

INTRODUCTION

Although pedestrian and bicyclist safety was not identified as one of the focus areas for the Action Plan, due to the comparative lack of crashes and injuries involving pedestrians and bicyclists, it remains a top priority by the community and the county commission. Building upon the facility recommendations already identified in the *Greater Triangle Area Transportation Plan* (GTATP), this effort focuses on prioritizing those improvements to guide the County through implementation by identifying the most cost-effective projects that will deliver the greatest benefits to pedestrians and bicyclists.

The prioritization process is guided by objective criteria such as crash history, traffic stress levels, anticipated demand, network connectivity, and implementation cost. This framework is intended to provide the County with a clear starting point for decision-making while remaining flexible for future adjustments. A detailed summary and process manual accompany this section to allow the County to:

- Adjust scoring methodologies to align with evolving priorities.
- Add new projects to the priority list.
- Update scoring with new data as it becomes available.

Future public engagement efforts, such as surveys or community meetings, could be helpful to ensure that the prioritization results remain aligned with community needs and values.

Scoring Overview

Projects are evaluated and ranked on a **100-point scale** based on the following weighted criteria:

Criteria	Weight
Crash history	25 points
Level of traffic stress	20 points
Anticipated non-motorized demand/utilization	20 points
Connectivity within broader transportation network	25 points
Implementation cost	10 points

Note: These weights are intended as a starting point and can be modified in future iterations to better reflect County priorities, community values, and evolving transportation needs.

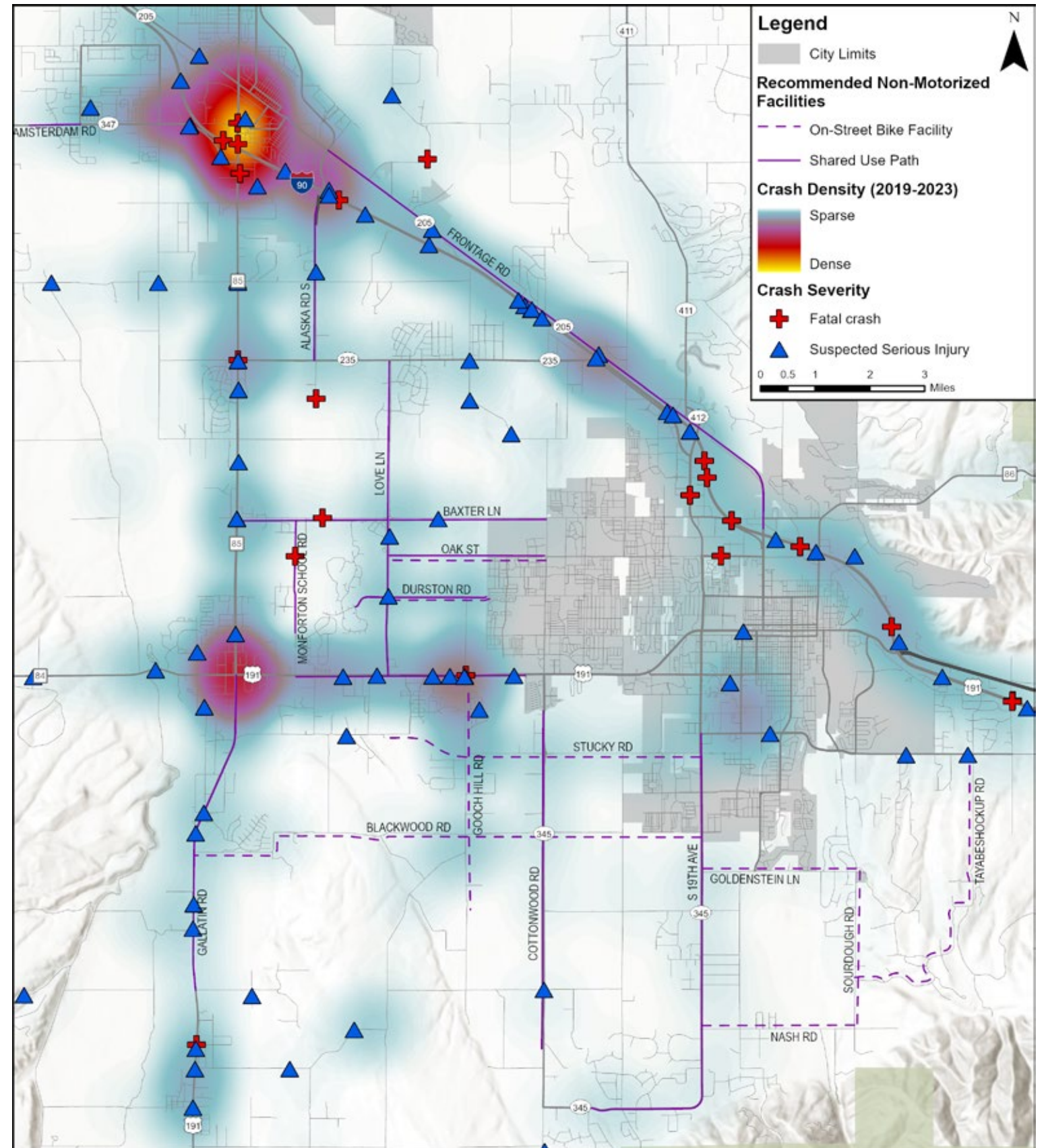
Crash History Score (25 Points)

