



EL DORADO CITY COMMISSION - WORK SESSION AGENDA
CITY HALL – 220 E. FIRST AVENUE
April 15, 2026 - 5:00 PM

Work Session Discussion Items:

- a. Susan B. Allen Hospital (SBA) Request for a Sales Tax Ballot Question
- b. 12th Avenue Bike Path Transportation Alternatives Application
- c. Safe Streets For All (SS4A) Plan Presentation
- d. Greens at Prairie Trails Reimbursement Interest and Conditional Release

Regular Agenda Preview:

- a. Items to be Placed on the Consent Agenda
 - i. Meeting Minutes
- b. Items to be Placed on the Regular Agenda
 - i. Consideration of a Public Hearing for Unfit/Unsafe Structures
 - ii. Consideration of the adoption of the Safe Streets for All (SS4A) Plan
 - iii. Consideration of the Adoption of a Land Bank Policy

Reports:

- a. City Commission Reports
- b. City Manager Report

EL DORADO

KANSAS

TO: City Commission
FROM: David Dillner, City Manager
SUBJ: Susan B. Allen Hospital (SBA) Request for a Sales Tax Ballot Question
DATE: April 15, 2026

Background:

Rural hospitals in Kansas and across the U.S. face structural financial challenges such as high operating costs and inflation, low reimbursement rates, and uncompensated care. Nationally, nearly half of rural hospitals operate at a financial loss, and hundreds are at risk of closure, particularly in Midwestern states like Kansas. These hospitals are increasingly seeking local voter-approved sales taxes to address persistent financial shortfalls. Morton, Gove and Logan Counties in Kansas have recently sought sales tax to fund their local hospitals. Susan B. Allen Memorial Hospital (SBA) is requesting that the governing body place such a measure on the upcoming ballot.

A ballot question for the August primary election will need to be approved for placement on the ballot by May 6. The City Commission would have to approve the ballot question on or before the May 4 regular meeting to meet this deadline. Alternately, a ballot question could be considered for the November general election. An ordinance would need to be approved by the City Commission on or before the August 3 regular meeting for the November election.

In full transparency, the City Manager has been invited to join the Susan B. Allen Memorial Hospital Board of Directors. The City Manager will defer to the City Commission before committing to participate on the board. The board appointment would not be considered a conflict of interest for the City Manager even if a sales tax vote should proceed and be approved by voters. In fact, it may be advantageous for the City to have representation on the board if a local sales tax is approved.

Attachments:

1. SBA Sales Tax Request Executive Summary
2. SBA Economic Impact for Sales Tax Request
3. HF Sinclair Letter of Support

Advisory Board Recommendation:

NA

Policy Issue:

Should the City Commission place a sales tax question on an upcoming ballot to support Susan B. Allen Memorial Hospital? In addition to the state sales tax, cities in Kansas have the option of imposing a local sales tax. Before imposing a local sales tax, the governing body of the city must receive the approval of a majority of its voters. Cities may levy a local sales tax in five-hundredth percent increments (0.05%) and are authorized to impose a maximum sales tax rate of 3% (2% general and 1% special). General sales taxes may be used for general government purposes or for other legally authorized public purposes. A time-limited sales tax may be written such that it could be subject to voter approval for continuation.

General sales taxes are often approved to fund infrastructure and transportation projects, police, fire departments, and emergency medical services, public libraries, health services, and sanitation, or to support general operational expenses of the municipality. Cities have also approved sales taxes to support hospitals serving the community. Special sales taxes are authorized for specially defined projects or expenses and must sunset no later than ten years after adoption. The proceeds from a special sales tax may not be spent on anything except for the authorized purpose, while general sales tax proceeds may be spent on any expense with a public purpose deemed appropriate by the governing body.

Fiscal Impact:

A sales tax to support the hospital will not directly impact the City's fiscal condition. It will alter the City's flexibility to request future sales taxes to support projects or operations. A sales tax to support the hospital would increase the local sales tax rate and may make it more difficult for a sales tax supporting municipal services or projects to be adopted by voters. For example, the City may desire to pursue a sales tax to fund a special streets or recreation project, or it may desire to pursue a sales tax for the purpose of lowering the mill levy. Any increase in sales taxes may place pressure on future sales tax requests since voters are often tax adverse. Even so, the City Manager does not anticipate a scenario whereby the City would request and receive authorization for the maximum 3% limit for local sales taxes.

The City does not know the hospital's official request for a sales tax at this time. Hospital representatives will present their request to the City Commission with an overview of the hospital's financial condition and the amount requested. Over the last three years, the City's one-cent sales tax has produced an average of \$3.5 million per year.

Sales taxes are considered a regressive revenue source, meaning that it affects lower-income households more than higher-income households because it consumes a higher percentage of income for those with less income. Increasing the sales tax rate could also have a potential impact on retail competitiveness with other communities in the immediate region. This consideration is especially important for larger purchases (such as vehicles and appliances) where the sales tax rate will make a difference when compared to lower-tax jurisdictions.

Trade-Offs:

As previously mentioned, a sales tax to support external purposes would affect the City's ability to pursue a sales tax for its own purposes. Health care is an important need for a community. A local sales tax to support health care and the hospital should be weighed against future needs of the City. For example, the City Commission has discussed a local sales tax to fund improvements to the municipal pool and band shell at Forest Park and 9th Avenue. A sales tax supporting the hospital may impair the City's ability to obtain voter approval for this project. Increasing the sales tax rate will create pressure for future sales tax campaigns that may be necessary to fund municipal projects or operations amid pressures from the Legislature to reduce reliance on property taxes.

Deciding to pursue a local sales tax to support the hospital or other municipal efforts represents value-based decisions for the community. This means that allocating sales tax proceeds for either of these uses is neither right or wrong. Rather, a decision to provide sales tax proceeds to the hospital or to fund City projects or operations represents a value judgment based on what the community values and desires. Both purposes would serve the public interest and both enhance the quality of life for residents. Placing such items on a ballot provides the community with an opportunity to weigh the trade-offs against the community's values to decide the preferred use of sales tax funds.

Staff Recommendation:

The City Manager does not provide a recommendation on this request at this time, since the information provided by hospital representatives has not been thoroughly reviewed prior to the meeting. The City Commission should provide guidance to the City Manager if it desires to pursue an August primary election ballot question as time is of the essence to prepare the necessary ordinance for governing body approval. If the August timeline is not preferred, staff will have more time to consider the request and make a recommendation at an upcoming Commission meeting.

Commission Action:

This item is for discussion purposes only. The item will be scheduled for consideration at a regular meeting pending direction to do so by the City Commission.



Protecting Our Community. Strengthening Our Economy.
Support the 1¢ Sales Tax for Susan B. Allen Memorial Hospital

A Vital Community Lifeline

Susan B. Allen Memorial Hospital is here for our community 24 hours a day, 7 days a week, 365 days a year—providing emergency care, delivering babies, supporting families, and ensuring access to healthcare for all, regardless of ability to pay.

A Powerful Economic Driver

- 293 local jobs supported by the hospital
- \$16.4 million in wages paid annually
- Healthcare represents 10.3% of all county jobs
- Every 100 hospital jobs create 43 additional jobs in our community

A strong hospital = a strong local economy

Why This Matters – A sustainable hospital is essential to:

- Attract and retain businesses
- Support workforce growth
- Keep families living and working locally
- Maintain a high quality of life in Butler County

The Challenge – Despite responsible management and cost reductions:

- Ongoing operating losses threaten long-term stability
- \$2.6 million in critical equipment needs
- Difficulty competing with Wichita wages
- 31% of nursing staffed by costly contract labor
- \$5.5 million in uncompensated care provided in 2025

The Solution: A 1¢ Sales Tax – A local, voter-approved 1-cent sales tax will:

- Stabilize hospital operations
- Help retain and recruit local healthcare workers
- Reduce reliance on expensive temporary staff
- Invest in equipment and expanded services

What's at Stake – Without action, our community risks:

- Loss of local healthcare access
- Loss of jobs and economic activity
- Reduced ability to attract businesses and families

The Ask – Place the 1¢ sales tax initiative on the ballot.

Invest in What Matters Most

A strong hospital means a strong community—today and for future generations.



Hospitals Have a Significant Economic Impact to Kansas and Butler County



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Proud of Our Record of Service

Susan B. Allen Memorial Hospital

- Provides care 24 – 7 – 365
- Serve thousands of patients annually
- Bring life into the world
- Provide comfort at the end of life
- Keeps our communities healthy, strong and vibrant
- A major source of employment



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Economic Impact Report

The Importance of the Health Care Sector to the Kansas Economy

- Highlights the significant role Kansas hospitals play within our local communities
- Demonstrates “ripple” effect
 - dollars hospitals bring into the state
 - jobs hospitals help create
- Prepared by the Institute for Policy & Social Research at the University of Kansas



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Statewide and County Economic Impact

Susan B. Allen Memorial Hospital contributes
in three areas:

- Attract and retain business and industry
- Attract and retain retirees
- Create jobs in the local economy



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Significant Economic Contributions in Kansas Communities

Hospital impacts spread broadly over the entire Kansas economy, through job and income creation, tax generation and enhancement of the Kansas quality of life. Specific channels of influence include:

- Creating direct jobs and income within the health care sector when health care establishments hire staff;
- Creating secondary jobs and income when suppliers to health care industries hire their own employees and when employees purchase goods and services such as groceries in the community;

Continued ...



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Major Employers in Butler County

Hospitals alone employ more than 678 people directly and pay out more than \$46.3 million in labor income.

Health care employers provide about 10.3 percent of the county's jobs and 12.6 percent of labor income.

The hospital employment multiplier is 1.43.

Every 100 hospital jobs in Butler County support an additional 43 jobs in non-health care sectors in Butler County.



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Income Impacts in Butler County

Susan B. Allen Memorial Hospital directly supports:

- More than 293 jobs and
- Nearly \$16.4 million in labor income for employees
- Local grocery stores, restaurants, gas and electric utilities, and other industries used by the hospital and its employees.



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Economic Contributions of the Health Care Sector

In summary, the health care sector in Butler County generates significant employment and income for local residents and generous tax revenue for local governments.

Health care businesses provide about 3,257 jobs and over \$193 million in labor income. When the multiplier effect is included, the contributions rise to about 4,151 jobs and over \$224.5 million in labor income in the county.

The health care sector supports about \$868,500 in local sales tax revenue.



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Improving Health and Saving Money

Hospitals save Kansans millions of dollars:

- Disease prevention programs
- Early detection equals decreased treatment cost and lost earnings



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Covering the Uninsured and Underinsured

Kansas hospitals are a safety net:

- Providing nearly \$2 billion in uncompensated care annually; SBAMH covered \$5.5 Million in uncompensated care in 2025
- Offering financial assistance programs; and
- Treating all, regardless of their ability to pay.



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2025 KHA Public Funding Survey Results

90 Hospitals Participated in the Survey
Jan-May 2025



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2025 KHA Public Funding Survey Results

Participants included:

65 Critical Access Hospitals

22 Prospective Payment System

3 Rural Emergency Hospitals

79 of them being Rural 11 of them being Urban

Of the 90 Hospitals

74% reported being supported by mill levy or sales tax for a
total of \$55,423,124 of subsidized support



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Financial History

Operating Margin

2017	(\$13,624,875)
2018	(\$6,576,563)
2019	(\$10,360,269)
2020	\$2,287,590
2021	(\$313,315)
2022	(\$3,289,039)
2023	(\$2,670,398)
2024	(\$1,584,037)
2025	(\$4,024,633) Cyber Security Event

NOTE - Extraordinary Income Items:

	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023</u>
Covid Relief Funding	\$3,940,970	\$1,632,715	\$1,693,173	
Paycheck Protection	\$3,857,059			
Employee Retention Credit				\$2,715,459

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Current State

- We have to compete with the Wichita wage market. We have not been able to offer across the board wage increases since 2019. Creating a \$1.2 million discrepancy in wages from market.
- 31% of our nurse staffing requirement is being filled by contract staff.
- We currently have \$2.6 million in critical capital equipment needs.
- We have not been able to offer a 401K match since 2019 to our employees.

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Action Taken

- 2022 Hired an Orthopedic Surgeon
- 2024 Hired Integrity Health Providers for ER and Hospitalist programs with local Physician oversight
- Made Improvements to Quality of Care
- Became an In-network provider for insurances being utilized in our community (Ambetter, UHC, & Providers Care)
- From 2023- 2024 we reduced expenses by \$1.1 million

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Action Taken Continued

Grant Applications

- Rural Health Transformation Program
 - There are limitations to what the funds can be utilized for. KDHE has established specific initiative projects that are available to submit applications for. Items can not be used to subsidize operational funding of the hospital.
 - Through the REH/CAP grant we applied for \$484,000 to revamp clinic space to increase access to care in Cardiology, Dermatology, Wound care, and to finish the other half of the El Dorado Urgent Care.
 - Through the Regional Partnership Grant Program, we applied for \$570,000 for our collaboration efforts with Butte Community College, Dr. Paul McKesey, and Coaxion to continue radiologic services.

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Foundation & Auxiliary Giving

2025

SBAMH Auxiliary	\$7,311
SBAMH Foundation	\$288,833

2024

SBAMH Auxiliary	\$4,090
SBAMH Foundation	\$290,482

The SBAMH Foundation is limited in their giving back to the hospital. Only 5% of each endowment can be drawn annually, 29% are restricted funds.

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Limitations

- We cannot mortgage the buildings
- We cannot be acquired by a faith-based health system.
- We cannot become a Critical Access Hospital
- We cannot become a Rural Emergency Hospital

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Our Ask

We are asking that a one cent sales tax to fund Susan B. Allen Memorial Hospital be added to the August ballot.

- These funds would enable us to increase staff wages to market keeping our community working in our community instead of driving to Wichita to work.
- These funds allow us to continue to offer our community the services we provide.

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In Summary



- Susan B. Allen is a key ingredient to our community's quality of life.
- SBA keeps our communities healthy and vibrant.
- Kansas hospitals are major contributors to both the local and state economies.
- Families remain more healthy and secure because hospitals provide needed health care services.
- A vigorous and sustainable health care system is essential not only for the health and welfare of community residents, but also to enhance economic opportunity.
- Furthermore, evidence shows that quality health care improves business productivity, aids in the recruitment and retention of businesses, and attracts and retains retirees.

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HF Sinclair Corporation
El Dorado Refinery
1401 Douglas Road
El Dorado, KS 67042
04/13/2026

To the City Commissioners of El Dorado:

HF Sinclair is proud to call El Dorado home. For generations, our refinery and our employees have lived, worked, and raised families in this community. The strength and well-being of El Dorado directly affect our workforce and our shared future.

HF Sinclair supports Susan B. Allen Memorial Hospital and recognizes its essential role as a rural-serving community hospital providing high-quality healthcare to El Dorado and the greater Butler County region. In communities like ours, quick and reliable access to emergency and inpatient care close to home is critical for residents, families, and employers alike.

As one of the area's largest employers, HF Sinclair understands the importance of a strong local healthcare system for workforce safety, employee well-being, and community stability. Our employees and their families rely on Susan B. Allen Memorial Hospital, and its ability to deliver timely, dependable care strengthens El Dorado as a place to live and work.

We value the partnerships that make El Dorado a strong community and remain committed to being a responsible corporate citizen invested in its long-term health and success.

Sincerely,

Ted Trevino
Vice President & Refinery Manager

EL DORADO

KANSAS

TO: City Commission
FROM: Scott Rickard
SUBJ: 12th Avenue Bike Path Transportation Alternatives Application
DATE: April 15, 2026

Background:

This item is for consideration of a Transportation Alternatives application for the 12th Avenue Bike Path. The Commission has already discussed this project at prior work sessions, and submitted a resolution of support for constructing pedestrian accommodations on the 12th Avenue bridge. The bridge replacement is moving forward with 10-foot pedestrian accommodation. What remains is the connection from that crossing to the existing path near Jason Drive, the Walnut River Athletic Complex, and onward access to El Dorado Lake and the State Park. KDOT reviewed the concept submittal, found the project eligible, and officially invited the City to submit a full application by May 15, 2026.

This project addresses a gap that will exist after the bridge is rebuilt. 12th Avenue is a two-lane roadway with 11-foot travel lanes, minimal shoulders, and a posted speed limit of 45 mph. The corridor is not suitable for pedestrians or inexperienced cyclists in its current condition.

At the Commission's direction, staff had JEO complete an independent review of the staff-developed concept before moving onto the concept application. JEO reviewed feasible alignment options and prepared a technical memorandum to help test the concept before the City advanced it further. That work narrowed the practical options and documented why some ideas that may sound simple, such as using the shoulder or trying to place the path mid-slope, are not realistic solutions once drainage, clear zone, right of way, utilities, maintenance, and user safety are considered. JEO reviewed three alignment options.

Staff have also continued direct outreach. Letters were mailed to 42 adjacent property owners along the corridor. Three email responses have been received to date and are attached for Commission review. Staff also attended an HOA meeting, explained the project and the application process, and shared project documents with the HOA for distribution to its members. The property owner's letter also explained the project, outlined the two main options still under review in that area, and requested input before the application is finalized. This project has been discussed with the Commission, taken to the HOA, and sent directly to adjacent owners before final submittal.

Attachments:

1. 2026 TA-Invitation to Apply - City of El Dorado
2. El Dorado - 12th Avenue Trail Concepts - Memo (2026-02-23)
3. El Dorado - 12th Street Trail Project Estimate and Display (Option 1)
4. El Dorado - 12th Street Trail Project Estimate and Display (Option 2)
5. letter
6. Callaway comment
7. Owner comments
8. Poe comment
9. Rice comment

Advisory Board Recommendation:

NA

Policy Issue:**Fiscal Impact:**

Transportation Alternatives is a reimbursement-based federal aid program. The City is responsible for at least the minimum 20 percent local cash match on eligible participating items, along with 100 percent of right of way, utilities, and any non-participating costs, plus any costs above the awarded amount. At the Commission's direction, the City also contracted with JEO for \$13,500 to independently review the staff developed concept, evaluate alignment options, and prepare a technical memorandum. JEO's current concept level estimates put total construction at \$855,648 for Option 1 and \$788,592 for Option 2, both including contingency. On construction alone, that equates to a minimum local match of about \$171,130 for Option 1 or about \$157,718 for Option 2, with additional local responsibility possible depending on final scope and eligibility. The city's funds will be requested from the Excess Sales Tax Committee.

Trade-Offs:

1. Authorize staff to submit the full Transportation Alternatives application for the 12th Avenue Bike Path and finalize the supporting materials consistent with Commission direction.
2. Authorize staff to submit the application but limit it to a specific alignment option identified by the Commission.
3. Do not submit the application this cycle.

Staff Recommendation:

Staff recommend authorizing submission of the full Transportation Alternatives application utilizing Option 1 on the north side of 12th Avenue. The project builds on the pedestrian accommodation already secured as part of the bridge replacement, addresses a known gap in the corridor, and gives the City a chance to compete for outside funding. The added JEO review and the outreach to adjacent owners and the HOA have also put the City in a better position to move forward with a stronger application.

Commission Action:

This item is for discussion purposes only. The item will be scheduled for consideration at a regular meeting pending direction to do so by the City Commission.

Eisenhower State Office Building
700 SW Harrison
Topeka, KS 66603



phone: 785-296-3585
fax: 785-368-7415
www.ksdot.gov

Calvin Reed, Secretary of Transportation

Laura Kelly, Governor

Date: March 31, 2026

Re: 2026 Transportation Alternatives (TA) Application

Dear Mr. Rickard,

Thank you for submitting a Transportation Alternatives (TA) Concept Form for 2026 round of TA. I am pleased to inform you that the applicant organization and project concept are eligible for the TA Program, and you are now invited to prepare and submit a full application with the following recommendations:

Concept Title	Category	Recommendations
12th Avenue Multiuse Path Connectivity & Safety Project City of El Dorado	Ped/Bike	• Provide a detailed cost estimate supporting all proposed work phases. Current estimates seem low, define items in "other" category. • Provide documentation that justifies costs associated with Right of Way Acquisition and/or Utility Relocation. • Describe project sponsor's understanding of drainage conveyance along the project. • Provide letters of support and/or public engagement documentation that demonstrate favorable support for the proposed project. • Consider design options that enhances separation for pedestrians and/or cyclists. • Include a clear legend on all maps and make sure map includes proposed project locations, connections to existing infrastructure, and proposed treatments. • Label all photos with location and proposed treatment. • Include contingency in your cost estimates • Refer to KDOT sample schedule when outlining timeline.

