways throughout City. Intersection/crossing improvements citywide include intersection control evaluations for roundabouts where feasible, enhanced crossings at key intersections near schools/parks, and miscellaneous systemic safety treatments to encourage multimodal safety at individual intersections. Detailed list provided elsewhere.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Traffic Calming - Medians (Back-To-Back Curb)	0.68	All Crashes	6.00	MILE	$ 264,000	$ 1,584,000
Traffic Calming - Bulbouts	0.68	All Crashes	20.00	EACH	$ 36,000	$ 720,000
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	1.10	MILE	$ 9,000	$ 9,900
Provide 2-Ft Paved Shoulder on Rural 2-Lane Roadways	0.66 - 0.89	All Crashes	1.10	MILE	$ 298,000	$ 327,800
Provide Highway Lighting	0.72	Nighttime	4.70	MILE	$ 300,000	$ 1,410,000
Traffic Calming - Wider Lane Lines	0.68	All Crashes	3.40	MILE	$ 21,000	$ 71,400
Install Sidewalk or Walkways	NA	Pedestrian	2.00	MILE	$ 634,000	$ 1,268,000
Traffic Calming - Lane Narrowing	0.68	All Crashes	8.10	MILE	$ 39,000	$ 315,900
Install Driver Feedback Speed Limit Signs	NA	All Crashes	10.00	EACH	$ 10,000	$ 100,000
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Perform an Intersection Control Evaluation and Implement	NA	All Crashes	15.00	INT	$ 225,000	$ 3,375,000
Convert Existing Intersection to Modern Roundabout	0.18 - 0.59	All Crashes	15.00	INT	$ 2,500,000	$ 37,500,000
Install Pedestrian Hybrid Beacons (PHB) or HAWK	0.453	Pedestrian	1.00	EACH	$ 200,000	$ 200,000
Install a Rectangular Rapid Flashing Beacons (RRFB)	0.526	Pedestrian	10.00	XING (2)	$ 15,000	$ 150,000
Raised Intersection/Raised Crossing	0.64	All Crashes	10.00	EACH	$ 30,000	$ 300,000
Install High Visibiity Crosswalk Markings	0.6	Pedestrian	29.00	XING	$ 2,500	$ 72,500
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	2.00	INT	$ 19,000	$ 38,000
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 47,442,500
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 2,372,125
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 14,232,750
Estimated Construction Cost:		$ 64,122,375

Local Match†: 20% $ 16,287,200

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 7,694,685
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 9,618,356
Estimated Project Total:		$ 81,436,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Set Appropriate Speed Limits for All Road Users
Additional Improvements #2: Safe Routes to School
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**SR 36 from Mule Skinner Road to Country Road 20337**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Vernon**	**Checked By:**	**BCC**
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**Medium**		

Location Description

Roadway: SR 36
From: Mule Skinner Road
To: Country Road 20337
Length: 8.99 miles

Key Intersection Locations:

Project Location Map

Map ID: 11.64.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**8.99**
Average Daily Traffic (vehicles per day)	**832**
Functional Classification	**Major Collector**
Roadway Ownership	**State**
Urban/Rural Designation	**Rural**
Number of Key Intersections	**0**

Why Was This Location Identified?	
Composite Safety Score	✓
Historic Crashes	✓
Critical Crash Rate Differential	✓
Crash Profile Risk Score	
usRAP - Star Rating (Veh, Ped, Bike)	✓
Local Street Assessment	

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**0**
Suspected Serious Injury Crashes (A)	**1**
Suspected Minor Injury Crashes (B)	**5**
Possible Injury Crashes (C)	**6**
No Injury/PDO Crashes (O)	**23**
Total Crashes	**35**
Total EPDO Crashes	**296**

What Crash Types are Over-Represented?			
Fatal		Head On (HO)	
Serious Injury	✓	Parked Vehicle (PV)	
Pedestrian (Ped)		Single Vehicle	
Bicycle (Bike)		Rear to Rear (RR)	
Motorcycle		Rear to Side (RS)	
Angle		Sideswipe (SS)	
Front to Rear (FR)		Other/Unknown	

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS

Project Description/How is safety improved?