Crash history is broken into four scoring components with the following weights:

- Crash Rate per 1 Million Vehicle Miles Traveled (MVMT) – 10 points
- Injury Rate per 1 MVMT – 10 points
- Bike/Pedestrian Crash Frequency – 2.5 points
- Bike/Pedestrian Injury Frequency – 2.5 points

Data Sources

Crash records from 2019–2023 were used in the analysis. Traffic volumes were obtained from 2024 Average Annual Daily Traffic (AADT) data provided by the Montana Department of Transportation (MDT). Where AADT data was not available, 24-hour traffic counts collected for the 2023 GTATP or the 2025 supplemental planning effort were used. The source for each traffic volume is documented in **COLUMN L** of the dataset.



Crash History Score (25 Points)

Interim Formulas

$$\text{Crash Rate (COLUMN M)} = \frac{[\text{Crashes (Col G)}] \times 1,000,000}{5 \times 365 \times [\text{Traffic Volume (Col K)}] + \frac{\text{Length (ft)}}{5280}}$$

$$\text{Injury Rate (COLUMN N)} = \frac{[\text{Injuries (Col H)}] \times 1,000,000}{5 \times 365 \times [\text{Traffic Volume (Col K)}] + \frac{\text{Length (ft)}}{5280}}$$

Composite Formula

$$\begin{aligned} \text{Crash History Score (COLUMN AP)} = & \left(\frac{\log_{10}(\text{Crash Rate} + 1)}{\log_{10}(\text{max Crash Rate} + 1)} * 10 \right) + \left(\frac{\log_{10}(\text{Injury Rate} + 1)}{\log_{10}(\text{max Injury Rate} + 1)} * 10 \right) \\ & + \left(\frac{\log_{10}(\text{Bike/Ped Crashes} + 1)}{\log_{10}(\text{max Bike/Ped Crashes} + 1)} * 2.5 \right) + \left(\frac{\log_{10}(\text{Bike/Ped Injuries} + 1)}{\log_{10}(\text{max Bike/Ped Injuries} + 1)} * 2.5 \right) \end{aligned}$$

Traffic Stress Score (20 Points)

The Traffic Stress Score evaluates how the proposed improvement will reduce stress levels for pedestrians and bicyclists. The total score is divided equally between Roadway Level of Traffic Stress (LTS) [10 points] and Intersection LTS [10 points].