		Determine what countermeasures will be included in project prior to submission of application. If to be determined, points will not be applied.
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All applications must be submitted on-line **by 11:59PM May 15, 2026** using the following link:
https://kdot.sjc1.qualtrics.com/jfe/form/SV_cwNoMR1LgPXJYKa

When developing your application, use the Word document attached to compile your responses prior to submitting them on Qualtrics. Incomplete responses not submitted on Qualtrics will be deleted after 72 hours.

For the different categories of attachments, e.g. photos, map, letters of support, etc. combine files into one pdf prior to attaching. Please do not attach files in other formats.

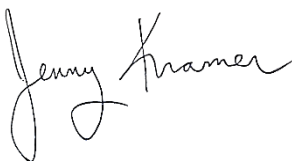
Incomplete, late, or hard copy applications will not be accepted. Please respond to all questions as thoroughly as possible, unless not applicable, and submit application on-line by the due date to be considered for this round.

When developing your cost estimates, please include the following and remember that you are 100% financially responsible for:

- Minimum 20% local cash match on eligible participating items (Preliminary Engineering (PE) and Design, construction and construction engineering/inspection)
- Right-of-Way
- Utilities
- Non-participating items

Once your application is complete and before submitting it, save your work as a pdf for your records. If you have any questions, please feel free to contact me by email at Jenny.Kramer@ks.gov or by phone at 785-296-5186. We look forward to receiving your application(s).

Sincerely,



Memorandum

Date: **February 23, 2026**

Attention: **Scott Rickard**

To: **City of El Dorado**

226 N. Vine St

El Dorado, KS 67042

From: **Riley Schmitz, PE**

Project No.: **260714.00**

Re: **12th Avenue Trail Concepts**

**This memo is based on the information as presented and understood at the time of writing. Any changes or omissions to the information may affect its conclusion.*

1. Objective

The objective of this concept study is to evaluate potential trail alignments along East 12th Avenue from Jason Drive to the Walnut River Athletic Complex. This memorandum summarizes the alignment options considered, associated advantages and disadvantages, and conceptual cost opinions for each alternative.

2. Existing Conditions

East 12th Avenue is owned and maintained by Butler County and consists of two 11-foot travel lanes with minimal shoulders. The posted speed limit is 45 mph. Kansas Department of Transportation (KDOT) traffic count data indicates a 2020 Average Annual Daily Traffic (AADT) of approximately 2,325 vehicles on the west end and 960 vehicles on the east end. Based on a maximum foreslope of 4:1 from the edge of pavement, the minimum clear zone is 20 feet from the edge of the driving lane.

Review of the USGS Wetlands Inventory Map and FEMA Floodplain Map indicates that wetlands and floodplain impacts are limited to the area beneath the nearby bridge being reconstructed. The proposed trail is anticipated to tie into the improved bridge. Any mitigation related to wetlands or floodplain at this location is expected to be addressed as part of the bridge project; therefore, no additional mitigation is anticipated for the trail improvements.

Utilities within the project corridor include overhead electric and telecommunications, underground telecommunications, waterlines, and sanitary sewer. Drainage is conveyed via roadside ditches with



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culverts at side road crossings. A large box culvert under 12th Avenue is located east of Aubrie Street.

3. Proposed Alignments

JEO considered a 10-foot trail path for the concepts. KDOT TA Grant projects typically require this as a minimum unless the City has justification for a narrower width. Three alignment options were evaluated:

- **Option 1:** Trail located on the north side of 12th Avenue within existing right-of-way.
- **Option 2:** Trail on the north side of 12th Avenue with a segment utilizing Quail Run between Aubrie Street and Lakeland Drive for bicycle use and a 6-foot sidewalk added to the south side for pedestrian access.
- **Option 3:** Trail crossing to the south side of 12th Avenue between Aubrie Street and Lakeland Drive, then crossing back to the north side east of Lakeland Drive.

Key considerations for each option are summarized below.

Option 1 – North Side of 12th Avenue

JEO evaluated three potential trail placements on the north side of the roadway based on existing grading, utilities, fencing, and clear zone requirements:

- **Along the rear property lines:** This placement would result in significant impacts to existing utilities and potential grading onto private property. Some tree removal would be required, and ditch capacity could be reduced due to fill.
- **On the roadway foreslope:** To maintain user safety, the trail would need to be offset from the pavement edge, which would either require filling the ditch or cutting into the foreslope and constructing a retaining wall. Any wall would need to be outside the 20-foot clear zone and would significantly increase project cost and mowing/maintenance complexity of the foreslope.
- **Within the ditch bottom:** This placement would minimize impacts to private property, utilities, trees, and roadway



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foreslope, while minimizing impacts to ditch capacity. However, the trail would be unusable during storm events and may require increased maintenance due to frequent wet conditions.

Based on these considerations, JEO developed a conceptual cost opinion for a trail located in the ditch bottom, as this alternative minimizes impacts and construction complexity.

Option 2 – Utilizing Quail Run

Option 2 generally follows the Option 1 alignment, except between Aubrie Street and Lakeland Drive, where the trail would follow Aubrie Street and utilize Quail Run as part of the route for bicycle use. A 6-foot sidewalk along the south side of Quail Run is also included for pedestrian access. The trail would reconnect east of the Danielle Court cul-de-sac.

Routing users along Quail Run would place pedestrians and bicyclists in front of homes rather than behind them, reducing privacy concerns associated with backyard access. Although some pedestrians may continue to use the ditch along 12th Avenue as a shortcut, this option is expected to reduce foot traffic in the ditch corridor.

Sidewalk is necessary to provide a continuous path for pedestrians. A 6-foot sidewalk in front of homes on the south side of Quail Run would have impacts to utilities, trees, private properties, and potential reconstruction of driveways if ADA compliance is not met. The sidewalk would have wheelchair ramps at roadway crossings and tie back into the trail on the east end of Danielle Court.

JEO developed a conceptual cost opinion and alignment exhibit for Option 2.

Option 3 – South Side Crossing

Option 3 follows Option 1 except that the trail would cross to the south side of 12th Avenue between Aubrie Street and Lakeland Drive, then cross back to the north side east of Lakeland Drive.



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Although this option would keep trail users away from existing homes, it would introduce two high-speed roadway crossings for pedestrians and bicyclists, creating significant safety concerns. For this reason, JEO does not recommend further consideration of Option 3, and no cost estimate or alignment exhibit was prepared.

4. Additional Considerations

- **Butler County Coordination:** As the roadway owner, Butler County's approval will be critical for any improvements within the right-of-way. JEO recommends coordinating with the County prior to pursuing grant funding or executing project agreements.
- **Property Impacts:** Most of the trail can be accommodated within existing right-of-way; however, some private property impacts are anticipated. The most significant potential impact involves property owned by the U.S. Army Corps of Engineers (USACE). JEO recommends confirming alignment acceptability with USACE prior to pursuing funding or agreements.
- **Drainage:** The existing ditch conveys significant flow. Any trail construction must maintain existing ditch capacity and fill within the ditch should be minimized.
- **Existing Pedestrian Use:** In the absence of a designated trail, pedestrians and bicyclists are likely already using 12th Avenue to access the Walnut River Athletic Complex. This route is not suitable for pedestrians or inexperienced cyclists. Providing a trail would significantly improve safety for all users.
- **Lighting:** Lighting is limited to development entrances. Additional lighting could improve usability and security for trail users and adjacent homeowners. Lighting costs were not included in the conceptual estimates.
- **Proposed Bridge tie-ins:** The trail concepts are laid out to tie into the proposed bridge. Exact tie-in locations may vary. Additionally, grading along the bridge may require further considerations to limit impacts of the project.



5. Conclusion

This concept study evaluated three potential trail alignment options along East 12th Avenue between Jason Drive and the Walnut River Athletic Complex. Based on the evaluation of existing conditions, right-of-way constraints, utility conflicts, drainage considerations, and user safety, Options 1 and 2 are considered feasible for further development, with Option 2 presenting the most practical and cost-effective solution.

Option 2 minimizes impacts to private property, utilities, trees, and existing drainage infrastructure, reduces construction costs by utilizing existing roadway facilities, and addresses privacy concerns associated with routing the trail behind residences. Option 1 is technically feasible but would require construction within the roadside ditch and would result in increased maintenance considerations. Option 3 is not recommended due to the safety risks associated with additional high-speed roadway crossings.

JEO recommends that the City coordinate with Butler County and the U.S. Army Corps of Engineers to confirm right-of-way and property considerations prior to pursuing grant funding or advancing design. Further refinement of the preferred alignment, public coordination, and preliminary engineering are recommended as next steps to advance the project toward implementation.

CONCEPTUAL OPINION OF COST			 Date Prepared: February 23, 2026		
EL DORADO - 12TH STREET TRAIL IMPROVEMENTS					
City of El Dorado, Kansas					
JEO Project No. XXXXXX					
ESTIMATE OF QUANTITIES					
Item #	Description	Unit	Quantity	Unit Price	Total
12TH STREET TRAIL IMPROVEMENTS - CONCEPTUAL (OPTION 1)					
1	MOBILIZATION	LSUM	1	\$100,000.00	\$ 100,000.00
2	SITE CLEARING AND RESTORATION	LSUM	1	\$10,000.00	\$ 10,000.00
3	REMOVAL OF EXISTING STRUCTURES	LSUM	1	\$5,000.00	\$ 5,000.00
4	EMBANKMENT	CUYD	962	\$20.00	\$ 19,240.00
5	UNCLASSIFIED EXCAVATION	CUYD	1930	\$20.00	\$ 38,600.00
6	SHARED USE PATH CONSTRUCTION (5") (AE) (8-FT WIDTH)	SQFT	51900	\$8.00	\$ 415,200.00
7	WHEELCHAIR RAMPS	EACH	8	\$1,500.00	\$ 12,000.00
8	STORM WATER SEWER PIPE (24") (RCP)	LNFT	75	\$100.00	\$ 7,500.00
9	END SECTION (24") (RCP)	EACH	2	\$1,500.00	\$ 3,000.00
10	SIGNAGE	LSUM	1	\$2,500.00	\$ 2,500.00
11	PAVEMENT MARKING	LSUM	1	\$5,000.00	\$ 5,000.00
12	TRAFFIC CONTROL	LSUM	1	\$20,000.00	\$ 20,000.00
13	EROSION CONTROL	LSUM	1	\$40,000.00	\$ 40,000.00
14	SWPPP INSPECTION	LSUM	1	\$5,000.00	\$ 5,000.00
15	SEEDING	LSUM	1	\$30,000.00	\$ 30,000.00
Subtotal Construction					\$ 713,040.00
Contingency				20.0%	\$ 142,608.00
Total Construction					\$ 855,648.00

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30%
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MARK	DATE	DESCRIPTION
PD	2/19/2026	30% SUBMITTAL

EL DORADO

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JEO PROJECT NO.: 251636.00
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QAQC: RJS
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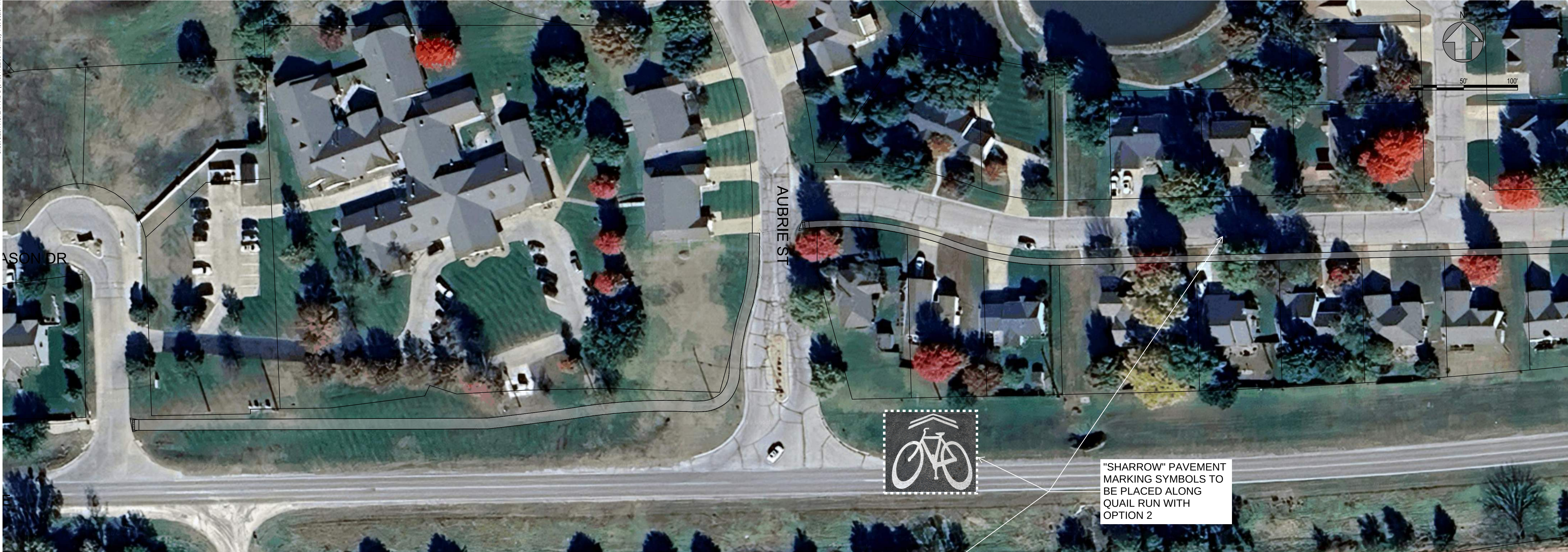
SHEET TITLE

G102

CONCEPTUAL OPINION OF COST		 Date Prepared: February 23, 2026			
EL DORADO - 12TH STREET TRAIL IMPROVEMENTS					
City of El Dorado, Kansas					
JEO Project No. XXXXXX					
ESTIMATE OF QUANTITIES					
Item #	Description	Unit	Quantity	Unit Price	Total
12TH STREET TRAIL IMPROVEMENTS - CONCEPTUAL (OPTION 2)					
1	MOBILIZATION	LSUM	1	\$90,000.00	\$ 90,000.00
2	SITE CLEARING AND RESTORATION	LSUM	1	\$10,000.00	\$ 10,000.00
3	REMOVAL OF EXISTING STRUCTURES	LSUM	1	\$5,000.00	\$ 5,000.00
4	EMBANKMENT	CUYD	900	\$20.00	\$ 18,000.00
5	UNCLASSIFIED EXCAVATION	CUYD	1800	\$20.00	\$ 36,000.00
6	SHARED USE PATH CONSTRUCTION (5") (AE) (8-FT WIDTH)	SQFT	37550	\$8.00	\$ 300,400.00
7	SIDEWALK (4") (AE) (6-FT WIDTH)	SQFT	10680	\$7.00	\$ 74,760.00
8	WHEELCHAIR RAMPS	EACH	10	\$1,500.00	\$ 15,000.00
9	STORM WATER SEWER PIPE (24") (RCP)	LNFT	75	\$100.00	\$ 7,500.00
10	END SECTION (24") (RCP)	EACH	2	\$1,500.00	\$ 3,000.00
11	SIGNAGE	LSUM	1	\$2,500.00	\$ 2,500.00
12	PAVEMENT MARKING	LSUM	1	\$5,000.00	\$ 5,000.00
13	TRAFFIC CONTROL	LSUM	1	\$20,000.00	\$ 20,000.00
14	EROSION CONTROL	LSUM	1	\$37,500.00	\$ 37,500.00
15	SWPPP INSPECTION	LSUM	1	\$5,000.00	\$ 5,000.00
16	SEEDING	LSUM	1	\$27,500.00	\$ 27,500.00
Subtotal Construction					\$ 657,160.00
Contingency				20.0%	\$ 131,432.00
Total Construction					\$ 788,592.00

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PD	2/19/2026	30% SUBMITTAL

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SHEET TITLE

Date: 2/27/26

To: Quail Run Property Owners

Subject: 12th Avenue Shared Use Path Concept, Request for Quail Run Input

Property Owner,

The City of El Dorado has submitted a concept paper to the Kansas Department of Transportation (KDOT) for a shared-use path connection along 12th Ave. The Transportation Alternatives program through KDOT is a federally funded program administered by KDOT that supports pedestrian and bicycle improvements, including projects focused on safety, accessibility, and recreation, and it requires a local sponsor and local match.

This concept is intended to create a continuous, separated place for walking and biking between El Dorado neighborhoods, the Walnut River Athletic Complex, and onward to El Dorado Lake and El Dorado State Park. The corridor currently has no pedestrian accommodations, and 12th Avenue has 11 foot lanes with minimal shoulders, which leaves little practical space for pedestrians or bicyclists to travel comfortably alongside traffic.

The City's Transportation Study showed meaningful bicycle and pedestrian activity along the 12th Avenue corridor using activity heat maps. While heatmaps don't capture every user, it provides a good snapshot of where people are already walking, running, and biking, and it highlights 12th Avenue as a regular route for pedestrians.

Why you are receiving this letter

A portion of the concept includes the Quail Run neighborhood. We need input from property owners before deciding whether to advance a full Transportation Alternatives application. If the City proceeds, the full application will be vetted for submission by the City Commission prior to May 15, 2026. The City Commission has asked staff to continue discussions with adjacent property owners due to concerns raised during early outreach.

Enclosed is a map showing the two primary options still under review in the Quail Run area.

Option 1, 12th Avenue right-of-way option

Under this option, the shared use path would stay within the 12th Avenue right of way through the Quail Run area. This option maintains the facility along the primary corridor and avoids routing pedestrians along Quail Run.

Option 2, Quail Run sidewalk and shared street option

Under this option, pedestrians would be accommodated with a new 6 foot sidewalk in front of the homes along Quail Run for runners, walkers, and families. Bicyclists would continue to use the street, supported by shared use pavement markings and signage to clarify bicycle presence and shared roadway use.

Either option can function from a transportation standpoint. The remaining question is which option the neighborhood prefers, and what concerns should be addressed before the City moves forward.

In addition, KDOT is scheduled to replace the 12th Avenue bridge over the Walnut River this summer. That project will include a dedicated 10-foot pedestrian accommodation, and the City's path concept is intended to tie into the bridge improvement so the pedestrian investment functions as a continuous corridor connection.

Timeline

1. Concept paper submitted to KDOT, completed.
2. City Commission consideration of whether to submit a full application, prior to May 15, 2026.
3. If submitted, KDOT award notifications are typically provided in fall 2026.
4. If awarded, construction of the shared use path would be planned for 2027.

Quail Run pavement rehabilitation

Separately from the shared use path concept and bridge replacement, Quail Run is currently being targeted for pavement rehabilitation in summer 2027 as part of the City's multi year paving outlook. This work is subject to City Commission approval and available funding at the time the paving program is finalized.

What we need from you

Please send us your preference and any concerns you would like considered as we evaluate the options:

1. Do you prefer Option 1, keeping the facility within the 12th Avenue right of way, or Option 2, constructing a 6 foot sidewalk in front of the homes along Quail Run with shared use markings for bicycles on the street.
2. What concerns do you have, for example yard impacts, privacy, access and driveway interface, drainage, trees, or safety.
3. If you support one option, are there specific design considerations you want included.

You can respond by email or phone to:

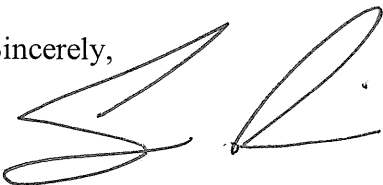
316-322-4453

engineering@eldoks.gov and srickard@eldoks.gov

I will forward this letter to the Homeowners Association as well. If it would be helpful, I would be happy to meet in person to discuss the concept and hear feedback directly.

Thank you for taking the time to provide input. Your feedback will be shared with the City Commission as part of the decision on whether to advance a full application.