This project is focused on improving rural, high-speed, two-lane roadway safety along the corridor to address the composite safety score and historic crashes. Improvements include centerline and edgeline rumble strips, installation of a safety edge and wider shoulders, and upgraded signage for the major curve on the corridor.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures


Longitudinal Rumble Strips and Stripes on Two-Lane Roads


Roadside Design Improvements at Curves


SafetyEdge™

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Shoulder Widening on Rural Roads	0.771	All Crashes	8.99	MILE	$ 32,000	$ 287,770
Install Safety Edge with Repaving Projects	0.79 - 0.892	All Crashes	8.99	MILE	$ 121,000	$ 1,088,131
Install Retroreflective Strips on Curve Signage	NA	All Crashes	2.00	CURVE	$ 1,000	$ 2,000
Install Centerline Rumble Strips	0.36 - 0.56	Head-on Fatal & Injur	8.99	MILE	$ 5,000	$ 44,964
Install Edge line Rumble Strips	0.49 - 0.87	Fatal & Injury	8.99	MILE	$ 9,000	$ 80,935
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 1,503,801
*Mobilization: (% +/-)**	*10%*	$ 75,000
Traffic Control: (% +/-)	*5%*	$ 75,190
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 451,140
Estimated Construction Cost:		$ 2,105,132

Local Match†: 20% $ 534,800

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 252,616
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 315,770
Estimated Project Total:		$ 2,674,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: _____
Additional Improvements #2: _____
Additional Improvements #3: _____
Additional Improvements #4: _____
Additional Improvements #5: _____

Disclaimer:

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Project Information Sheet

GFA(s):	**Tooele County**	**Date Prepared:**	**3/1/2024**
Project Name:	**1st Street & Wendover Boulevard Intersection Improvements**	**Prepared By:**	**EJS**
Jurisdiction(s):	**Wendover**	**Checked By:**	
Emphasis Areas:	**Roadway Departures, Impaired Driving, Intersections**		
Equity Priority:	**High**		

Location Description

Roadway:	NA	**Key Intersection Locations:**	
From:	NA	1st Street & Wendover Boulevard	
To:	NA		
Length:	NA		

Project Location Map

Map ID: 11.65.1

Segment Information and Safety Analysis Areas Summary

Roadway Characteristics	Value
Length (miles)	**NA**
Average Daily Traffic (vehicles per day)	**NA**
Functional Classification	**NA**
Roadway Ownership	**NA**
Urban/Rural Designation	**NA**
Number of Key Intersections	**NA**

Why Was This Location Identified?	
Composite Safety Score	**NA**
Historic Crashes	**NA**
Critical Crash Rate Differential	**NA**
Crash Profile Risk Score	**NA**
usRAP - Star Rating (Veh, Ped, Bike)	**NA**
Local Street Assessment	**NA**

Segment Crash History

Crash History (2018 - 2022)	# of crashes
Fatal Crashes (K)	**NA**
Suspected Serious Injury Crashes (A)	**NA**
Suspected Minor Injury Crashes (B)	**NA**
Possible Injury Crashes (C)	**NA**
No Injury/PDO Crashes (O)	**NA**
Total Crashes	**NA**
Total EPDO Crashes	**NA**

What Crash Types are Over-Represented?			
Fatal	**NA**	Head On (HO)	**NA**
Serious Injury	**NA**	Parked Vehicle (PV)	**NA**
Pedestrian (Ped)	**NA**	Single Vehicle	**NA**
Bicycle (Bike)	**NA**	Rear to Rear (RR)	**NA**
Motorcycle	**NA**	Rear to Side (RS)	**NA**
Angle	**NA**	Sideswipe (SS)	**NA**
Front to Rear (FR)	**NA**	Other/Unknown	**NA**

Intersection Crash History

									What Crash Types are Over-Represented?							
Intersections	**Signal**	**K**	**A**	**B**	**C**	**O**	**Total**	**EPDO**	K/A	Ped/Bike	Angle	FR	HO	PV	RR/RS	SS
1st Street & Wendover Boulevard		0	0	1	3	3	7	59			✓					✓

Project Description/How is safety improved?