Data Sources

The LTS methodology is based on the approach developed by Montgomery County, Maryland, which provides greater nuance than traditional LTS scoring. The full methodology is available here: [Montgomery County Bicycle Master Plan – Appendix D](#). LTS values were determined from aerial imagery reviewed in July 2025.

Interim Formulas

$$\text{Roadway LTS (COLUMN T)} = \frac{(\text{Existing LTS [Col R]} - \text{LTS w/ Improvement [Col S]})}{(\text{LTS w/ Improvement [Col S]})}$$

Roadway LTS Scores Based On:

- Facility type
- Posted speed limit
- Number of lanes
- Presence of on-street parking

$$\begin{aligned} \text{Intersection LTS (COLUMN AD)} = & (\#LTS 1 [\text{Col Y}] * 1) + (\#LTS 2 [\text{Col Z}] * 2) \\ & + (\#LTS 2.5 [\text{Col AA}] * 2.5) + (\#LTS 3 [\text{Col AB}] * 3) \\ & + (\#LTS 4 [\text{Col AC}] * 4) \end{aligned}$$

Intersection LTS Scores Based On:

- Posted speed limit
- Number of lanes
- Presence of median refuge islands

Process:

- Count the number of intersections along the route by LTS (Columns Y–AC).
- Only public streets are included; private driveways are excluded.

Composite Formula

$$\text{Total Traffic Stress Score (COLUMN AQ)} = \left(\frac{\log_{10}(\text{Intersection LTS} + 1)}{\log_{10}(\text{max Intersection LTS} + 1)} * 10 \right) + \left(\frac{\log_{10}(\text{Roadway LTS} + 1)}{\log_{10}(\text{max Roadway LTS} + 1)} * 10 \right)$$



Demand/Utilization Score (20 Points)

The Demand/Utilization Score estimates the potential use of a proposed improvement based on surrounding housing density and the presence of key activity centers within a 0.5-mile buffer. The total score is divided equally between Demand (based on housing units) [10 points] and Utilization (based on activity centers) [10 points].

Data Source

Structures and Addresses Framework GIS data from the Montana State Library (downloaded June 2025).

Interim Formulas

$$\text{Demand Score (COLUMN AF)} = \frac{\text{\#Housing Units in 0.5 mi buffer}}{\left(\frac{5280 * \text{Length (ft)}}{5280 * 5280}\right)}$$

Included Montana Place Types:

- 100: Building (generic)
- 101: Dwelling, single-family
- 102: Dwelling, multi-family
- 103: Institutional residence/dorm/barrack
- 107: Mobile home