Sincerely,



Scott Rickard
City Engineer

Scott Rickard

From: mlhillcallaway4967@gmail.com
Sent: Tuesday, March 3, 2026 6:10 PM
To: Scott Rickard
Subject: 12th Avenue Bike Path

Not sure I am sending this to the right place but maybe you can forward it on for me please. I live at 2035 Daniel Court which is option number two for the proposed path. I would much prefer option number one, which has the path going right along 12th St. which is like the area just west of the Vintage area. I feel this is a much safer option as if we have walkers and or bikers riding through this residential area every single home has a garage that people back out of and come into multiple times a day. I think it would also look better to just continue what we already have and take it on out to the lake. I also think there's a good possibility the homeowners would be saddled with the job of picking up assorted trash along the residential section of the bike path. I think this is a great idea and I myself would use it more if it was this close to me. Thank you and if I need to send this somewhere else, please let me know. Thank you. , Marcia Callaway Sent from my iPhone

12th Ave Bike path comments

Derek Richardson-2025 E Danielle Ct 620-218-1576

Prefers not to have a path placed at all, but if it moves forward, he would rather have it placed in the back yard. If path is placed in front yard it will take up more room & parking would be an issue. It is not safe to walk along 12th; people can use path from golf course to get to lake.

Scott Rickard

From: Kimberly Poe <hankpoe@gmail.com>
Sent: Thursday, March 5, 2026 2:07 PM
To: Engineering; Scott Rickard; Vintage HOA
Subject: Resident Input - 12th Ave Shared Use Path
Attachments: Alternate Route - Shared Path.png

To Whom It May Concern,

We are writing as residents of 1985 Quail Run to express our strong opposition regarding the proposed plans to construct a shared use path directly behind our homes or a sidewalk extending halfway into our front lawns and through our driveways.

We have lived at 1985 Quail Run in Vintage Place for nearly 14 years. This neighborhood has long been known for being a safe, quiet and well-maintained residential area. Many of us chose to live here specifically because of the privacy, safety, and pride residents take in maintaining their properties. The proposed changes would significantly impact the value, character, safety, privacy and livability of our neighborhood.

OPTION 1 - 12th Street Shared Use Path - Placing a shared use path directly behind our homes would greatly reduce the privacy and security of our backyards. Increased public access directly behind our homes would create safety concerns and invite constant foot and bicycle traffic, as well as trash and animal waste within very close proximity of our property lines. The "ditch" (as we refer to it) is currently mowed and cleaned up by the homeowners. The nearby lake area already attracts transient and unhoused individuals, and placing a public path directly behind our properties invade the privacy of backyard areas that are currently not exposed to public view. Furthermore, 12th Ave is a busy roadway and to invite pedestrians to walk near it is irresponsible and unsafe. During peak lake season, hundreds, if not thousands, of speeding and possibly impaired drivers travel 12th Ave in a day. We often hear motorcycles, boat trailers and many other vehicles veer off the side of the road into the rocky edge. Vehicles have driven off into the ditch and into the backyard fences of the homes on Quail Run.

QUESTIONS - Will there be drainage issues? Who will mow and weedeat the ditch and around the pathway? Are pedestrians in view from the street for patrol to keep an eye on them? Will lighting be placed along the path?

OPTION 2 - SIDEWALK FRONT YARDS - STREET BIKE PATH - The proposal to place a sidewalk several feet (nearly halfway) up into our front lawns would remove a substantial portion of well-maintained property that homeowners have invested significant time, money and resources into landscaping and maintaining. In addition, the construction will greatly disrupt driveways, existing underground sprinkler and irrigation systems that many homeowners rely on to maintain their yards. We have experienced an increase in vehicle thefts and break-ins lately and inviting more non-residents into our neighborhood makes our property vulnerable and the residents feel unsafe. We also understand that the proposal may include a bike lane along the street in front of our homes. However, the current street conditions in Vintage Place are poor and they are disintegrating into sand. We are cautiously optimistic to see the proposed date of 2027 for street resurfacing in our neighborhood as mentioned in the letter. The street conditions should take priority over any type of additional structures being placed. The street width is

insufficient to safely accommodate a bike lane along with normal residential traffic and parking without creating congestion or safety hazards. The Vintage Place residents, especially along Quail Run, have growing families with multiple drivers and greatly value the on-street parking.

Additionally, we recently had an in-ground pool built and during that process we had utilities and property lines marked and located. From our records, there is an 8' waterline as well as gas lines near the projected location for the front yard sidewalks.

QUESTIONS - Who would be responsible for repairing or relocating sprinkler lines and sprinkler heads that will become inaccessible? What is the plan for cleaning up the post-construction mess and replacing the destroyed sod in the construction areas when it's finished? With the sidewalk placement through the center of our driveways, does this mean we can't park over the center of our own driveway? If the homeowner would be responsible for those costs that would place an unfair financial burden on residents that didn't want this project in the first place.

Increased foot and bicycle traffic would likely result in additional issues such as litter and animal waste in residents' yards and along the sidewalk or shared use path. We understand the importance of improving community infrastructure and promoting recreational opportunities. However, we respectfully ask the city to reconsider the placement of these proposed pathways and sidewalks and to explore alternative routes that would minimize disruption to established residential properties and preserve the safety, privacy and character of our neighborhood.

ALTERNATIVE ROUTE SUGGESTION (See attachment) - Extend the existing shared use path that ends at 12th and Jason Drive. Without knowing the underground utility locations, easement measurements etc... We ask that this route be considered as well.

Continue the shared use path north onto Jason Drive all the way down to come out through the rear of the cul de sac on Jason Court. From there, extend the shared use path to the clearing behind (east of) the treeline that runs north-ish and south-ish parallel to, but away from, the backyards of the homes on Lakeland Drive. Bring the shared use path south back down to the 12th street bridge access.

This alternate idea could be more efficient, safer and less invasive to less residents.

- Jason Drive has significantly less vehicle traffic than 12th Ave or Quail Run.
- Jason Drive residents tend to be older residents without young children playing outside or multiple teen drivers parking in the street.
- On-street parked cars are virtually non-existent on Jason Drive.
- Jason Drive runs along the golf course instead of both sides of the street being occupied by homeowners.
- There is a lot more room to encroach on easements.
- Jason Drive (seems) a bit wider than Quail Run.
- The project would affect less homeowners.
- Quail Run (and Danielle Ct) contains about 35 houses on a narrow street. Jason Drive contains just about 20.

In conclusion, we are strongly opposed to all of the options presented to us, **but would be the least opposed to the 12th street right-of-way option 1**, although there are still a lot of concerns. Neither of

the options are ideal. The 12th street pathway is the LEAST invasive and would cause the least amount of undo stress and hardships in the future

We appreciate your time and careful consideration of the concerns of the residents most directly affected by this proposal.

Sincerely,

Kimberly & Nick Poe

1985 Quail Run El Dorado, KS 67042

316-323-8892 316-323-4311

Scott Rickard

From: Scott Rickard
Sent: Thursday, February 26, 2026 7:45 PM
To: 'Denna Rice'
Subject: RE: Bridge project on 12th
Attachments: 5 Year Paving Streets Plan (2026 Update).pdf; El Dorado - 12th Avenue Trail Concepts - Memo (2026-02-23).pdf; El Dorado - 12th Street Trail Project Estimate and Display (Option 1).pdf; El Dorado - 12th Street Trail Project Estimate and Display (Option 2).pdf

Denna,

Thank you for reaching out and sharing your concerns.

On the potential bike and pedestrian path near 12th Avenue, the alignment is still conceptual. No final design or location has been selected. The City is currently evaluating whether to pursue a grant application, which would be due May 15, 2026. There are two alignment options being discussed. I have spoken with the Homeowners Association and will reach out to affected property owners directly as we continue evaluating options. Information supplied to the City Commission and HOA is attached.

Regarding Quail Run, I would like to understand who indicated in 2017 that the street would be repaved. In 2023, I shared that we would continue to monitor it for future consideration. Street rehabilitation is one of the most underfunded infrastructure needs we have, so we have to be disciplined about how limited dollars are prioritized. The City uses our Pavement Management Plan and condition based prioritization to build our paving program.

Our current 5 Year Paving Outlook shows street work forecasted in this general area in 2027, see attached map.

I appreciate you taking the time to communicate your concerns. We will continue evaluating the path concept carefully, and we will engage residents before any decisions are made. Feel free to call me at 316-322-4451 if you need more information or detail.

Scott

!! Please note my Email Address has changed: srickard@eldoks.gov !!

Scott Rickard,
CITY ENGINEER
City of El Dorado, Kansas
226 N. Vine St. | El Dorado, KS 67042
Office: (316) 322-4451

EL DORADO
K A N S A S

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From: Denna Rice <jbmom444@gmail.com>

Sent: Thursday, February 26, 2026 7:31 AM

To: Scott Rickard <srickard@eldoks.gov>

Subject: Bridge project on 12th

Was not well informed until yesterday about the consideration of putting a 6ft concrete path through the middle of our front yards on Quail Run. PLEASE FIX OUR STREET first. Multiple of us have been begging since 2017. If you must do this walking path that no one is begging for, put it behind the houses. We definitely are begging not in front! We take pride in our yards, spend a lot of money on lawn treatment plans and have sprinkler systems. The kids play in the front, we have our garages open most of the time. Please don't let them do this.

Kimberly Poe

Ashley Voyles

Tanna Cooney

Audrey Reese

Pam Garland

Denna Rice

Jan McAllister

Jessica Eck

And many more!

EL DORADO

KANSAS

TO: City Commission
FROM: Scott Rickard
SUBJ: Safe Streets For All (SS4A) Plan Presentation
DATE: April 15, 2026

Background:

JEO has been asked to attend and walk the Commission through the draft Safe Streets and Roads for All Action Plan prepared for the City. The intent is to get the draft in front of the Commission now so there is an opportunity to see where the document is headed, hear the main takeaways directly from the consultant, and begin considering how this work may fit into the City's broader transportation and safety priorities. The draft plan itself is organized around plan purpose, safety analysis, project prioritization, and implementation.

This plan is meant to serve as a guide. It is not a final design, and it does not commit the City to any one project. What it does provide is a more structured way to look at crash history, risk factors, public input, and corridor needs so the City can make better informed decisions about future safety work.

There are a few parts of the plan that deserve particular attention. Page 2 explains the purpose of the document and the Safe System framework behind it. The Executive Summary lays out the big picture in a format that is easy to follow. The project prioritization tables on pages 110 and 111 begin to show where the plan is pointing the City in terms of corridor and intersection needs. The sections on policy, program, and further study show that this effort is not limited to large capital projects. There are operational, educational, enforcement, and planning components built into the plan as well, and the implementation section helps show how the City could use the document going forward.

The example projects in the draft are also helpful because they make the plan more tangible. The plan includes corridor and intersection concepts that start translating the crash analysis, public input, and safety diagnosis into actual project ideas. That is useful for Commission discussion because it begins to show what this plan may look like in practice, even though future project scope, timing, and funding would still need to be worked through separately.

Another reason this discussion is timely is because the completed plan may help position the City for future funding opportunities. There are several programs either open now or coming up soon that may suit the types of improvements identified in this plan. That includes SS4A implementation funding, possible Build Kansas support for local match, Behavioral Safety grants, STEP grants, Safe Routes to School opportunities, and other KDOT safety related programs. That context is worth keeping in mind as the Commission reviews the draft and begins thinking about next steps.

Attachments:

1. El Dorado SS4A Plan 2026-04-03

Advisory Board Recommendation:

NA

Policy Issue:

Fiscal Impact:

The SS4A Action Plan was prepared under the City's awarded Safe Streets and Roads for All planning grant. The total budget for the planning effort was \$200,000, including \$160,000 in Federal Highway Administration funds, \$30,000 in KDOT funds, and a \$10,000 City of El Dorado match. The city's match was taken from the street sales tax fund. No additional funding request is associated with this presentation. Any future project, study, or program that comes out of this document would come back separately and would depend on available local, state, federal funding.

Trade-Offs:

1. Receive the presentation and provide feedback on the draft plan and its overall direction.
2. Receive the presentation and move to accept the plan.
3. Defer discussion until a later time.

Staff Recommendation:

Staff recommends the City Commission provide feedback on the priorities, direction, and potential implementation opportunities identified in the document.

Commission Action:

This item is for discussion purposes only. The item will be scheduled for consideration at a regular meeting pending direction to do so by the City Commission.

El Dorado SS4A

APRIL 2026





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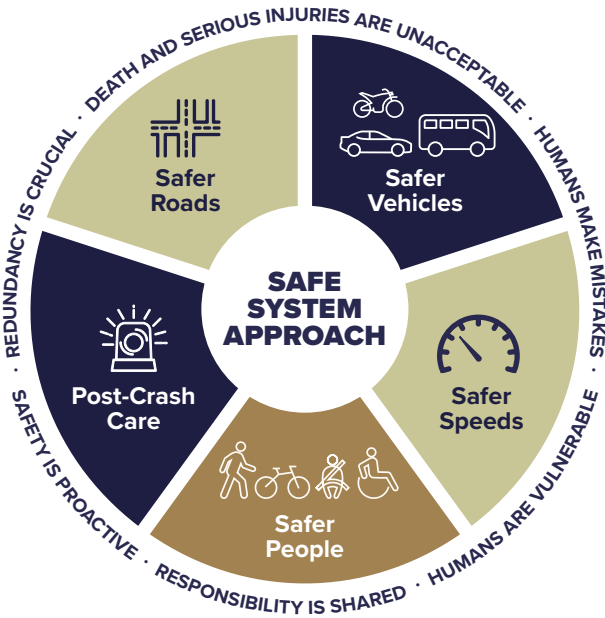
EXECUTIVE SUMMARY

The City of El Dorado, Kansas, is committed to creating a safer transportation system for all residents, workers, and visitors. Through participation in the U.S. Department of Transportation’s Safe Streets and Roads for All (SS4A) program, El Dorado developed this Safety Action Plan (SAP) to identify the community’s most pressing transportation safety challenges and establish a framework for reducing fatal and serious injury crashes.

Embracing the Safe System Approach

The Safe Streets 4 All El Dorado SAP is guided by the Federal Highway Administration’s Safe System Approach, which recognizes that people make mistakes and that the human body is vulnerable to crash impacts. By designing a transportation system where mistakes are less likely to result in serious injury or death, the City of El Dorado seeks to create a culture of safety. The Safe System Approach is built around five key elements, as outlined in the graphic below.

Five Key Elements of the Safe System



Community Engagement

Community engagement played an essential role in shaping the Safe Streets 4 All El Dorado SAP by bringing residents’ lived experience into the planning process and grounding the technical analysis in a local context. Public input was gathered through pop-up events, focus groups, online surveys, a project website, and supporting media outreach, helping ensure that the plan reflected community needs, values, and day-to-day travel experiences.

Community members provided valuable insight into the safety challenges they experience across El Dorado’s transportation system. Residents consistently identified speeding, distracted driving, and failure to yield as major concerns, while also pointing to sidewalk gaps and poor sidewalk conditions, limited visibility, uncontrolled intersections, and school travel safety issues. This feedback helped confirm patterns seen in the crash analysis while also revealing near misses, mobility barriers, and other concerns that are not always captured in reported crash data.

Public input strengthened the plan by adding a local perspective to the technical analysis and helping highlight issues that crash history alone cannot fully explain. By incorporating those voices, the plan is better grounded in everyday experience and better equipped to guide meaningful, community-responsive safety improvements.



Approach

- 1

Safer Vehicles

Expand El Dorado’s availability of vehicle systems and features that help to prevent crashes and minimize the impact of crashes on both occupants and non-occupants.
- 2

Safer Speeds

Promote safer speeds on all El Dorado streets through a combination of thoughtful, equitable, context-appropriate street design, appropriate speed-limit setting, targeted education, outreach campaigns, and enforcement.
- 3

Safer People

Encourage safe, responsible driving and behavior by people who use El Dorado’s streets and create conditions that prioritize their ability to reach their destination unharmed.
- 4

Post-Crash Care

Enhance the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.
- 5

Safer Streets

Design street environments in El Dorado to mitigate human mistakes and account for injury tolerances, to encourage safer behaviors, and to facilitate safe travel by the most vulnerable users in the community.



In addition to those five key elements, the Safe Systems Approach is also characterized by the core principles as described below.

Core Principles of the Safe System Approach

1	Death and Serious Injuries are Unacceptable	Transportation systems must aspire to eliminate catastrophic outcomes.
2	Humans Make Mistakes	Recognizing human error leads to more forgiving street designs and interventions.
3	Humans Are Vulnerable	Reducing high-impact crashes and creating safer conditions protect all users.
4	Responsibility is Shared	Engineers, policymakers, local businesses, enforcement, and the public all play a role.
5	Safety is Proactive	Predicting and preventing risks rather than reacting post-incident.
6	Redundancy is Crucial	Layering safety measures ensures multiple lines of defense.



A Public-Informed Data-Driven Approach

The Safe Streets 4 All El Dorado SAP was developed through a layered, data-driven, and community-informed analysis of transportation safety conditions across the city. As shown in the project workflow graphic (Figure 23), the process brought together the High-Injury and High-Risk Networks identified in the El Dorado Transportation Study, a crash-based High-Injury Network showing where severe crashes have already occurred, and a more proactive High-Risk Network shaped by crash patterns, risk factors, and public input to identify where future severe crashes are more likely. This approach moved beyond a purely reactive focus on

crash history to also consider underlying roadway conditions, multimodal activity, and residents’ lived experience. Together, these layers informed the development of El Dorado’s Priority Network, creating a more proactive framework for identifying the corridors and intersections where targeted diagnosis, countermeasure selection, and future safety investments can most effectively reduce fatal and serious-injury crashes and improve safety outcomes for all roadway users.



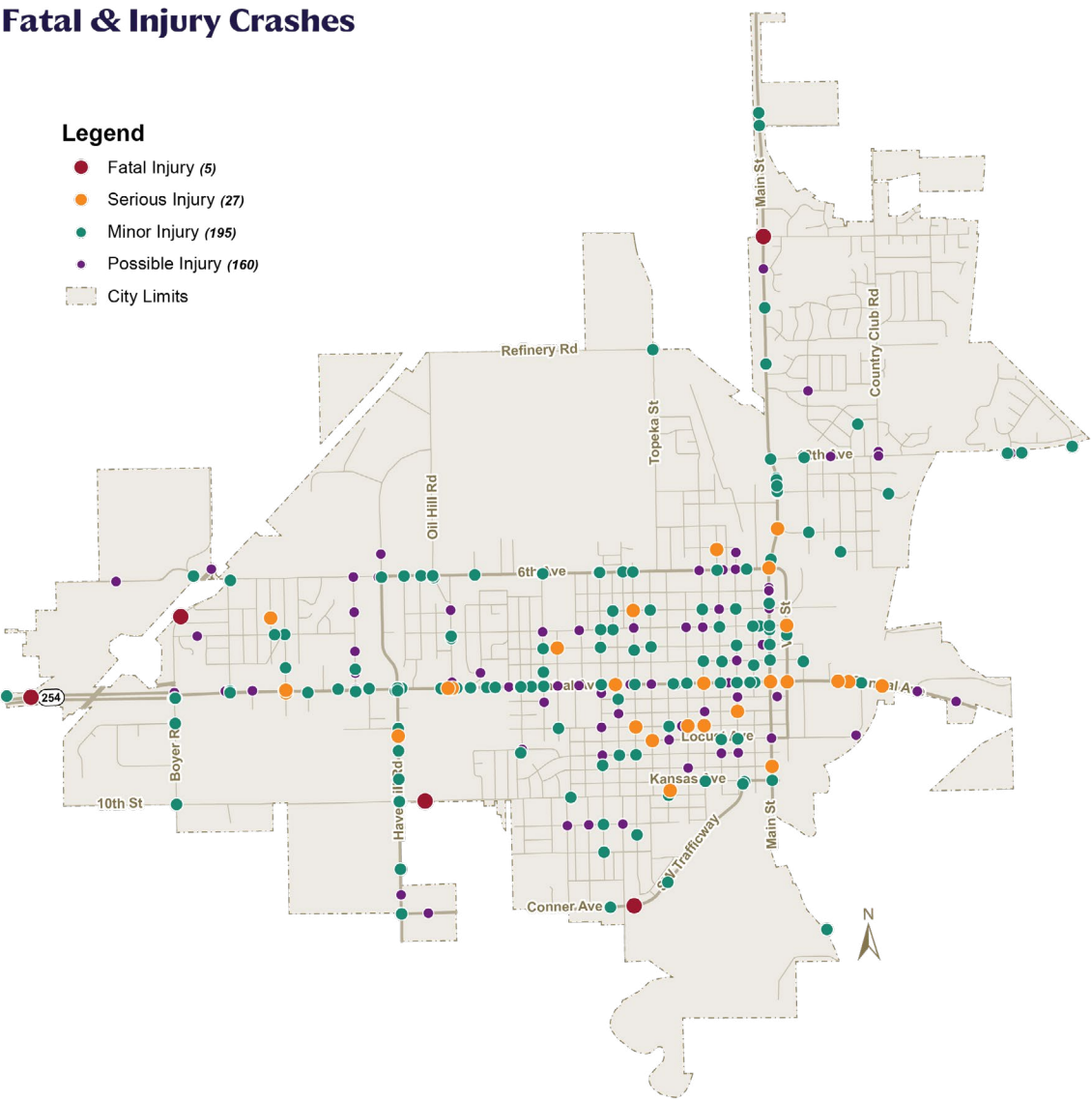


Problem Diagnosis

Problem diagnosis draws on El Dorado’s crash history and community input to identify the city’s most pressing safety challenges. Between 2015 and 2024, 2,082 crashes were reported within the city, including 387 fatal-and-injury (FI) crashes and 32 killed-or-seriously-injured (KSI) crashes, with the most serious outcomes concentrated on a relatively focused set of corridors and intersections. Problem diagnosis connects those patterns to the roadway, behavioral, and environmental conditions behind them and helps identify the types of countermeasures best suited to respond.