This project installs unsignalized intersection improvements at the 1st Street and Wendover Boulevard intersection including lighting, high-visibility crosswalks, and pedestriand and bicycle countermeasures. The intersection should also be evaluated to be signalized.

This project description represents potential safety improvement strategies that could be implemented at this location, as well as other locations with similar conditions. Additional improvement strategies could be considered subject to engineering analysis.

Proposed Proven Safety Countermeasures

Crosswalk Visibility Enhancements

Lighting

Opinion of Probable Construction Cost

Segment Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Intersection Improvements

Item Description	CMF	Applicable Crashes	Quantity	Unit	Unit Price	Item Cost
Install Intersection Lighting	0.62 - 0.67	Nighttime	1.00	INT	$ 31,000	$ 31,000
Systemic Low-Cost Countermeasures at Stop-Control Intersection	0.73 - 0.9	All Crashes	1.00	INT	$ 19,000	$ 19,000
Upgrade Existing Crosswalk to High-Visibility Crosswalk	0.6 - 0.75	Pedestrian	4.00	XING	$ 37,000	$ 148,000
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -
						$ -

Improvements Subtotal:		$ 198,000
*Mobilization: (% +/-)**	*10%*	$ 19,800
Traffic Control: (% +/-)	*5%*	$ 9,900
Items Not Estimated / Contingency: (% +/-)	*30%*	$ 59,400
Estimated Construction Cost:		$ 287,100

Local Match†: 20% $ 73,000

† *Toward SS4A Implementation Grants*

Preconstruction Engineering/Design	*12%*	$ 34,452
*Utilities***		$ -
*ROW***		$ -
Construction Engineering/Management	*15%*	$ 43,065
Estimated Project Total:		$ 365,000

*Mobilization is 10% +/- of the subtotal with a minimum of $2,500 and a maximum of $75,000
**To be evaluated during feasibility study/design

Additional Potential Improvements

Additional safety improvements could be considered that were not included due to availability of data, need for site-specific information, and/or agency/jurisdiction input. Potential additional countermeasures are listed below. Refer to the ***Countermeasure Toolbox*** for a complete list of safety countermeasures.

Additional Improvements #1: Evaluate signalization at warranted intersections
Additional Improvements #2:
Additional Improvements #3:
Additional Improvements #4:
Additional Improvements #5:

Disclaimer:

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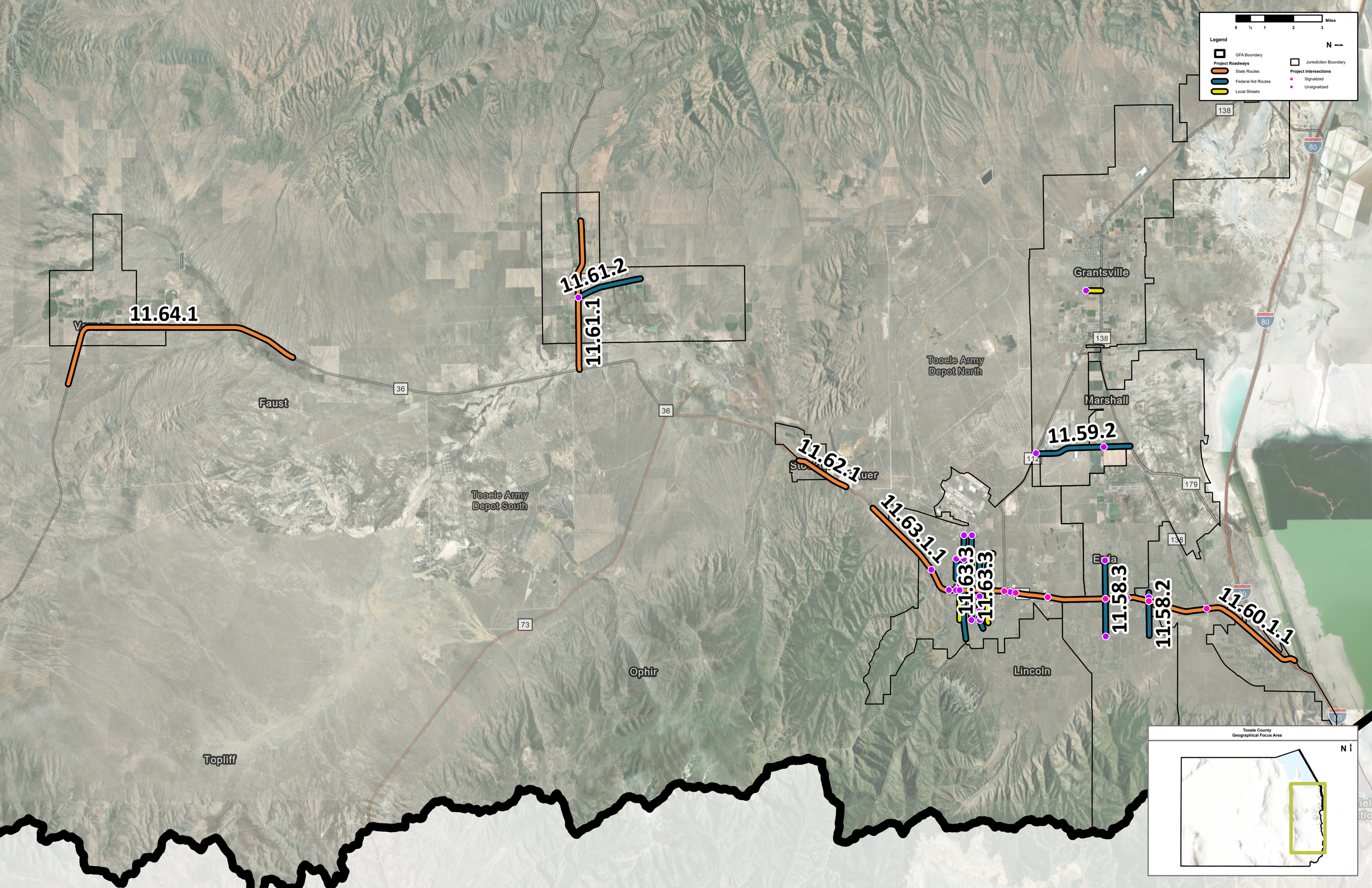
TOOELE COUNTY CASE STUDY CASE STUDY PROJECT LOCATION MAP


Miles
0 ⅛ 1 2 3
Legend
N
GFA Boundary
Project Roadways
State Routes
Federal Aid Routes
Local Streets
Jurisdiction Boundary
Project Intersections
Signalized
Unsignalized
11.64.1
11.61.2
11.61.1
11.62.1
11.63.1.1
11.63.3
11.63.3
11.59.2
11.58.3
11.58.2
11.60.1.1
Faust
Tooele Army Depot North
Tooele Army Depot South
Ophir
Topliff
Grantsville
Marshall
Lincoln
36
73
138
112
179
80
Tooele County
Geographical Focus Area
N

TOOELE COUNTY EQUITY INDEX MAP

Tooele County

Equity Need Areas

- High
- Medium
- Low

Great Salt Lake

Antelope Island State Park

Bonneville Salt Flats

West Wendover

Timpie

Dolomite

Flux

Great Salt Lake

Grantsville

Tooele

Dugway

Fish Springs National Wildlife Refuge