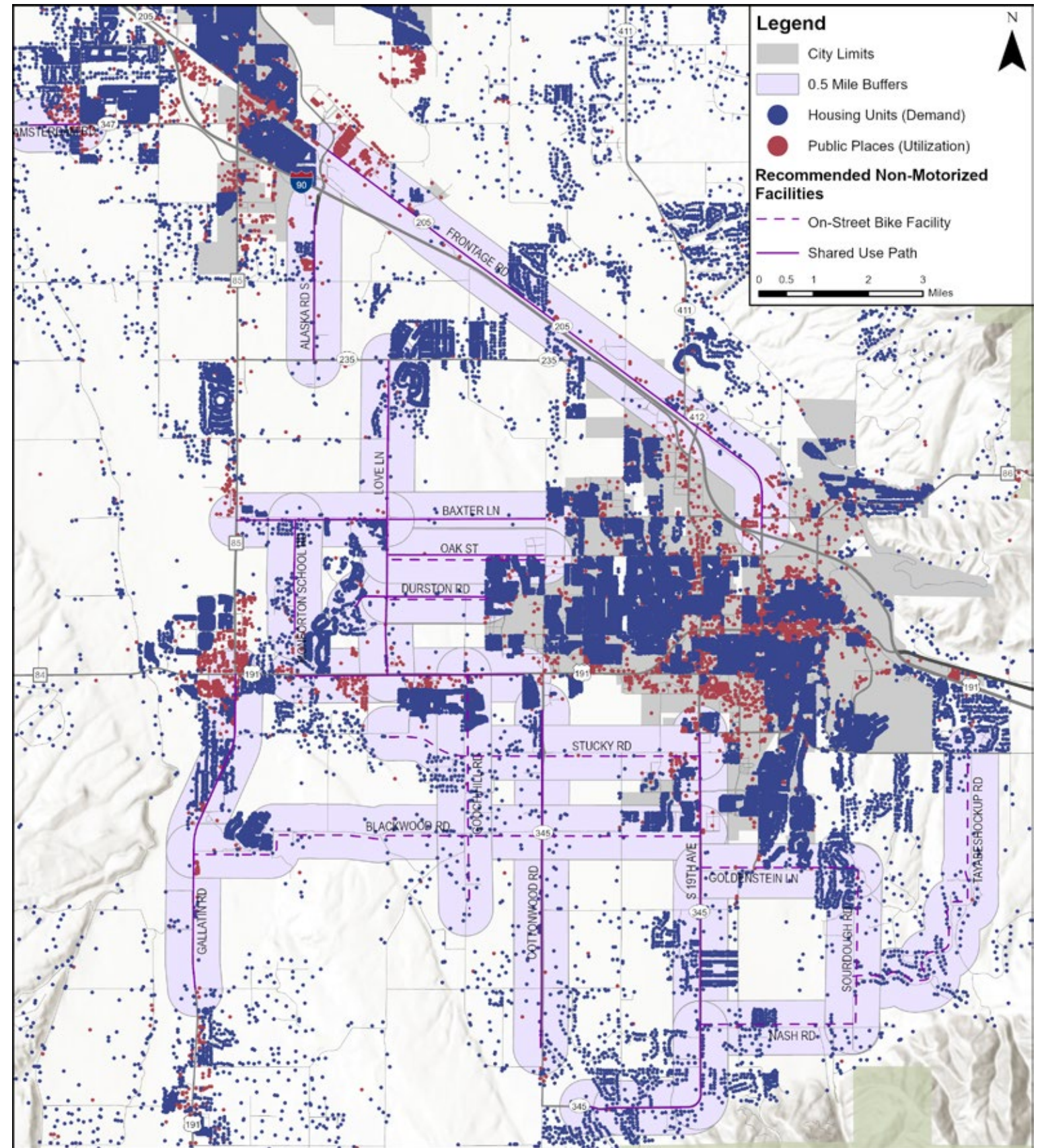
$$\text{Utilization Score (COLUMN AH)} = \frac{\text{\#Activity Centers in 0.5 mi buffer}}{\left(\frac{5280 * \text{Length (ft)}}{5280 * 5280}\right)}$$

Included Montana Place Types:

- Health/Medical: 200–207
- Transportation: 401, 408
- Government/Military: 500–509
- Education: 600–602
- Postal: 1001
- Commercial: 1100–1108
- Public Attractions & Recreation: 1300–1309

Composite Formula

$$\text{Total Demand/Utilization Score (COLUMN AR)} = \left(\frac{\log_{10}(\text{Demand Score} + 1)}{\log_{10}(\text{max Demand Score} + 1)} * 10\right) + \left(\frac{\log_{10}(\text{Utilization Score} + 1)}{\log_{10}(\text{max Utilization Score} + 1)} * 10\right)$$



Connectivity Score (25 Points)

The Connectivity Score evaluates how well a proposed improvement integrates into the current and planned non-motorized network **[10 points]** and the broader roadway system **[7.5 points]**, as well as its proximity to urban centers **[7.5 points]**.

Data Source

Connectivity values were determined from aerial imagery reviewed in July 2025.