1692 PDO Crashes
160 Possible Injuries
195 Minor Injuries
27 Serious Injuries
5 Fatal Injuries

Fatal & Injury Crashes



Cluster Analysis

A key part of that diagnosis is the cluster analysis, which groups El Dorado’s crashes into four recurring patterns that help guide both systemic and location-specific improvements. Together, the clustering findings show that El Dorado’s safety challenges reflect recurring patterns across the transportation system rather than isolated incidents at a few locations. This provides a clear bridge from diagnosis to action by distinguishing the issues best addressed through systemwide strategies from those that require targeted improvements within the Priority Network.

0

Cluster 0: Routine Intersection Crashes

The largest crash pattern, made up mostly of property-damage-only crashes involving angle and turning conflicts at intersections under normal daytime conditions. This cluster points to the need for better intersection operations, visibility, and yielding behavior.

2

Cluster 2: Rear-End & Parking-Related Crashes

A mostly lower-severity pattern tied to queued traffic, stop-and-go conditions, and parking-related conflicts on local and urban streets. This cluster points more toward operational and street-management improvements than major geometric changes.

1

Cluster 1: Speeding & Aggressive Driving Crashes

A smaller but more injury-prone pattern associated with speeding, aggressive lane changes, loss of control, and some head-on crashes, especially on higher-speed corridors during peak periods, weekends, and nighttime.

3

Cluster 3: Nighttime Impaired Driving & Severe Crashes

The smallest but most severe pattern, involving nighttime crashes on higher-speed roads that are often associated with impairment, speeding, and roadway departure. This cluster highlights the need for targeted enforcement and high-severity crash mitigation.



System-Wide Recommendations

Systemwide recommendations focus on the recurring safety issues that appear across El Dorado’s transportation system, not just at isolated locations. The analysis points most clearly to intersection safety, speed management, visibility, and multimodal access as the city’s primary systemic needs.

That includes actions such as reviewing signal timing and left-turn operations, improving signs, markings, and lane guidance, enhancing crosswalk visibility, upgrading lighting and sight distance where darkness or vegetation increases risk, and strengthening sidewalk, crossing, and school-route connections for people walking and biking.

The plan also supports targeted behavioral strategies, including enforcement and education related to distracted driving, failure to yield, speeding, and impaired driving. Together, these recommendations create a citywide safety framework focused on the conditions most closely linked to fatal and serious-injury crashes in El Dorado.

Site Specific Recommendations

Site-specific recommendations are built from the citywide framework by focusing investment on the Priority Network, where crash history, future risk, and community concerns most clearly overlap. In El Dorado, that includes Central Avenue (K-254), Main Street (US-77), 6th Avenue, and Haverhill Road, along with key intersections such as Central at Village, Oil Hill, Haverhill, Boyer, Main, and Summit, and Main at 6th, 3rd, and McCollum.

Along these corridors and intersections, the recommendations become more targeted and project-oriented. They include corridor speed treatments, signal and turn-movement improvements, upgraded pedestrian crossings, sidewalk gap closure, lighting and visibility improvements, and other intersection-specific operational or geometric changes.

Together, these site-specific recommendations translate the plan’s broader safety diagnosis into focused improvement needs on the Priority Network and set the stage for the project identification, prioritization, and implementation strategies.

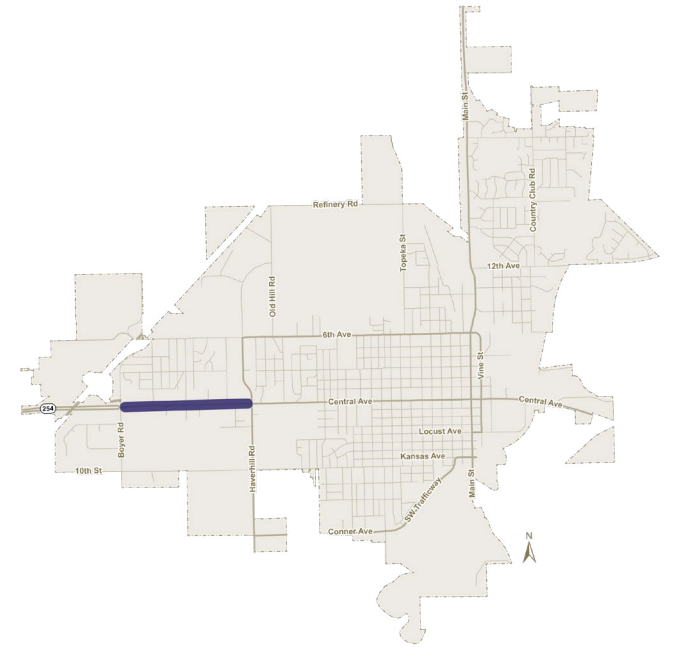
Project Groups

Project identification and implementation are centered on the Priority Network, translating the plan’s safety analysis into a focused set of corridor improvements, intersection projects, and action-ready programs. The overall strategy pairs larger capital needs in El Dorado’s highest-risk corridors with lower-cost operational and programmatic actions that can begin sooner, creating a practical framework for phased implementation while maintaining focus on the locations and conditions most closely tied to fatal and serious injury crashes.



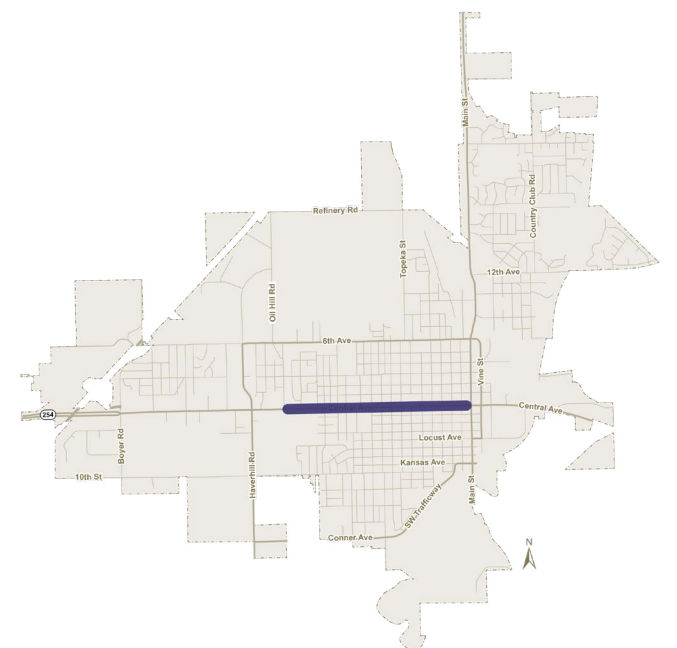
1 Project 1 Central Avenue Boyer Road to Haverhill Road

Central Avenue is a top-priority east–west corridor for safety improvement in El Dorado. Central Avenue from Boyer to Haverhill pairs corridor-wide improvements with targeted upgrades at Central & Boyer, Central & Village, and Central & Haverhill. Recommended treatments include signal and turn-movement improvements, clearer lane guidance, access management, pedestrian and ADA/PROWAG upgrades, and lighting and visibility improvements. The corridor may also support a larger future reconstruction that adds a center turn lane, separated bicycle facilities, and protected intersections to improve safety for all users.



2 Project 2 Central Avenue Oil Hill Road to Main Street

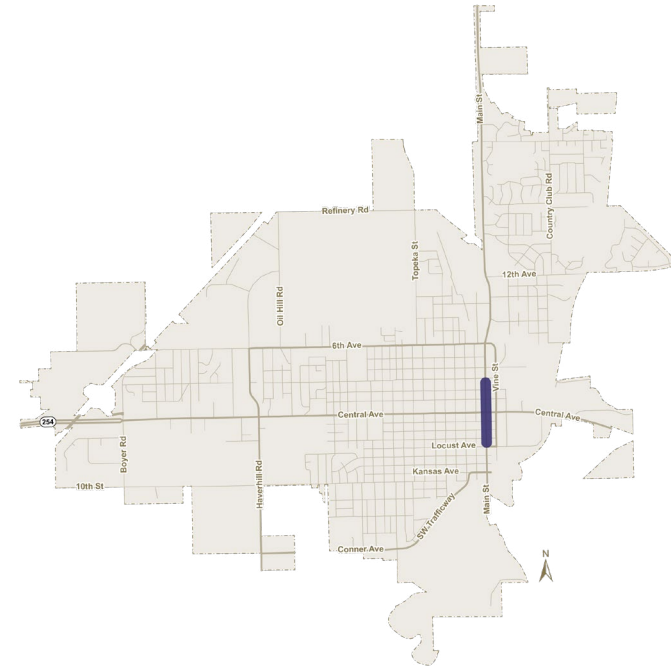
Central Avenue remains one of El Dorado’s highest-priority safety corridors, and Project 2 focuses on the segment from Oil Hill Road to Main Street, where crash history and intersection risk are heavily concentrated. Recommended improvements include targeted intersection upgrades, clearer turn movements and lane guidance, signal and operational improvements, and pedestrian crossing, lighting, and visibility enhancements. Together, these treatments would improve safety on one of the city’s busiest east–west corridors while supporting safer access for people walking, biking, and driving.





Project 3 Main Street Locust Avenue to 3rd Avenue

Main Street is a priority north–south corridor and a key gateway into downtown El Dorado. Project 3 focuses on the segment from Locust Avenue to 3rd Avenue, where the transition from a wider, higher-speed corridor into the downtown street environment contributes to speed carryover and reduced pedestrian comfort. Recommended improvements emphasize traffic calming and multimodal safety, including a potential road diet to a three-lane section, gateway treatments, raised crosswalks or raised intersections, corner extensions, upgraded pavement markings, and other measures to slow traffic and reinforce a lower-speed downtown setting. Targeted improvements at and near 3rd Avenue also include upgrades to signals, pedestrian infrastructure, ADA/PROWAG, visibility, and lane guidance to enhance safety for all users in this active mixed-use area.



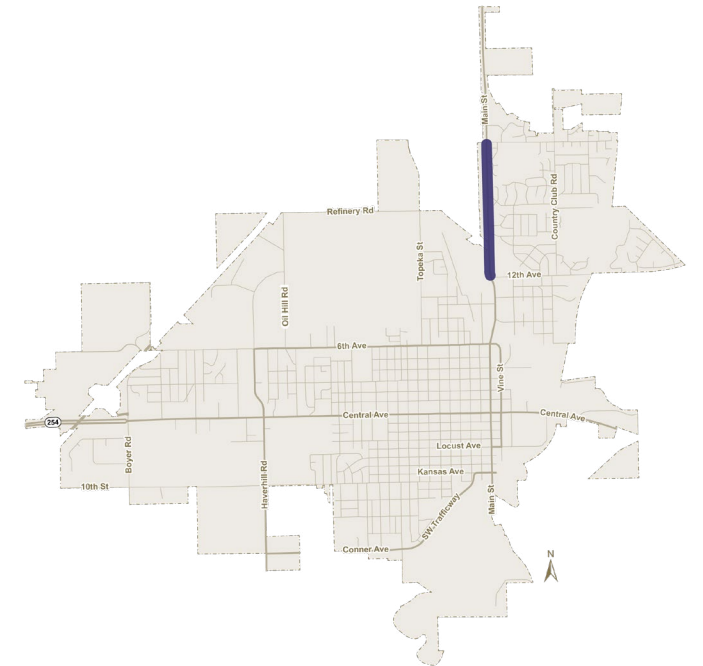
Project 4 Main Street at 6th Avenue

Project 4 focuses on the intersection of Main Street and 6th Avenue, a key location where targeted operational and geometric improvements can enhance safety and traffic flow. Recommended treatments include signal upgrades, retroreflective backplates, refreshed pavement markings, improved lane-use guidance, lighting, access management, and evaluation of options such as left-turn phasing, flashing yellow arrows, or a roundabout. The project also builds on previously awarded HSIP funding for corner-radius improvements and signal reconfiguration, helping improve turning movements, reinforce lane discipline, and reduce conflicts at this important north–south and east–west junction.



Project 5 Main Street 12th Avenue to McCollum Road

Project 5 continues safety improvements along Main Street north of downtown, with focused attention on the intersections at 12th Avenue and McCollum Road. Recommended treatments include signal and lighting upgrades, retroreflective backplates, pavement marking improvements, ADA upgrades, and targeted improvements to sight distance and crossing conditions. At McCollum, the project also includes improved ramp and crosswalk alignment and consideration of a future roundabout concept. Together, these improvements would strengthen safety and access along a key north–south corridor, with added benefits for school travel and everyday pedestrian movement.



Project 6 6th Avenue Haverhill Road to Main Street

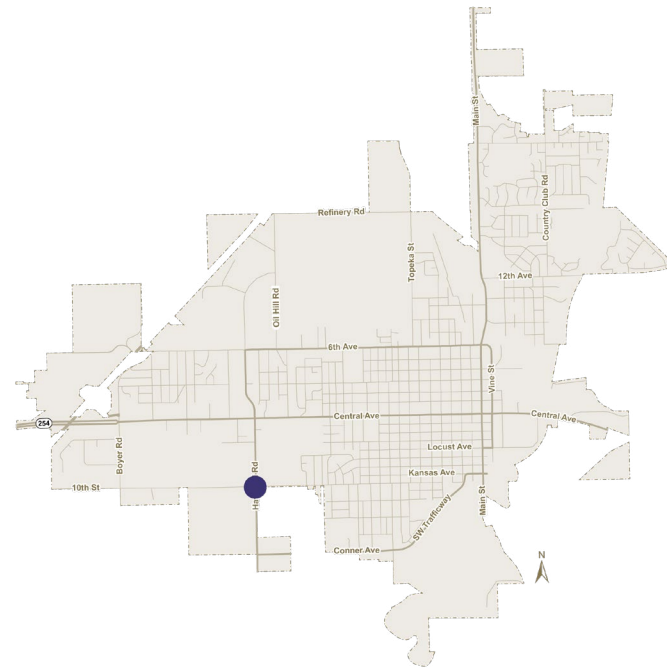
Project 6 focuses on improving safety and operations along 6th Avenue between Haverhill Road and Main Street, with particular attention to the intersections at Haverhill and Summit. Recommended treatments include signal upgrades, retroreflective backplates, pavement markings, lighting, ADA/PROWAG improvements, access management, and truck route signing. At 6th and Haverhill, improvements also include upgraded crosswalks, evaluation of left-turn phasing or a roundabout, and geometric changes to better accommodate large trucks. At 6th and Summit, the project calls for improved markings, sight-distance improvements, and evaluation of future signal or roundabout needs. Together, these improvements would strengthen safety and operations along an important east–west corridor while better supporting truck, vehicle, and pedestrian travel.





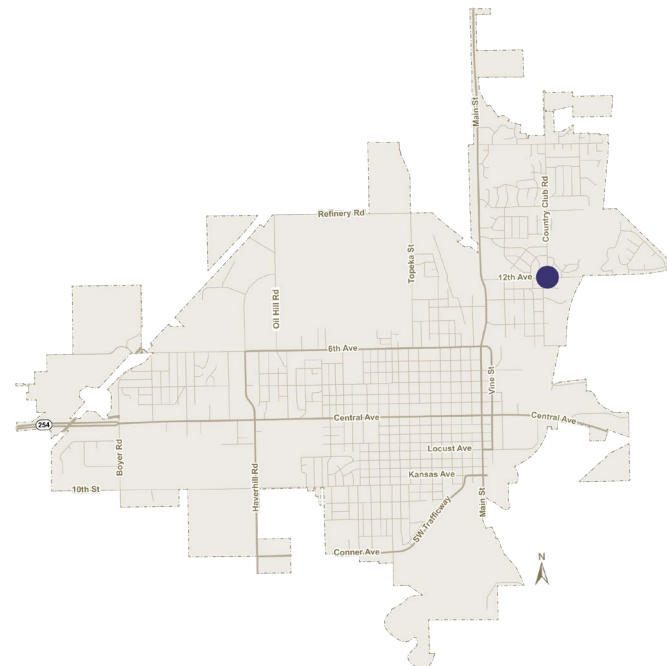
Project 7 Haverhill Road at Towanda Avenue

Project 7 focuses on targeted safety improvements at the intersection of Haverhill Road and Towanda Avenue. Recommended treatments include signal upgrades, retroreflective backplates, refreshed pavement markings, ADA/PROWAG improvements, and evaluation of options such as left-turn phasing, signal warrant changes, or a roundabout. The project also includes an added intersection warning sign on the west approach for eastbound traffic. Together, these improvements would help improve visibility, clarify operations, and reduce conflict at this priority intersection.



Project 8 12th Avenue at Country Club Road

Project 8 focuses on targeted safety improvements at the 12th Avenue and Country Club Road intersection and creates an opportunity to study broader corridor design changes. Recommended treatments include pavement marking upgrades, sight-distance improvements, crosswalk enhancements, and ADA/PROWAG upgrades. The project also considers Country Club Road as a potential demonstration corridor for repurposing an existing 41-foot collector street, which could help inform future design approaches for similar streets in El Dorado.



Policy Recommendations

El Dorado's policy recommendations focus on creating a clearer, more consistent framework for advancing safety citywide. Recommended actions include data-driven enforcement policies for speeding, distracted driving, impaired driving, and failure to yield; review of traffic control and signal operations, including left-turn phasing and warrant evaluation; coordination on truck routes and commercial vehicle safety; and operational policies, such as winter roadway pretreatment, where conditions contribute to crash risk. Together, these policy actions would help the City move from reacting to individual crashes to a more proactive, repeatable approach to safety.

Program Recommendations

El Dorado's program recommendations emphasize education, outreach, and ongoing behavior-based safety efforts that complement physical improvements. Recommended programs include public education on distracted driving, right-of-way awareness, and pedestrian and bicycle safety; teen and older-driver outreach; Safe Routes to School and school-zone awareness initiatives; and education on vehicle safety technology, motorcycle safety, and safe interaction with larger vehicles. Together, these programs would reinforce safer travel behavior, respond directly to concerns raised through community engagement, and extend the benefits of engineering improvements beyond individual project locations.

Areas of further study

El Dorado's further study recommendations focus on moving from systemwide diagnosis to more detailed evaluation of priority locations and issues. Recommended next steps include focused corridor and intersection studies on the Priority Network, detailed review of signal timing and left-turn operations, traffic-control warrant evaluations, additional pedestrian crossing and school-route analysis, and other targeted safety reviews where conditions warrant, such as truck-route, railroad-crossing, or operational studies. Together, these follow-up efforts would help the city refine countermeasures, define project scope, and position high-priority improvements for future design, funding, and implementation.

Together, these projects and recommendations reflect a phased implementation approach that does not rely solely on major capital projects. Near-term strategies such as operational changes, signage and marking upgrades, lighting improvements, speed management, and Safe Routes to School can begin advancing while larger corridor and intersection projects are developed and pursued through future funding opportunities.



Our Collective Responsibility

Everyone has a role to play in creating safer streets in El Dorado. Public officials, transportation professionals, law enforcement, schools, businesses, and community members all share responsibility for improving safety across the transportation network.

This Safety Action Plan reflects El Dorado's commitment to prioritizing safety and quality of life for people who live, work, and travel in the community. By working together and keeping safety at the forefront of transportation decisions, El Dorado can continue building a strong culture of safety and create streets that are safer and more welcoming for all users.

By advancing the strategies identified in this plan, El Dorado can continue to move toward its goal of eliminating fatal crashes and significantly reducing serious injury crashes, while supporting safer travel for people of all ages and abilities.

Implementation & Next Steps

The Safe Streets 4 All El Dorado SAP is intended to serve as a guide for improving transportation safety across the community. The recommendations in this plan provide the City with a range of tools and strategies to address the most pressing safety needs as opportunities, partnerships, and funding resources become available.

Rather than a fixed list of projects, the plan offers flexible solutions that can be implemented individually, combined into corridor improvements, or incorporated into

future roadway maintenance, reconstruction, or development projects. This approach allows the City to pursue a variety of funding opportunities while advancing safety improvements in a practical and scalable way.

Regular progress reporting and continued review of crash data will help the City monitor trends, evaluate the effectiveness of implemented improvements, and guide future updates to the plan. Maintaining this data-driven and community-informed approach will help ensure that safety priorities remain aligned with current conditions and emerging needs.

This plan also represents a continued call to prioritize safety in everyday decision-making. By using this plan as a guiding framework and maintaining a strong commitment to implementation, El Dorado can continue making steady progress toward safer streets and a transportation system that better protects all roadway users.



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Plan Purpose

Chapter 1



PLAN PURPOSE

What is a Safety Action Plan?

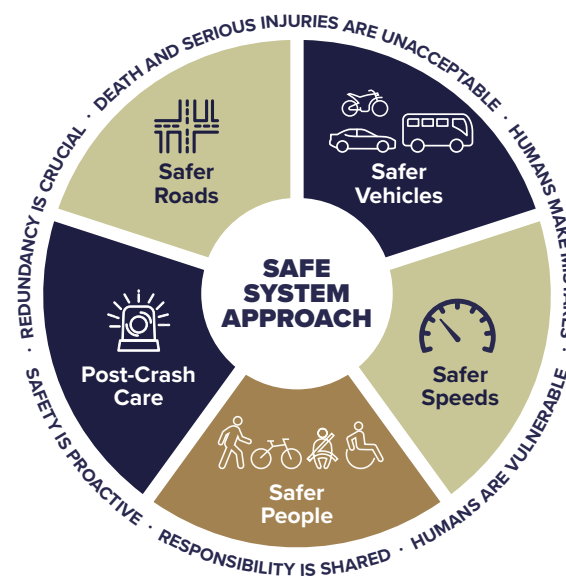
The U.S. Department of Transportation (USDOT) established the Safe Streets and Roads for All (SS4A) Action Plan in 2022, with \$5 billion allocated over five years (2022–2026). In late 2024, the City of El Dorado was awarded an SS4A grant funding and officially launched the Safe Streets 4 All El Dorado initiative in summer 2025.

The Safe Streets 4 All El Dorado Safety Action Plan (SAP) provides data-driven analysis and recommendations to guide future transportation safety efforts. The Safe Streets 4 All El Dorado SAP focuses on identifying risk factors, analyzing crash trends, and establishing strategic safety goals. While the Safe Streets 4 All El Dorado SAP sets the foundation for improving safety, the design and implementation of specific countermeasures will be advanced through future stand-alone projects led by the City.

Serving as the City’s roadmap for safer streets, the Safe Streets 4 All El Dorado SAP outlines

actionable strategies to reduce and ultimately eliminate fatal and serious injuries across El Dorado’s transportation network.

The final Safe Streets 4 All El Dorado SAP includes a community-wide safety analysis, public engagement to identify key concerns, prioritized project recommendations, and an implementation plan to guide the deployment of safety improvements.



Project Timeline

July 2025	August 2025	September 2025	October 2025	November 2025
Project Launch	Project Kick-off Meeting	- Pop-Up Event - Progress Meeting	Progress Meeting	Progress Meeting

December 2025	January 2026	February 2026	March 2026	April 2026
- Focus Group Meeting - Field Visits	Focus Group Meetings	- Pop-up Event - Focus Group Meeting	- Progress Meeting - Field Data Collection - Draft & Submit Implementation Plan	Present Final Plan to City Council



Principles of The Safe System Approach

The Safe System Approach provides the framework for achieving the community’s goal of eliminating fatal crashes and reducing serious injury crashes in El Dorado’s transportation network. As part of the National Roadway Safety Strategy released in January 2022, the

USDOT adopted the Safe System Approach as its guiding framework to address roadway safety challenges nationwide. This approach acknowledges both human mistakes and human vulnerability and is designed to protect all roadway users.

The Safe System Approach is built around the following six principles:

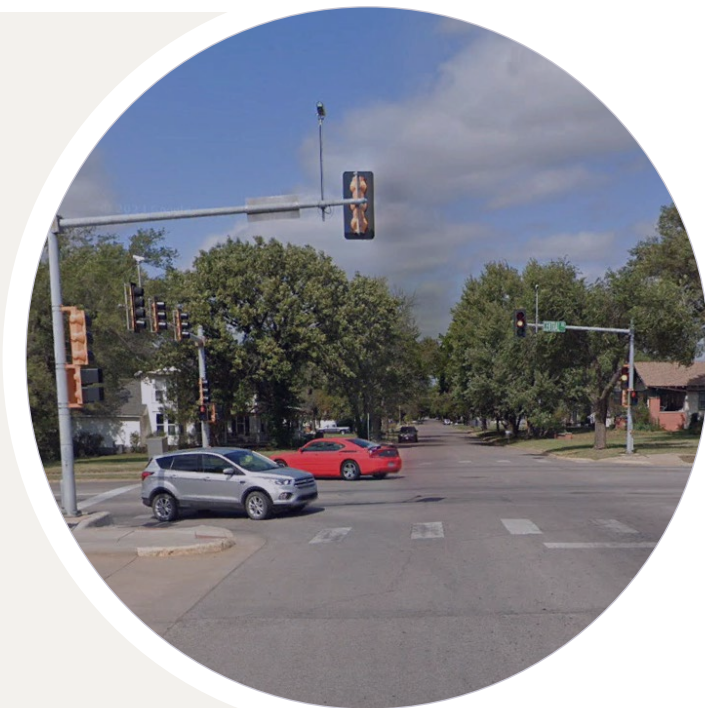
Core Principles of the Safe System Approach

1	Death and Serious Injuries are Unacceptable	The Safe System Approach prioritizes eliminating crashes that result in death and serious injury on roadways.
2	Humans Make Mistakes	People will inevitably make mistakes and decisions that can lead to or contribute to crashes, but the transportation system can be designed to accommodate human error and avoid deaths.
3	Humans Are Vulnerable	People have physical limits in tolerating crash forces before death or serious injury occurs. It is critical to design and operate a transportation system that is human-centric and accommodates human physical vulnerabilities.
4	Responsibility is Shared	All stakeholders – including government at all levels, industry, nonprofit/advocacy, researchers, and the public – are vital to preventing fatalities and serious injuries on our roadways.
5	Safety is Proactive	Proactive tools should be used to identify and address safety issues in the transportation system, rather than waiting for crashes to occur and reacting afterwards.
6	Redundancy is Crucial	Reducing risks requires strengthening all parts of the transportation system so that, if one part fails, the other parts still protect people.



Objectives of The Safe System Approach

There are five objectives of a Safe System Approach: safer people, safer streets, safer vehicles, safer speeds, and post-crash care. To achieve zero fatal and serious injury crashes, all five of these objectives must be strengthened. Strengthening all five objectives provides redundant layers of protection against fatal and serious injuries on the transportation network. The Safe Streets 4 All El Dorado SAP was developed to strengthen the five Safe System objectives defined below through improving the overall transportation system.



Safer People

Encourage safe, responsible behavior by people who use our streets and create conditions that prioritize their ability to reach their destination unharmed.

Safer Streets

Design roadway environments to mitigate human mistakes and account for injury tolerances, encourage safer behaviors, and facilitate safe travel for the most vulnerable users.

Safer Vehicles

Expand the availability of vehicle systems and features that help prevent crashes and minimize their impact on both occupants and non-occupants.

Safer Speeds

Promote safe and appropriate speeds in all roadway environments through a combination of thoughtful, context-appropriate roadway design, targeted education and outreach campaigns, and enforcement.

Post-Crash Care

Enhance crash survivability by expediting access to emergency medical care, creating a safe work environment for vital first responders, and preventing secondary crashes through robust traffic incident management practices.



The Need for Safer Streets

A total of 39,345 people are estimated to have died in traffic crashes in 2024 within the United States. This represents a 3.8% decrease from 2023 and marks the first time since 2020 that fatalities fell below 40,000, according to the National Highway Traffic Safety Administration (NHTSA). Traffic crashes remain a leading cause of death for teenagers in the United States and continue to have higher impacts in rural areas and in some communities. In Kansas, 338 people died in traffic crashes in 2024, the lowest number on record and 13% fewer than in 2023.

In the summer of 2025, the City launched the Safe Streets 4 All El Dorado SAP for the community. This project aims to develop an SAP that will eliminate fatal crashes and significantly reduce serious injury crashes for all users of El Dorado's streets, sidewalks, and trails.

The Safe Streets 4 All El Dorado SAP provides an overview of the following:

- Historical crash data for the City of El Dorado
- Community perspective
- Development of applicable countermeasures
- Implementation Plan

39,345 Crashes In U.S.
42,939 Deaths In Kansas
13% Decrease From 2023

Nationally represented data from 2021. Insurance Institute for Highway Safety (IIHS) and the Highway Loss Data Institute (HLDI)

El Dorado Safety Action Plan Steering Committee

An Advisory Team composed of community stakeholders was formed early in the planning

process to guide the development of the SAP. The team met regularly throughout the project and contributed valuable guidance, feedback, and solutions on safety concerns in El Dorado's transportation system.

Steering Committee Members

David Dillner
City Manager, City of El Dorado

Scott Rickard
City Engineer, City of El Dorado

Michael Holton
Chief of Police, City of El Dorado

Brad Meyer
Director of Public Works,
City of El Dorado

Elizabeth Blakely
Management Intern,
City of El Dorado

Josh Potter
Engineering Tech
City of El Dorado

Julie Clements
Municipal Information Officer
City of El Dorado

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Safety Analysis

Chapter 2



SAFETY ANALYSIS

This chapter presents a comprehensive review of transportation safety conditions in El Dorado, Kansas, using a 10-year crash record (2015–2024). The analysis examines historical crash patterns and severity outcomes to better understand where and how crashes occur across the community. This data-driven review establishes a factual baseline to identify key safety concerns and develop a Priority Network to inform targeted strategies to reduce fatalities and serious injuries.

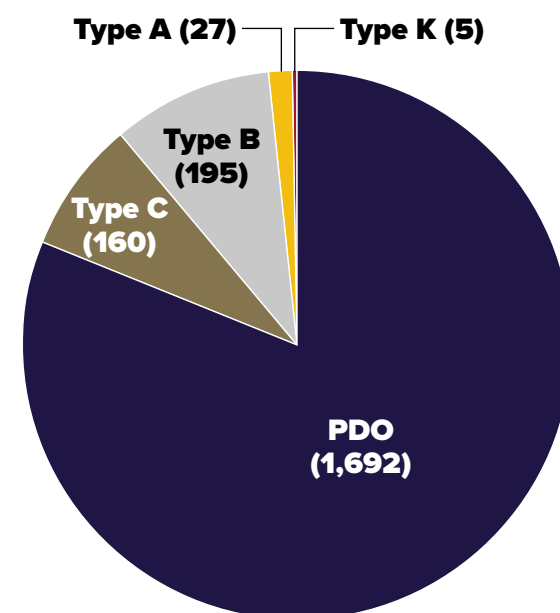
El Dorado Crash Analysis

To support the development of this plan, a series of maps was created to visually depict crashes reported in El Dorado over the study period. These maps illustrate the geographic distribution of crashes and help establish context for documented safety issues and community concerns. The following figures and summaries examine crash patterns in greater detail, highlight priority areas, and guide the City’s efforts to create a safer transportation system for all users.

Crash data used in this analysis was downloaded from the Kansas Geoportal and supplemented by the Kansas Department of Transportation (KDOT) crash database. The data includes crashes recorded between January 1, 2015, and December 31, 2024, within the city limits of El Dorado. During this time, a total of 2,082 crashes were reported, as shown in [Figure 1](#).

The crash severity breakdown is as follows:

- 1,692 property-damage-only (PDO) crashes
- 160 possible injury (Type C) crashes
- 195 minor injury (Type B) crashes
- 27 serious injury (Type A) crashes
- 5 fatal injury (Type K) crashes



Thirty-Eight (38) crashes involved a vulnerable road user (VRU), defined in this plan as a person who walks or rides a bike within the transportation network.



Crash Severity (All Crashes 2015-2024)

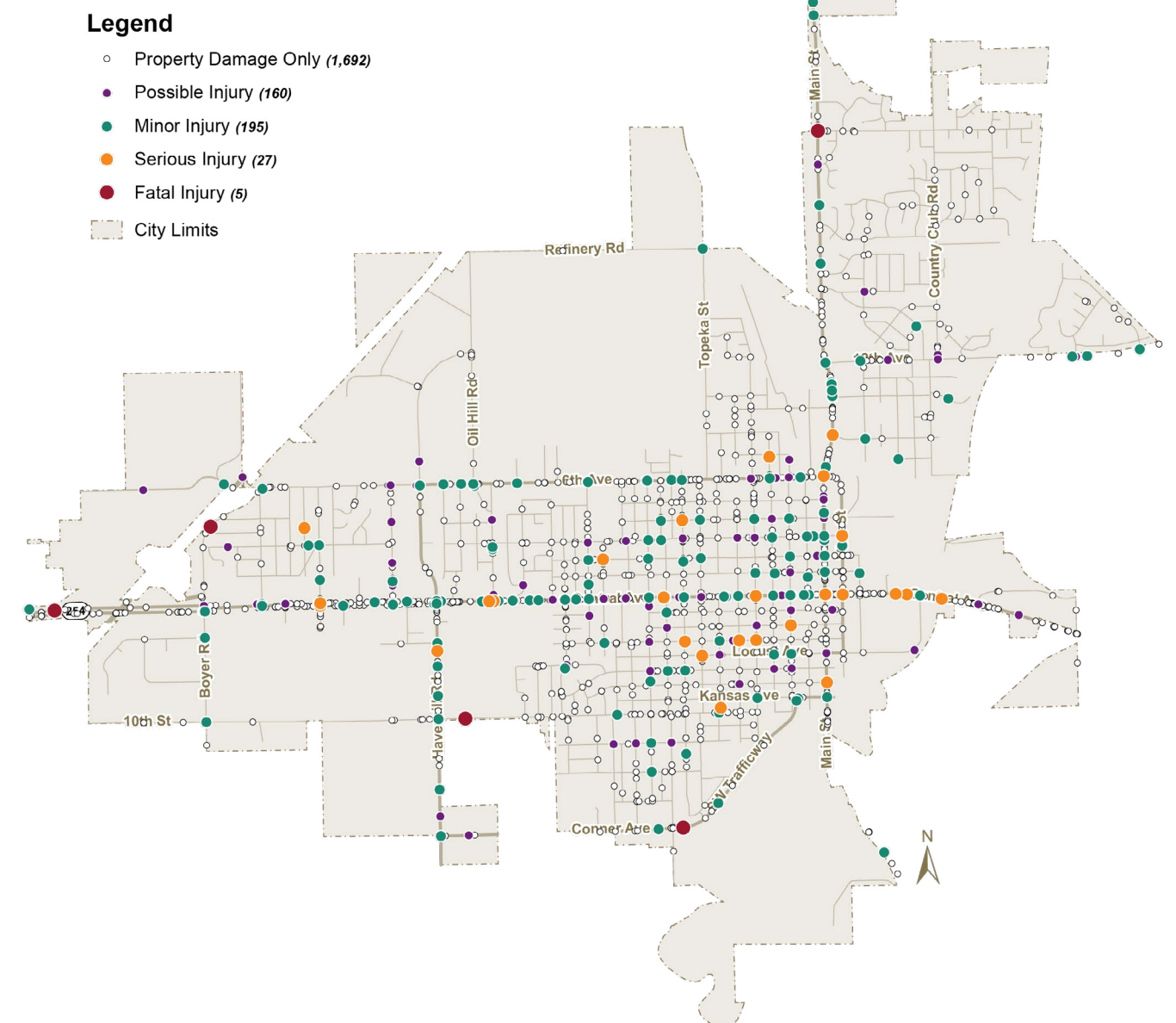


Figure 1: All crashes recorded within the city limits of El Dorado (2015 – 2024)



To illustrate areas where crashes frequently occur, [Figure 2](#) displays a heat map. Areas highlighted in light blue show locations with fewer crashes than those highlighted in red,

which have a higher number of crashes. Areas highlighted in yellow show where the highest density of crashes occurs.

Crash Density Heat Map

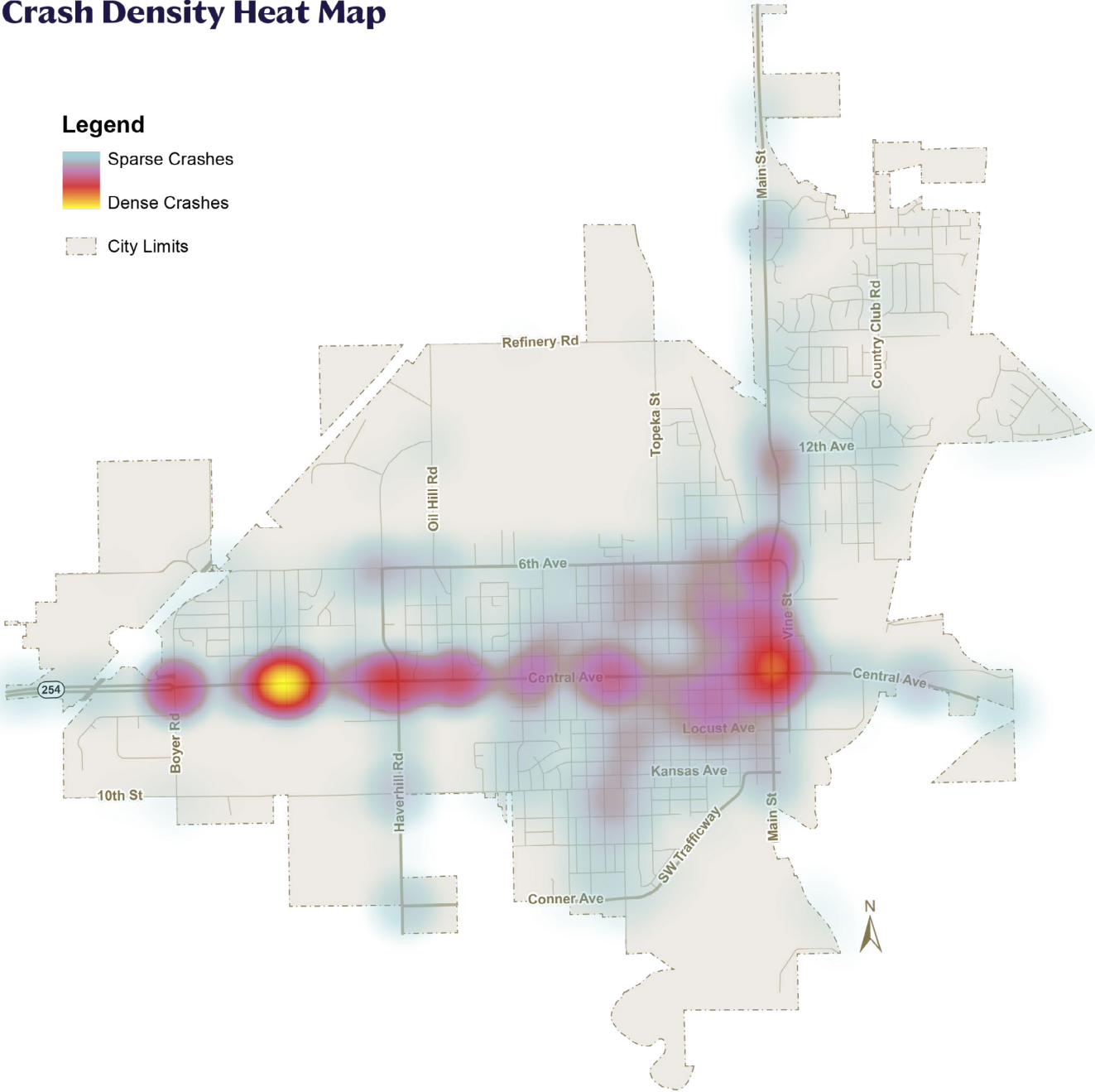


Figure 2: Crash density heat map (2015-2024)



[Figure 3](#) identifies the locations of VRU crashes. Of the 38 VRU crashes, 16 involve pedestrians and 22 involve people on bicycles.