Interim Formulas

$$\text{Non-Motorized Connectivity Score (COLUMN AL)} = (\text{Existing Facility Connections [Col AJ]} * 2) + \text{Future Facility Connections [Col AK]}$$

$$\text{Road Network Connectivity Score (COLUMN AI)} = \text{Network Connectivity}$$

Where:

- 1 = road is built & connected to network
- 0 = road is not yet built/connected to network

$$\text{Urban Connectivity Score (COLUMN AO)} = \frac{([\text{Max to BZN} + \text{Max to BEL}] - [\text{to BZN} + \text{to BEL}])}{(\text{Max to BZN} + \text{Max to BEL})}$$

Where:

- Higher scores are assigned to projects located closer to these urban centers, reflecting greater accessibility and integration potential.
- to BZN [Col AM] = Furthest point of facility to Bozeman city center (7th Avenue/Main Street)
 - to BEL [Col AN] = Furthest point of facility to Belgrade city center (Jackrabbit Lane/Main Street)

Composite Formula

$$\text{Total Connectivity Score (COLUMN AS)} = \left(\frac{\log_{10}(\text{NonMotoConnectivity Score} + 1)}{\log_{10}(\text{max NonMotoConnectivity Score} + 1)} * 10 \right) + \left(\frac{\log_{10}(\text{RoadConnectivity Score} + 1)}{\log_{10}(\text{max RoadConnectivity Score} + 1)} * 7.5 \right) + \left(\frac{\log_{10}(\text{UrbanConnectivity Score} + 1)}{\log_{10}(\text{max UrbanConnectivity Score} + 1)} * 7.5 \right)$$

Cost Score (10 Points)

The Cost Score reflects the relative expense of implementing each proposed improvement, coincident with the project's length.

Data Source

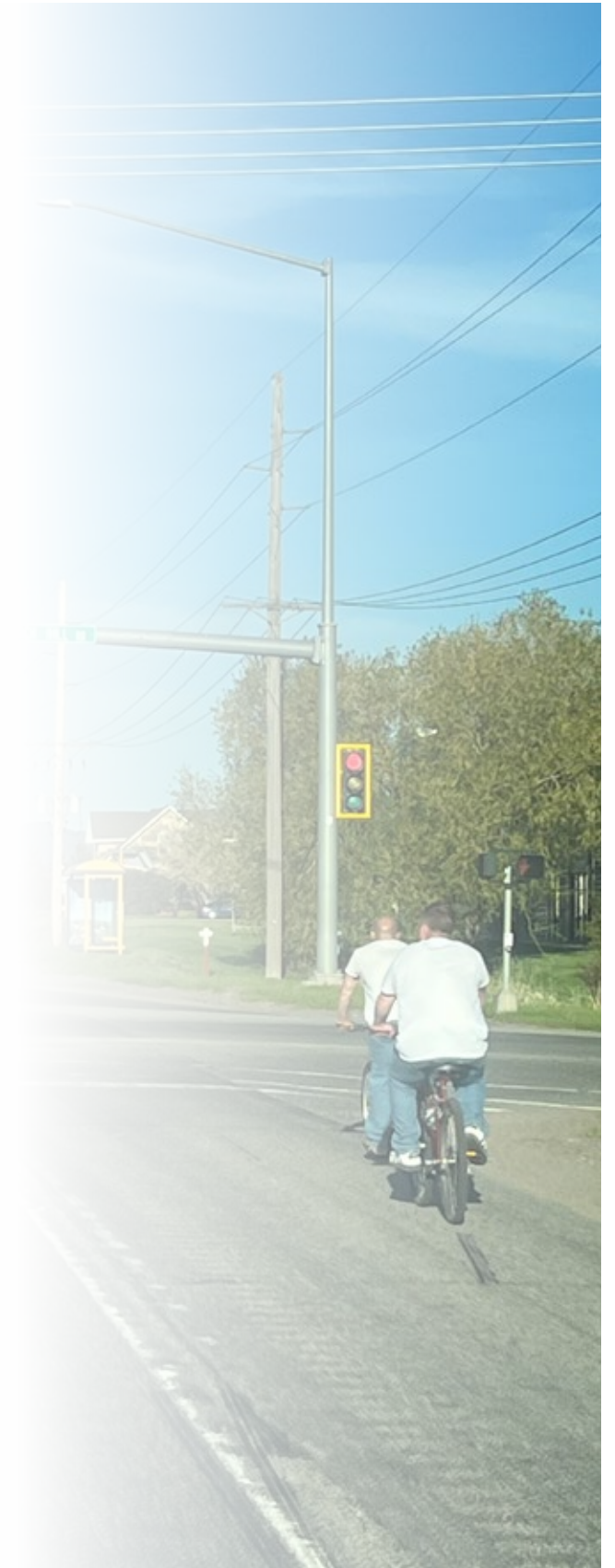
The standard per-mile cost estimates from the GTATP were used as the basis for this scoring component. The estimates are based on uniform cost factors and serve as a consistent baseline for comparison across projects. They do not account for project-specific variables such as construction complexity, right-of-way acquisition, or major structural work such as bridge replacements. To better capture potential variability, the scoring uses the high range of each cost estimate.