Vulnerable Road User Crashes

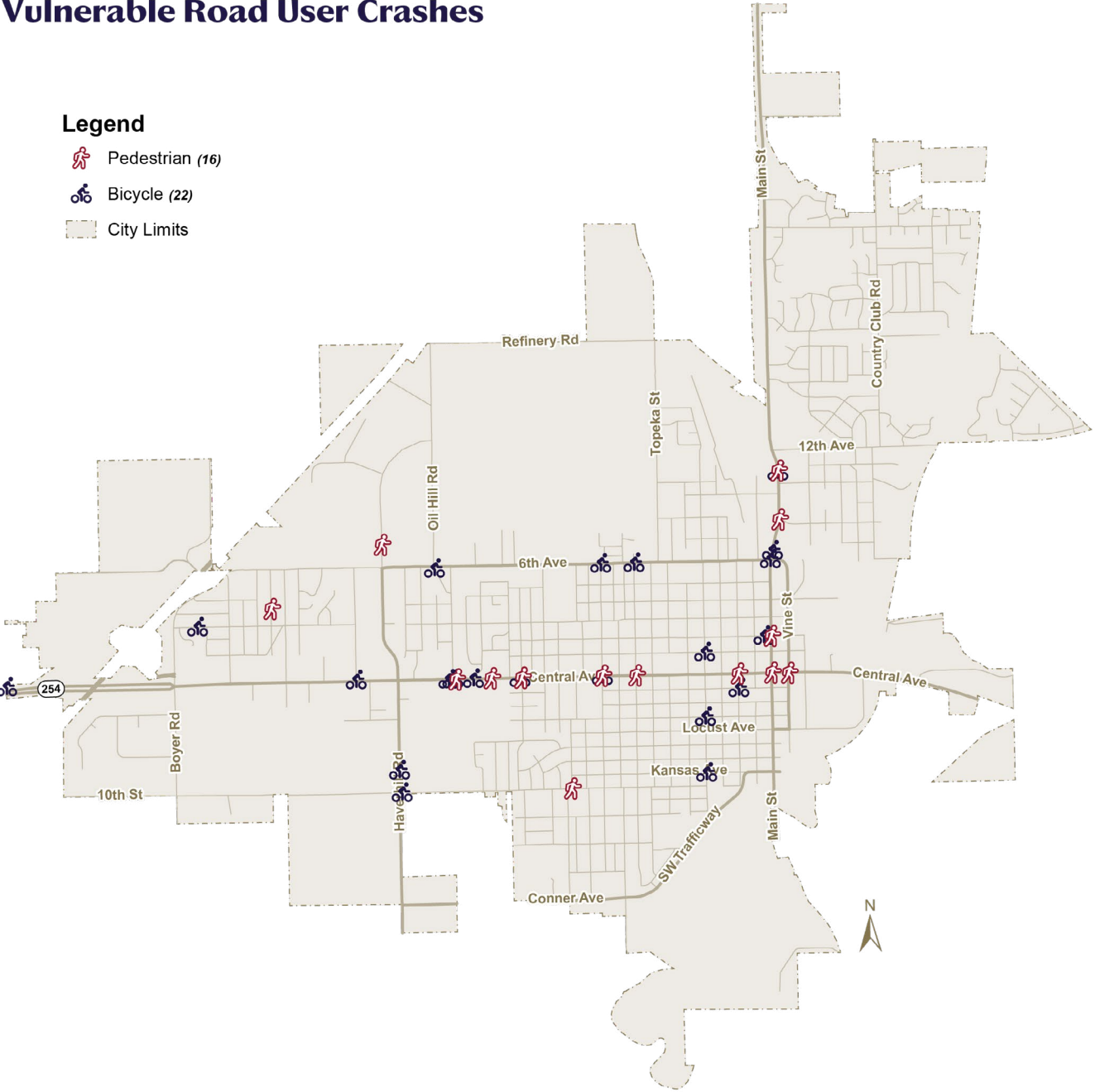


Figure 3: El Dorado VRU crashes (2015-2024)

SUMMARY OF HISTORICAL CRASH DATA

Consistent with the Safe Streets and Roads for All (SS4A) emphasis on reducing the most serious outcomes, this section focuses on crashes that result in fatalities or serious injuries. These crashes are commonly referred to as Fatal or Seriously Injured (KSI) crashes and are a key measure for identifying locations and conditions associated with the greatest safety risk. However, because the number of KSI crashes in El Dorado is relatively low, fatal-plus-injury (FI) crashes are also examined where appropriate to provide a more stable basis for identifying patterns and informing recommendations. Reviewing both KSI and FI crashes helps clarify the circumstances and contributing factors associated with severe outcomes and supports the development of targeted countermeasures and policy actions to reduce future crash severity.

KSI and FI Crashes

Of the 1,692 crashes reported during the 10-year study period, 387 resulted in either a fatality or some level of injury and are classified as FI crashes. Of these, 32 are classified as KSI crashes. [Figure 4](#) shows the locations of FI crashes, and [Figure 5](#) shows the KSI crash locations. The remainder of this section provides additional detail on FI and KSI crash patterns.



Fatal & Injury Crashes

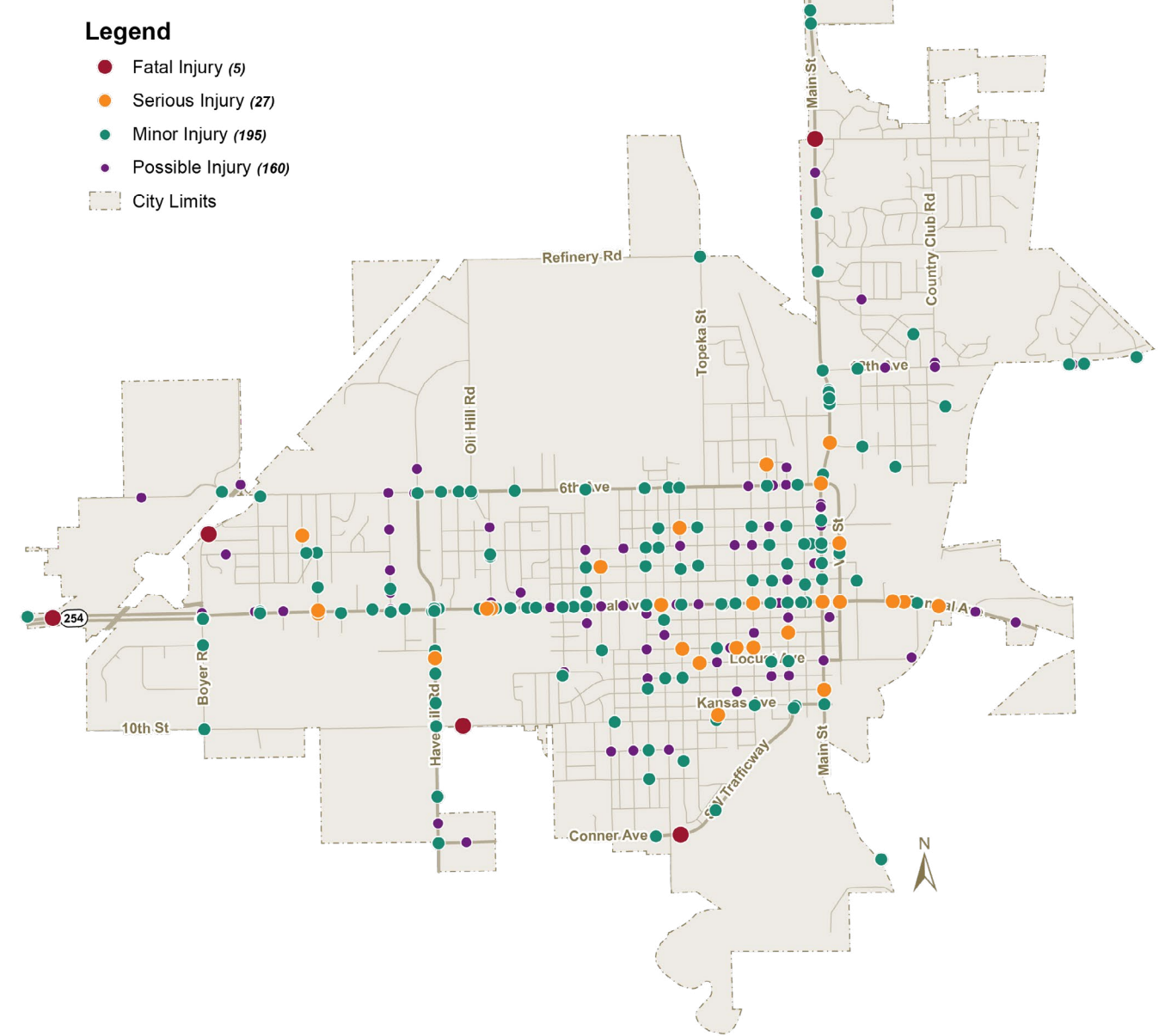


Figure 4: FI crashes in El Dorado (2015-2024)



Fatal & Serious Injury Crashes

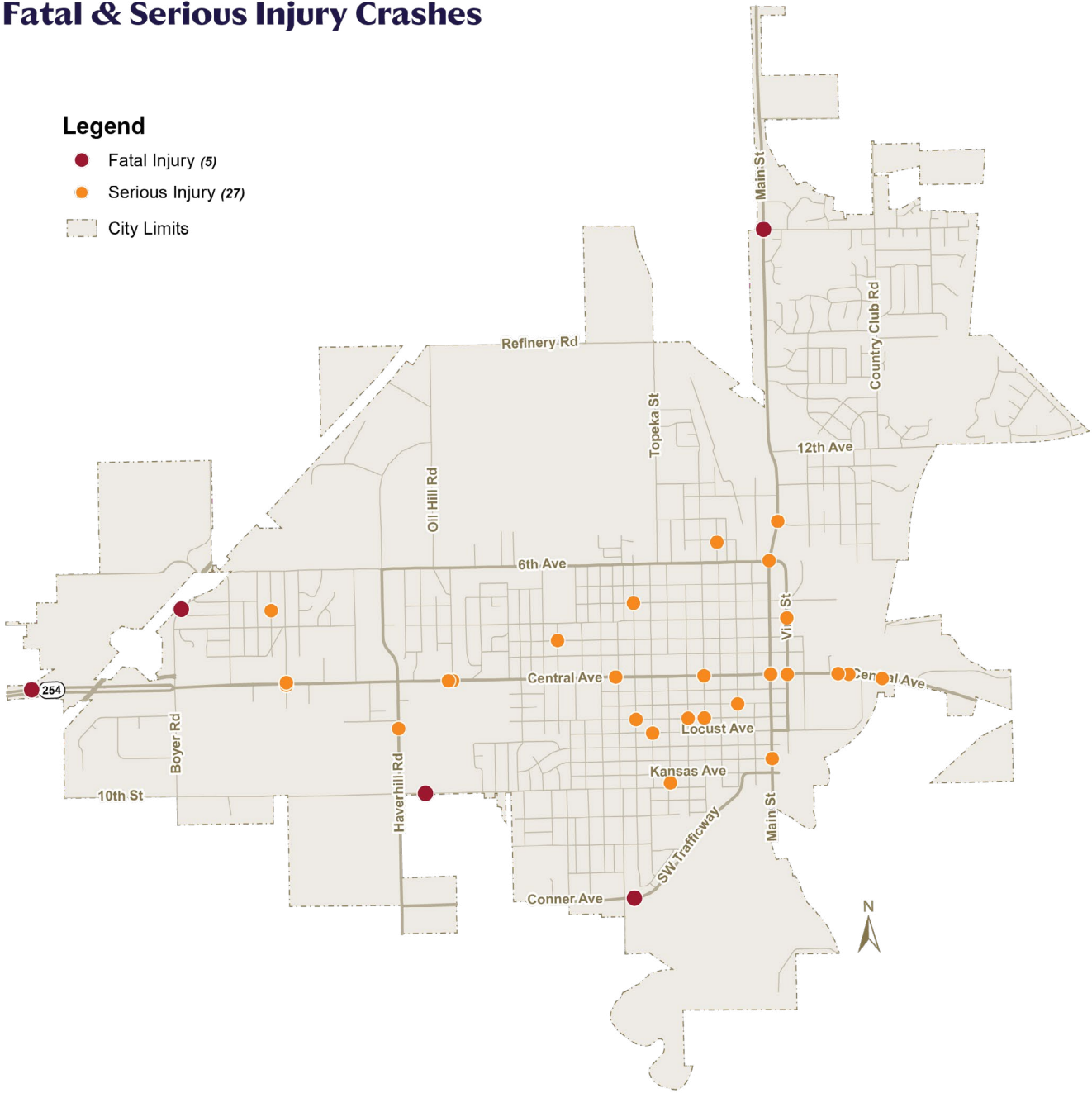


Figure 5: KSI crashes in El Dorado (2015-2024)



Comparison of Peer Cities in Kansas

Figure 6 shows KSI crash rates per 100,000 population in El Dorado and selected peer cities in Kansas, 2015–2024. El Dorado recorded 319 KSI crashes per 100,000 residents over the study period, which is slightly below the peer-city average of 350 and near the middle of the comparison group.

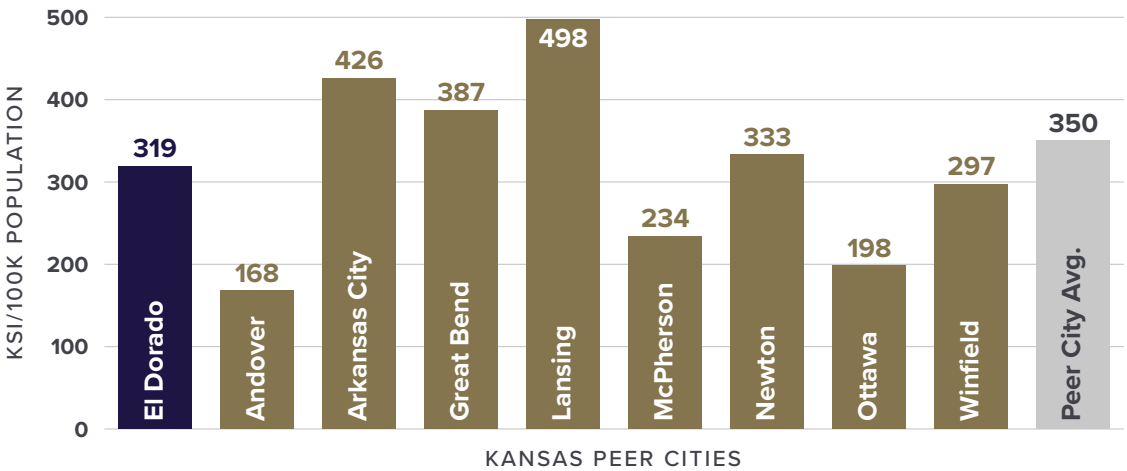


Figure 6: KSI crashes per 100k population (2015-2024)

Figure 7 shows alcohol-involved KSI crash rates per 100,000 population in El Dorado and selected Kansas peer cities, 2015–2024. El Dorado recorded 54 alcohol-involved KSI crashes per 100,000 residents during the study period, which is below the peer-city average of 64 and falls near the middle of the comparison group.

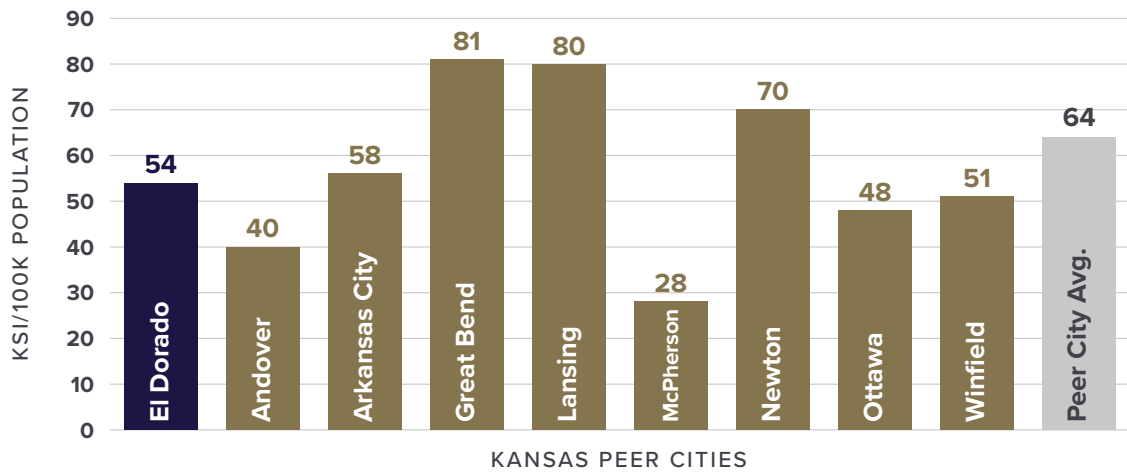


Figure 7: Alcohol-involved KSI crashes per 100k population (2015-2024)



Figure 8 shows VRU-involved KSI crash rates per 100,000 population in El Dorado and selected Kansas peer cities, 2015–2024. El Dorado recorded 47 VRU-involved KSI crashes per 100,000 residents during the study period,

which is below the peer-city average of 58 and lower than most comparison cities, though still indicative of an ongoing safety risk for people walking and biking.

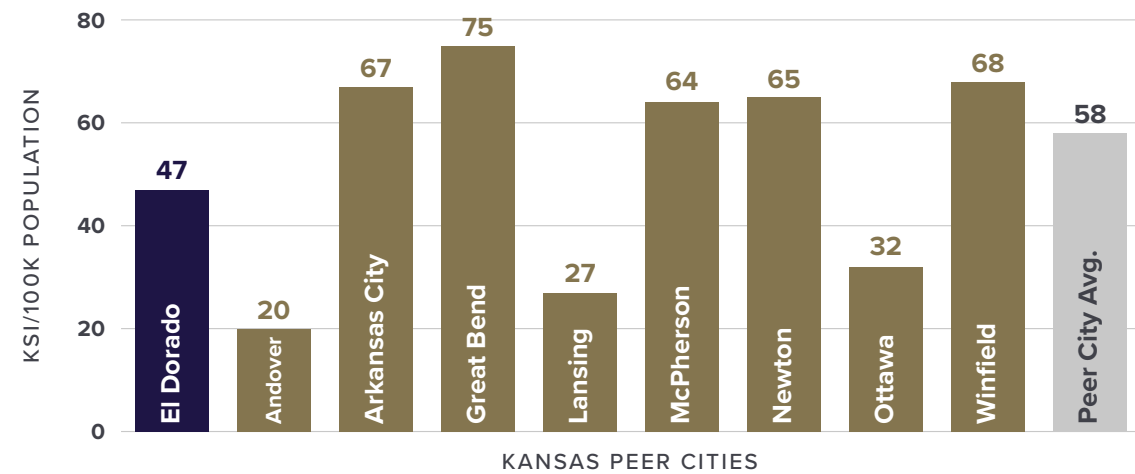


Figure 8: VRU-Involved KSI crash rates per 100k Population (2015-2024)

Figure 9 shows motorcycle-involved KSI crash rates per 100,000 population in El Dorado and selected Kansas peer cities, 2015–2024. El Dorado recorded 62 motorcycle-involved KSI crashes per 100,000 residents during the study

period, above the peer-city average of 57 and higher than most comparison cities, indicating that motorcycle safety is a more pronounced concern in El Dorado than in many peer communities.

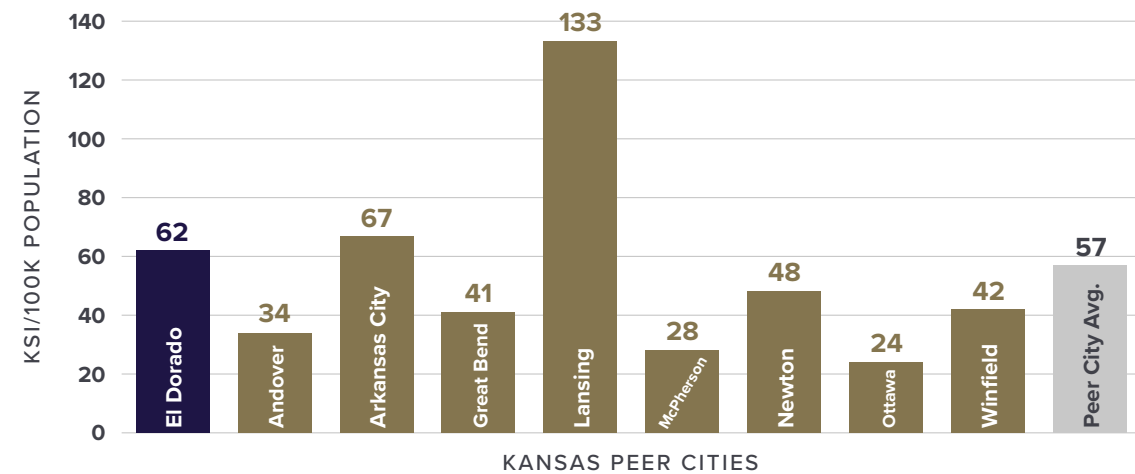


Figure 9: Motorcycle-Involved KSI crash rates per 100k Population (2015-2024)



Figure 10 shows annual KSI crash rates per 100,000 population in El Dorado compared to the Kansas peer-city average, 2015–2024. El Dorado's annual KSI rate fluctuated more than the peer-city average over the study period, but both trend lines show an overall upward pattern.

El Dorado peaked in 2021 and again exceeded the peer-city average in 2024, indicating that while year-to-year outcomes vary, the risk of serious and fatal crashes has generally increased over time.

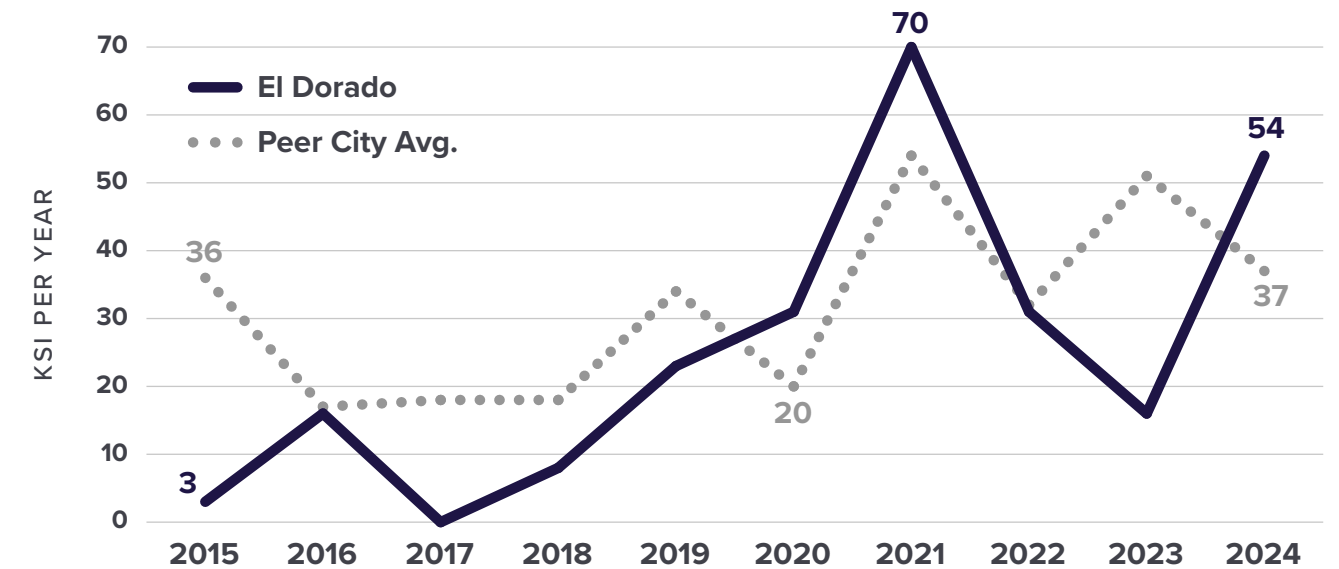


Figure 10: Annual KSI crash rates per 100k Population (2015-2024)



Crash Data Characteristics

Figure 11 shows that FI crashes in El Dorado are concentrated during weekday daytime and early evening travel periods. Most FI crashes occur between 7:00 AM and 7:59 PM, accounting for about 83% of the total, while only about 5% occur overnight between 12:00 AM and 5:59 AM. Crash activity is highest in the afternoon, with 3:00 PM to 5:59 PM accounting for about 25% of all FI crashes. The single highest hour is 3:00 PM (39 crashes), followed by 12:00 PM (38) and 4:00 PM (33). By day of week, Friday records the highest number of FI crashes (73),

followed by Thursday (69) and Tuesday (60), while Sunday has the fewest (35). Overall, about 79% of FI crashes occur on weekdays. The highest single hour-of-week occurs on Friday at 3:00 PM, when 13 FI crashes were recorded. Together, these patterns indicate that FI crash risk in El Dorado is most pronounced during typical weekday travel periods, particularly in the afternoon.



Time	MON	TUE	WED	THU	FRI	SAT	SUN	Total
12:00 AM	0	0	0	0	1	2	2	5
1:00 AM	1	0	1	0	0	1	2	5
2:00 AM	1	0	0	0	1	1	1	4
3:00 AM	0	0	0	0	0	1	0	1
4:00 AM	0	0	1	0	0	0	0	1
5:00 AM	1	1	0	1	1	1	0	5
6:00 AM	0	0	0	3	0	1	0	4
7:00 AM	2	8	6	7	4	0	0	27
8:00 AM	1	2	2	3	4	2	1	15
9:00 AM	3	0	0	6	1	1	0	11
10:00 AM	4	0	1	2	2	2	3	14
11:00 AM	3	7	1	5	7	2	2	27
12:00 PM	4	6	3	8	7	5	5	38
1:00 PM	5	6	2	4	5	5	0	27
2:00 PM	7	5	3	1	2	3	1	22
3:00 PM	5	4	6	8	13	1	2	39
4:00 PM	4	8	4	5	5	3	4	33
5:00 PM	4	3	7	2	4	2	1	23
6:00 PM	0	1	7	4	5	0	5	22
7:00 PM	2	7	2	5	3	3	2	24
8:00 PM	4	1	1	3	1	1	3	14
9:00 PM	3	0	1	1	4	8	1	18
10:00 PM	1	1	0	1	3	1	0	7
11:00 PM	0	0	0	0	0	1	0	1
Total	55	60	48	69	73	47	35	387

Figure 11: FI crashes by hour of day and day of week in El Dorado (2015-2024)



Figure 12 shows that FI crashes in El Dorado are overwhelmingly concentrated in a few key crash types. Angle/side-impact crashes account for the largest share by a wide margin, with 178 crashes (63%), pointing to intersection and turning conflicts as the most significant source of severe crash outcomes. Rear-end crashes are the second-largest category, with 61 crashes (21%), followed by head-on crashes, with 28 crashes (10%). The remaining crash types account for only a small portion of FI crashes, including sideswipe opposite direction (8 crashes; 3%), sideswipe same direction (5 crashes; 2%), and other crash types (4 crashes; 1%). Together, these findings indicate that strategies focused on reducing conflict points, improving intersection operations, and addressing opposing-direction crash risk will be especially important in reducing severe crashes in El Dorado.

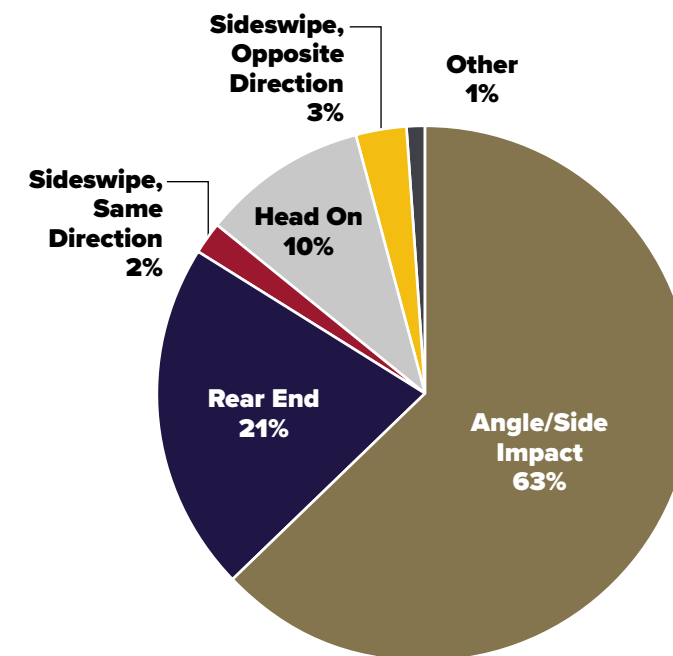


Figure 12: FI Crashes by type in El Dorado (2015-2024)

The Safe System Approach is a critical component of every SS4A project. In El Dorado’s crash data analysis, factors influencing crashes were categorized based on the first two objectives of the Safe System Approach: safer streets and safer people.

The factors related to the **Safer Streets** include:

- Lighting Condition
- Pavement Condition
- Functional Classification
- Traffic Control
- Posted Speed

The factors related to **Safer People** include:

- Seatbelt Use
- Driver Contributing Circumstances
- Alcohol Involvement
- Driver Age Group
- Vulnerable Road User

The following sections examine each factor.



Lighting Condition

Figure 13 shows that most crashes in El Dorado occur in daylight (1,532 crashes; 74%), and daylight also accounts for the largest share of FI crashes (291 crashes; 75%), reflecting higher daytime travel activity. The key safety takeaway, however, is that dark conditions with street lights on are disproportionately associated with more severe outcomes. Although these conditions account for only 342 crashes (16%), they

represent 10 of 32 KSI crashes (31%) and 13 of 38 VRU crashes (34%), yielding a KSI rate of 2.9%, compared with 1.2% in daylight. Dawn conditions also show elevated VRU involvement, with 4 VRU crashes among just 43 total crashes (9%). Together, these patterns suggest that visibility-related conditions remain an important factor in severe crash risk, particularly for nighttime travel and vulnerable road users.

Light Condition	All Crashes	KSI	FI	VRU
Daylight	1532	19	291	21
Light/Dark (No Street Lights)	87	2	8	0
Light/Dark (Street Lights On)	342	10	67	13
Dusk	46	0	9	0
Dawn	43	1	12	4
Unknown	32	0	0	0

Figure 13: Crashes by light condition in El Dorado (2015-2024)

Pavement Condition

Figure 14 shows that crashes in El Dorado most often occur under no adverse road conditions, which accounts for 1,860 total crashes (90%) and the large majority of KSI (27), FI (353), and VRU (33) crashes. This pattern largely reflects normal daily travel exposure. However, adverse conditions appear to be associated with a higher share of severe outcomes than their crash totals alone would suggest. Rain/mist/

drizzle represents only 6% of all crashes but accounts for 13% of KSI crashes, while other low-visibility/wind conditions account for just 2% of crashes yet include 3% of KSI crashes, 2% of FI crashes, and 5% of VRU crashes. Overall, the results indicate that wet and visibility-related conditions, while less frequent, may elevate safety risk and warrant attention in future countermeasure planning.

Road Condition	All Crashes	KSI	FI	VRU
No Adverse Road Condition	1860	27	353	33
Rain/Mist/Drizzle	123	4	23	3
Snow	47	0	3	0
Other Low Visibility/Wind	32	1	8	2

Figure 14: Crashes by road condition in El Dorado (2015-2024)



Functional Classification

Figure 15 shows the crash representation ratio by functional class and indicates that crashes in El Dorado are disproportionately concentrated on the arterial network, particularly primary arterials. Primary arterials are overrepresented across all crash types, with a ratio of 3.15 for all crashes, 4.57 for KSI crashes, 3.49 for FI crashes, and 4.67 for VRU crashes. This pattern suggests that primary arterial corridors carry a disproportionate share of both crash occurrence and crash severity, especially for KSI outcomes and those involving VRUs. Minor arterials are also notably overrepresented, with ratios above 2.0 for all crashes, KSI crashes,

and FI crashes, reinforcing the concentration of crash risk on higher-functional class roadways. By comparison, local roads are consistently underrepresented across all crash types, with ratios well below 1.0, while major collectors are modestly overrepresented for all crashes, FI crashes, and VRU crashes but underrepresented for KSI crashes. Overall, the results indicate that El Dorado’s arterial system, especially its primary arterials, should remain a central focus for corridor-based safety improvements, speed management, and multimodal countermeasures.

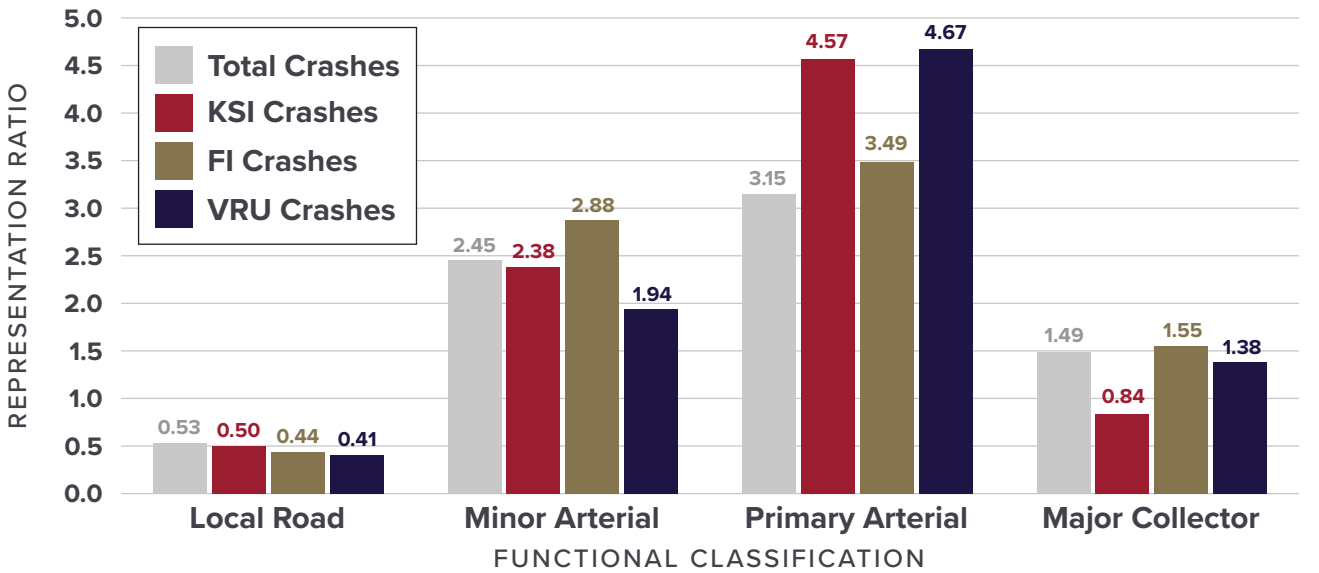


Figure 15: Representation ratio of crash severity by functional classification



Traffic Control

Figure 16 summarizes crashes by traffic control type and shows that severe crashes in El Dorado are concentrated at locations with traffic signals and stop signs. Within this set of crashes, stop sign-controlled locations account for the highest number of all crashes (526), FI crashes (117), and VRU crashes (15), while traffic signal locations are nearly as high, with 496 total crashes, 116 FI crashes, and 10 VRU crashes. KSI crashes are evenly split between traffic signals and stop signs, with 8 crashes each, compared

with 5 KSI crashes at locations with no control. Overall, locations with either a traffic signal or stop sign account for about 80% of all crashes in this table, 76% of KSI crashes, 80% of FI crashes, and nearly 90% of VRU crashes. This pattern suggests that crash risk in El Dorado is strongly concentrated at controlled-conflict points, particularly at intersections where turning, crossing, and yielding movements increase the potential for severe outcomes.

Traffic Control	All Crashes	KSI	FI	VRU
Traffic Signal	496	8	116	10
Stop Sign	526	8	117	15
No Control	257	5	59	3

Figure 16: Crashes by traffic control in El Dorado



Speed

Figure 17 shows the crash representation ratio by posted speed and indicates that crashes in El Dorado are disproportionately concentrated on roadways posted at 35 to 45 mph. This speed range is overrepresented across all crash types, with a ratio of 2.21 for all crashes, 2.24 for KSI crashes, 2.63 for FI crashes, and 3.11 for VRU crashes. The especially high FI and VRU ratios suggest that roadways in the 35 to 45 mph range create conditions in which both crash risk and severity are elevated, particularly for VRUs. By comparison, roadways

posted at 20 to 30 mph are underrepresented across all crash types, with ratios below 1.0, while roadways posted at 50+ mph are underrepresented for total crashes, FI crashes, and VRU crashes, though KSI crashes remain slightly overrepresented at 1.11. Overall, the findings indicate that 35 to 45 mph corridors are a critical speed environment in El Dorado, where crash occurrence and severity are both disproportionately high and where speed management and corridor design strategies may have the greatest safety benefit.

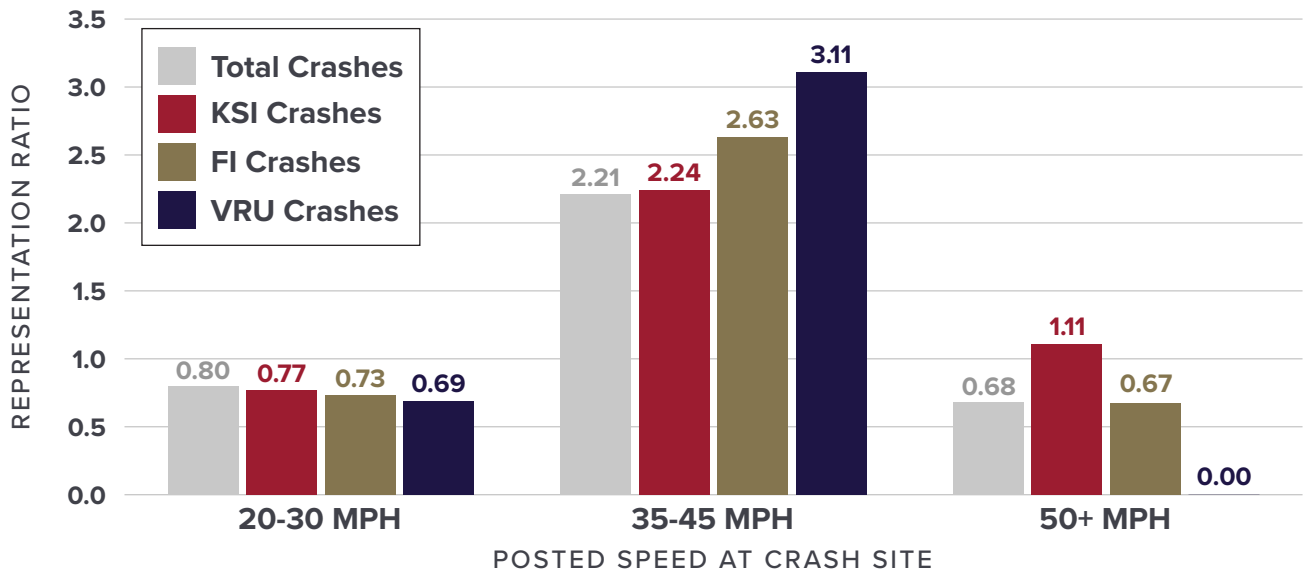


Figure 17: Representation ratio of crashes by posted speed in El Dorado



Roadway User Factors

Seatbelt Usage

Figure 18 shows reported seat belt use by crash severity. Across all crashes, approximately 79% of occupants were reported to be using seat belts, while FI crashes showed a slightly higher reported seat belt use rate of about 81%. In contrast, reported seat belt use in KSI crashes was notably lower, at approximately 68%. When we only look at fatal crashes, seat

belt usage was reported to be 56%. This pattern suggests that crashes with the most severe outcomes were associated with lower seat belt use. Education and outreach strategies that encourage consistent seat belt use may be an effective countermeasure to help reduce the severity of crash-related injuries.