Interim Formula

$$\text{Relative Cost (COLUMN F)} = \frac{\text{max Cost Estimate}}{\text{Cost Estimate}}$$

Composite Formula

$$\text{Cost Score (COLUMN AT)} = \left(\frac{\log_{10}(\text{Relative Cost} + 1)}{\log_{10}(\text{max Relative Cost} + 1)} * 10 \right)$$



SUPPLEMENTAL PLANNING

Pedestrian & Bicyclist Safety

Total Score (100 Possible Points)

The Total Score represents the sum of all five scoring components, with a maximum possible score of 100 points. Each component reflects a different aspect of project prioritization, ensuring a balanced evaluation that accounts for safety, accessibility, demand, network integration, and cost-effectiveness.

Scoring Components and Weights:

- Crash History Score – 25 points
- Traffic Stress Score – 20 points
- Demand/Utilization Score – 20 points
- Connectivity Score – 25 points
- Cost Score – 10 points

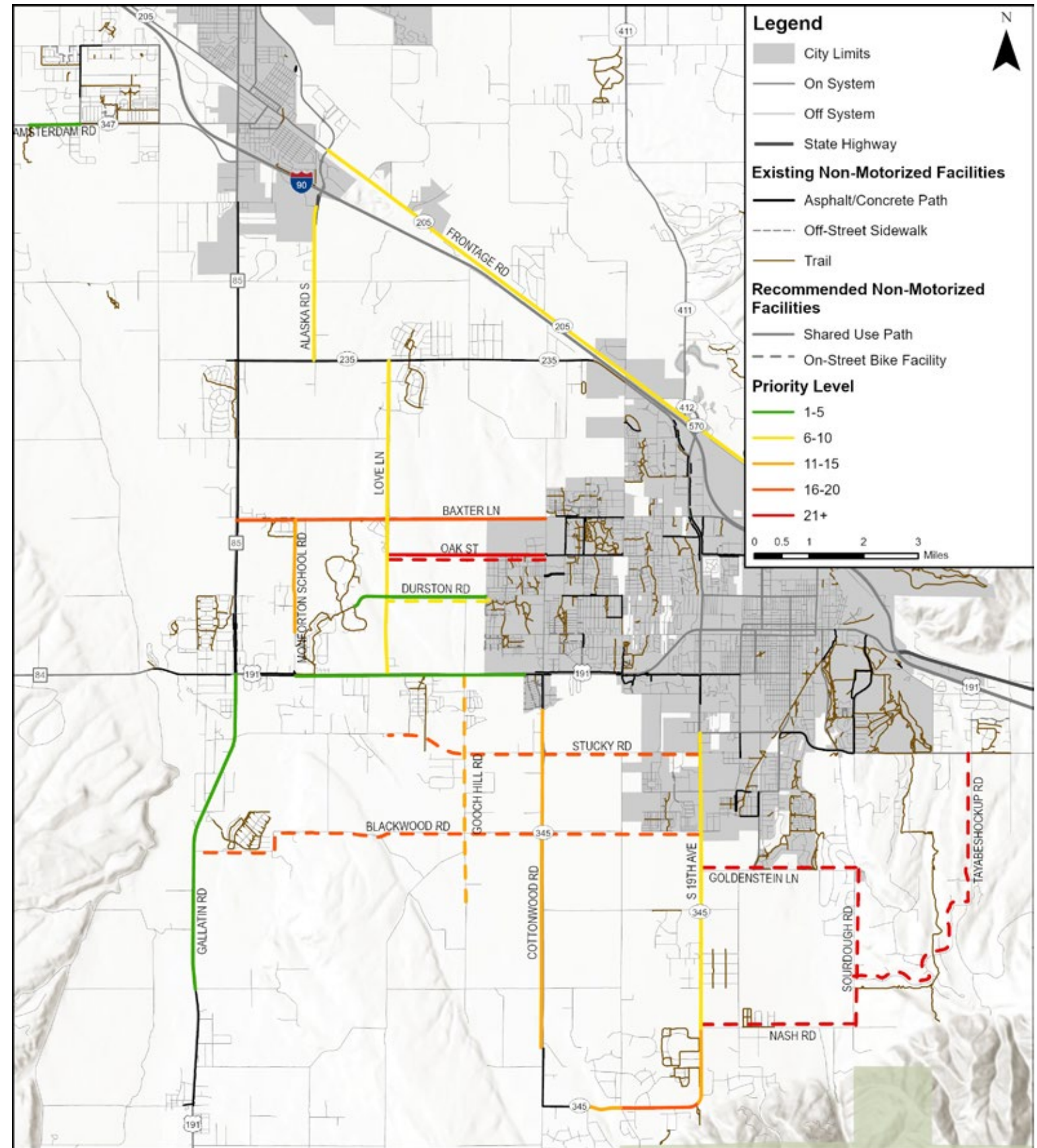
Composite Formula

$$\text{Total Score (Column AU)} = \text{Crash History Score} + \text{Traffic Stress Score} \\ + \text{Demand/Utilization Score} + \text{Connectivity Score} + \text{Cost Score}$$

Prioritization

Projects are ranked from highest to lowest total score, with higher-scoring projects representing those that are expected to have the greatest overall benefit relative to their cost. The scoring method described herein provides a clear, data-driven basis for prioritizing projects for implementation, while allowing for flexibility in future iterations as scoring methods, data inputs, or county priorities evolve.

The figure to the right illustrates the priority order for implementation of identified facilities, with higher scoring projects having a higher priority. Recommendations are grouped in batches of five to establish priority levels. These groupings are intended to highlight which projects should be prioritized for quicker implementation, without prescribing an exact “do this first, then next” order. Within each batch, the county can choose the sequence of implementation based on factors such as funding availability, coordination with other projects, or readiness for construction. These priority levels are intended to serve as a strategic implementation guide, rather than a prescriptive mandate, helping the county sequence improvements in a logical and achievable manner.



SUPPLEMENTAL PLANNING

Pedestrian & Bicyclist Safety

Scoring Results

ID	Location	Length (feet)	Estimated Cost (2022\$)	Crash History Score	Traffic Stress Score	Demand/Utilization Score	Connectivity Score	Cost Score	Total Score	Priority Level
SUP-1	Gallatin Road (Four Corners to Gallatin Gateway)	22,200	\$3,800,000	17.4	15.7	16.7	22.6	4.2	76.4	1
SUP-7	Durston Road (Black Bull to the Lakes Subdivision)	9,250	\$1,600,000	14.7	14.0	14.5	25.0	6.2	74.4	2
SUP-15	Amsterdam Road (Royal Road to Fishing Access)	3,550	\$600,000	9.1	14.2	19.6	20.4	8.9	72.2	3
SUP-2	Huffine Lane (Monforton School Road to Love Lane)	6,350	\$1,100,000	10.5	12.4	17.8	23.6	7.2	71.5	4
SUP-3	Huffine Lane (Love Lane to Advance Drive)	11,050	\$1,900,000	11.7	12.9	16.6	23.3	5.8	70.2	5
SUP-17	Frontage Road (Airway Boulevard to I-90 WB On/Off Ramp)	31,680	\$5,300,000	10.8	16.6	15.4	23.1	3.5	69.4	6
SUP-4	Love Lane (Huffine Lane to E. Valley Center Road)	21,120	\$3,600,000	15.7	14.1	12.3	21.2	4.3	67.6	7
SUP-13	S. 19th Avenue (Nash Road to Graf St)	19,800	\$3,400,000	12.7	15.3	16.2	18.7	4.4	67.3	8
BIKE-1	Durston Road (Westgate Avenue to Love Lane)	6,850	\$2,300,000	15.2	6.9	14.8	23.6	5.3	65.9	9
SUP-9	S. Alaska Road (E. Valley Center Road to Frank Road)	10,300	\$1,800,000	9.9	12.9	12.0	23.6	5.9	64.2	10
SUP-14	Cottonwood Road (Loyal Drive to Anderson School)	23,760	\$4,000,000	9.7	14.8	12.7	22.1	4.0	63.4	11
SUP-10	S. 19th Avenue (Cougar Drive to Hyalite Canyon Road)	2,250	\$400,000	10.7	11.0	11.2	20.0	10.0	62.8	12
SUP-16	Monforton School Road (Baxter Lane to Monforton School)	7,920	\$1,400,000	7.7	12.6	12.1	23.1	6.6	62.0	13
BIKE-3	Gooch Hill Road / Chapman Road (Huffine Lane to Patterson Road)	21,120	\$7,200,000	20.0	9.2	11.6	17.8	2.9	61.4	14
SUP-12	S. 19th Avenue (Kirk Hill Trailhead to Nash Road)	5,100	\$900,000	12.5	12.4	7.0	18.7	7.8	58.5	15
SUP-6	Baxter Lane (Love Lane to Jackrabbit Lane)	10,200	\$1,800,000	1.2	13.4	12.9	23.4	5.9	56.8	16
SUP-11	S. 19th Avenue (Hyalite Canyon Road to Kirk Hill Trailhead)	5,280	\$900,000	9.8	11.9	9.1	18.0	7.8	56.6	17
SUP-5	Baxter Lane (Love Lane to Harper Puckett Road)	10,560	\$1,800,000	3.7	12.1	11.0	23.3	5.9	56.1	18
BIKE-5	Blackwood Road (Gallatin Road to S. 19th Avenue)	35,640	\$12,150,000	17.9	11.0	11.2	12.8	2.0	54.8	19
BIKE-4	Stucky Road (S. 19th Avenue to Love Lane)	21,120	\$7,200,000	14.4	9.5	14.0	13.0	2.9	53.8	20
BIKE-6	Nash Road (S. 19th Avenue to Sourdough Road)	7,920	\$2,700,000	10.9	8.8	8.8	18.4	4.9	51.8	21
SUP-8	Oak Street (Cottonwood Road to Love Lane)	10,560	\$1,800,000	0.4	14.4	14.1	16.1	5.9	50.9	22
BIKE-9	Goldenstein Road (S. 19th Avenue to Sourdough Road)	10,560	\$3,600,000	4.0	8.6	12.0	19.8	4.3	48.6	23
BIKE-8	Sourdough Road (Nash Road to Goldenstein Road)	10,560	\$3,600,000	8.1	8.1	9.6	18.3	4.3	48.4	24
BIKE-7	Tayebeshockup Road / Triple Tree Road (Kagy Boulevard to Sourdough Road)	23,760	\$8,100,000	7.0	8.3	6.8	19.2	2.7	44.0	25
BIKE-2	Oak Street (Cottonwood Road to Love Lane)	10,560	\$3,600,000	0.4	7.8	14.1	16.1	4.3	42.6	26