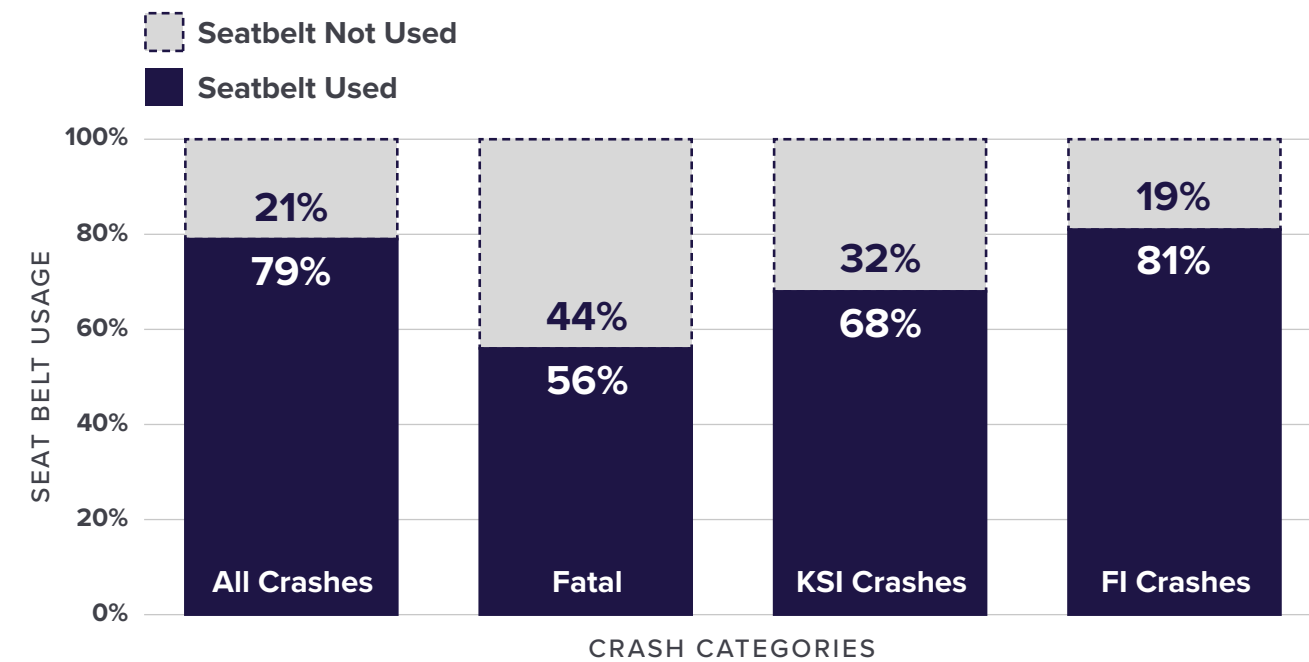


Figure 18: Reported seat belt use by crash severity



Driver Contributing Circumstances

Figure 19 shows that the most common driver contributing circumstances associated with severe crashes in El Dorado are right-of-way violations and inattentive/distracted driving. Right-of-way violations account for 5 KSI crashes and 74 FI crashes, representing about 16% of all KSI crashes and 19% of all FI crashes. Inattentive or distracted driving accounts for 3 KSI crashes, 48 FI crashes, and 4 VRU crashes, or about 9% of KSI crashes, 12% of FI crashes, and 11% of VRU crashes. Together, these two factors are associated with 122 FI crashes, nearly one-third

of all FI crashes in El Dorado (32%), making them the most notable driver-related contributors in this summary. Other contributing circumstances, such as improper driving, medical condition, and impairment, appear less frequently. These findings indicate that many of El Dorado’s most serious crashes are tied to driver judgment, awareness, and failure to properly respond to other roadway users, reinforcing the importance of intersection safety, visibility, and driver behavior strategies in the SAP.

Driver Contributing Circumstance	KSI	FI	VRU
Right-of-Way Violation	5	74	0
Inattentive/Distracted	3	48	4
Medical Condition	0	10	0
Impairment	0	7	0
Improper driving	0	16	0
Object Avoidance	1	2	0
Fatigued	0	1	0

Figure 19: Severe crash driver contributing circumstances in El Dorado



Impaired Driving

Figure 20 highlights crashes in El Dorado where driver impairment was known to be a factor. Although driver-impaired crashes account for a relatively small share of total crashes (79 crashes, or about 4%), they are disproportionately associated with severe outcomes. These crashes include 5 KSI crashes, representing about 16% of all KSI crashes, and 30 FI crashes, or about 8% of all FI crashes. When looking at fatal crash outcomes, 40%

involved an impaired driver. Crashes involving known driver impairment are more likely to result in the most serious injuries than crashes overall. Only 1 VRU crash in the dataset involved driver impairment. Overall, the findings suggest that impaired driving is not among the most frequent crash factors in El Dorado, but when it is present, the resulting crashes are more likely to be severe and should remain an important focus of the Action Plan.

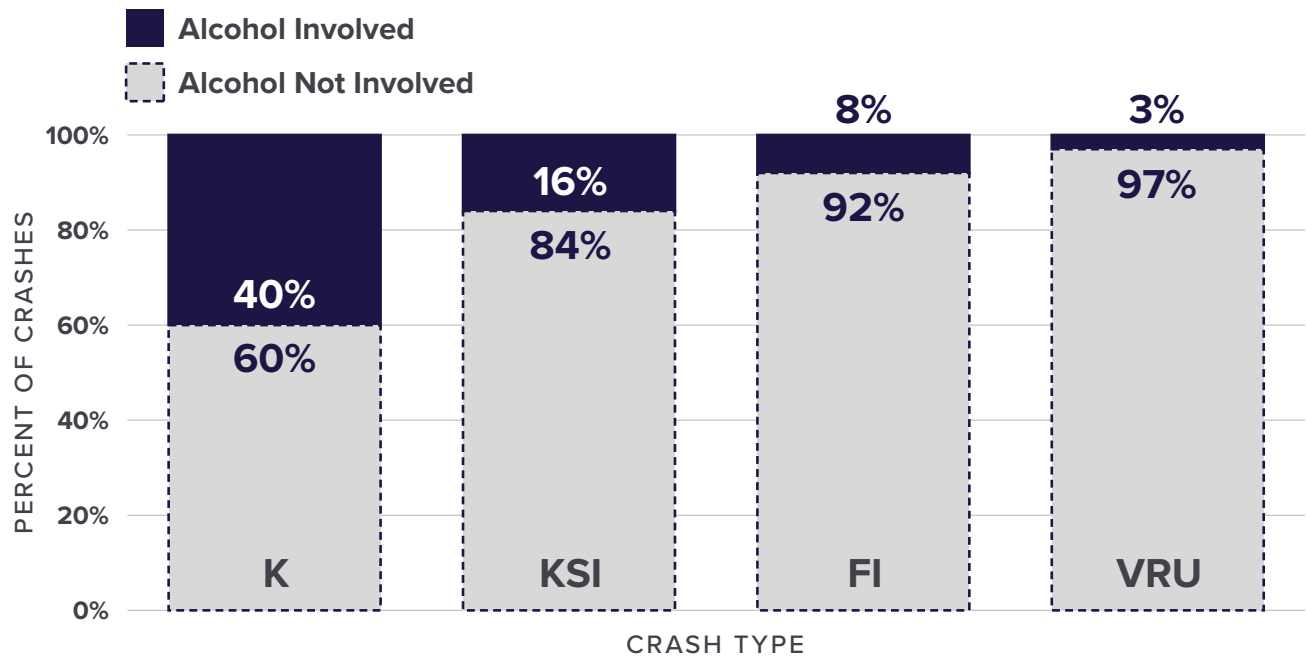


Figure 20: Crashes involving known driver impairment in El Dorado

Age

Figure 21 illustrates crash severity by driver age group in El Dorado and shows that FI crashes are most concentrated among younger drivers. Drivers 24 and younger account for the highest number of FI crashes (106), followed by drivers ages 25–34 (65) and 55–64 (57). KSI crashes are somewhat more distributed across age groups, with the highest totals among drivers 24 and younger and 35–44 (7 each). Although

FI crashes generally decline with age, crashes involving drivers 65–74 and 75 and older still result in severe outcomes, even at lower overall frequencies. These findings indicate that younger drivers account for the largest share of FI crashes, but the presence of KSI crashes across nearly all age groups reinforces the need to address risk across the entire driving population.

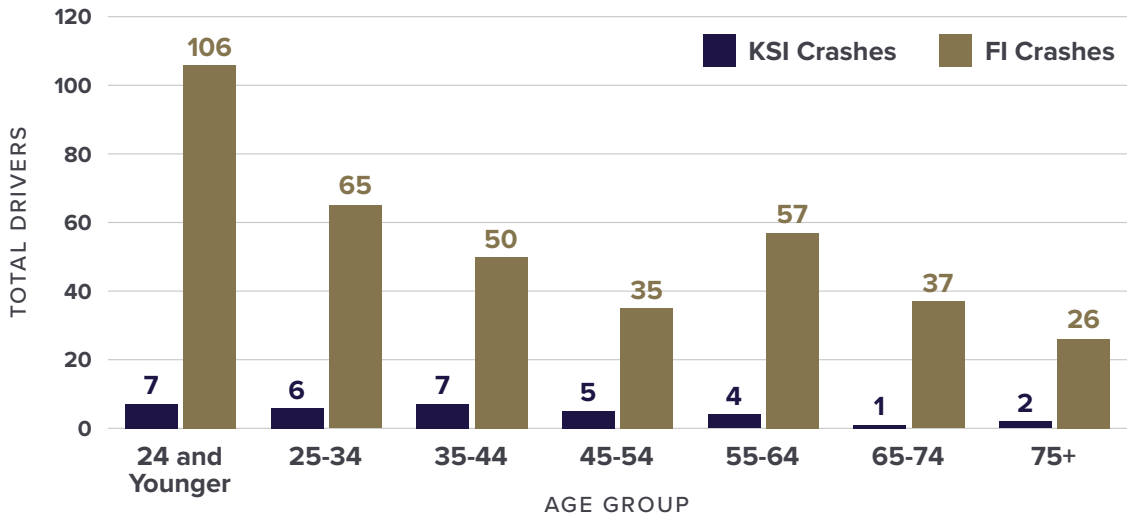


Figure 21: FI crashes by driver age group (2019-2023)

Vulnerable Road User Condition

Pedestrian and bicycle crashes made up just 38 of 2,079 total crashes (1.8%), but they accounted for a much larger share of the city’s most serious outcomes. Nearly every VRU crash resulted in injury (37 of 38, or 97.4%), and VRU crashes represented 18.8% of all KSI crashes (6 of 32).

Within the VRU crash set, 16.2% of injury crashes were KSI, compared with 8.3% of KSI crashes citywide. Although no fatal VRU crashes were recorded during the study period, the data indicate that when a crash involved a VRU, it was much more likely to result in injury.

Driver Contributing Circumstance	KSI	FI	VRU
Right-of-Way Violation	5	74	0
Inattentive/Distracted	3	48	4
Medical Condition	0	10	0
Impairment	0	7	0
Improper driving	0	16	0
Object Avoidance	1	2	0
Fatigued	0	1	0

Figure 22: VRU crashes



Priority Network

The Priority Network was established through a layered, data-driven, and community-informed process. Safety findings from the El Dorado Transportation Study, crash-based high-injury network (HIN) screening, and high-risk network (HRN) analysis were combined with public input gathered through community engagement ([Figure 23](#)). This approach ensured that the Priority Network reflected not only where

severe crashes have occurred but also where underlying risk factors and residents' lived experiences indicate ongoing safety concerns. The resulting network identifies the corridors and intersections where targeted diagnosis and countermeasure selection can most effectively guide project recommendations and future safety investment.

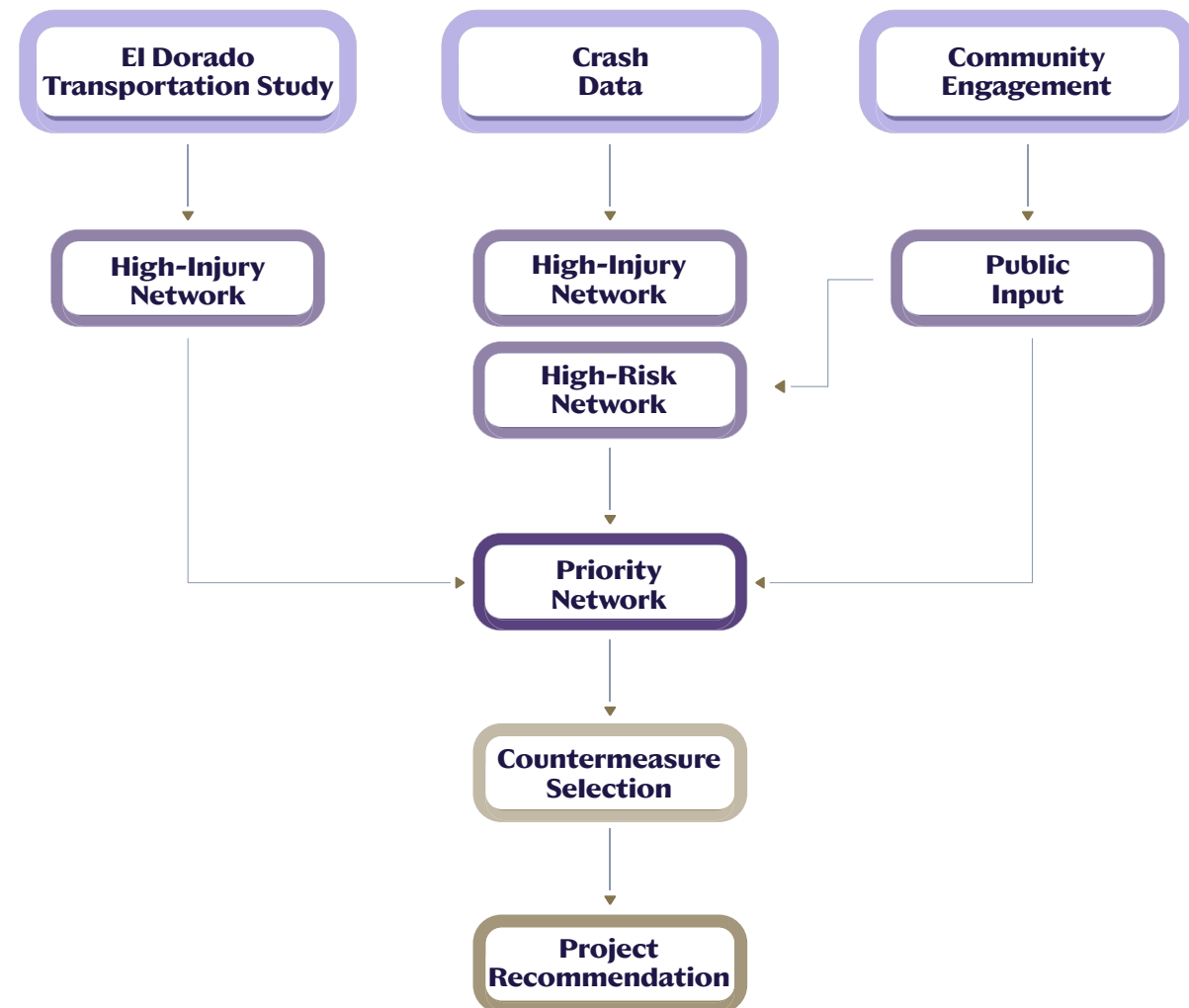


Figure 23: Process used to define the Priority Network



Transportation Study Identified High-Injury and High-Risk Network

The El Dorado Transportation Study identified a focused set of corridors and intersections that help define the city's emerging safety network. For VRUs, Main Street between Central Avenue and 2nd Avenue is the study's clearest high-injury segment, designated Priority Level 1 because it is on both KDOT's HIN and HRN. The study also identifies segments of Central Avenue, Main Street, and 6th Avenue as Priority Level 3 corridors on the HRN. This systemic VRU screening aligns with the broader crash analysis, which found that most crashes occur along Central Avenue and Main Street, and to a lesser degree along 6th Avenue. Together, these corridors form a clear corridor-based safety framework for El Dorado and should be treated as key inputs to the City's SS4A Priority Network.

Priority corridors identified in the study:

- **Main Street, Central Avenue to 2nd Avenue:** Priority Level 1 corridor on both the HIN and HR, the study's most clearly defined

high-injury segment for vulnerable road users.

- **Central Avenue (K-254):** The city's dominant crash corridor; the study states that most crashes occur along Central Avenue, and 14 of the top 20 crash locations are located on this corridor, with seven having crash rates that are statistically above average.
- **Main Street (US-77):** A primary north-south arterial and Priority Level 3 corridor in the VRU analysis, the study also identifies it as one of the city's principal crash corridors.
- **6th Avenue:** Priority Level 3 corridor and a secondary crash corridor, the segment between Main Street and Haverhill Road carries up to 10,500 vehicles per day, and the study notes that two Top 20 crash locations along the corridor have crash rates that are significantly above average.

[Figure 24](#) lists the Top 10 intersections identified in the study by crash frequency.

Intersection	Total Number of Crashes	Entering Daily Traffic Volume	Crash Rate (crashes/mev)	Critical Crash Rate	Above Critical Rate?
Central & Village	64	16,351	2.14	0.73	Yes
Central & Boyer	45	19,115	1.29	0.71	Yes
Central & Haverhill	34	20,164	0.92	0.71	Yes
Central & Oil Hill	31	15,512	1.10	0.74	Yes
Main & 6th	25	16,064	0.91	0.74	Yes
Central & Summit	23	14,789	0.85	0.74	Yes
Central & Main	21	12,613	0.91	0.76	Yes
Central & River	20	6,890	1.59	0.87	Yes
Main & 3rd	17	7,552	1.23	0.85	Yes
Central & Diagonal	16	15,500	0.57	0.74	No

Figure 24: Top ten identified intersections ranked by crash frequency from the 2024 El Dorado Transportation Study



Transportation Study
HIN/Priority Network



Figure 25: Priority corridors and intersections identified in the 2024 El Dorado Transportation Study



Public Input

Public engagement was an essential element of the El Dorado Safe Streets and Roads for All planning process, bringing residents’ lived experience into the technical analysis and helping inform development of the risk and priority networks. Feedback collected during the engagement process generally aligned with patterns identified in the crash analysis, reinforcing documented safety concerns. At the same time, community input added an important human dimension by capturing how people experience the transportation system in their daily lives, including where they feel unsafe, where they encounter barriers to walking or biking, and where near misses or

other unreported conflicts occur. While crash data shows where documented incidents have occurred, public feedback provides valuable insight into emerging risks, perceived safety concerns, and mobility challenges that may not be reflected in reported crash history alone. This combined approach strengthened the City’s understanding of local safety needs and supported a more comprehensive, data-informed framework for identifying priority corridors, intersections, and potential safety improvements. Additional detail on the community engagement process and key themes heard from residents is provided in Chapter 3.

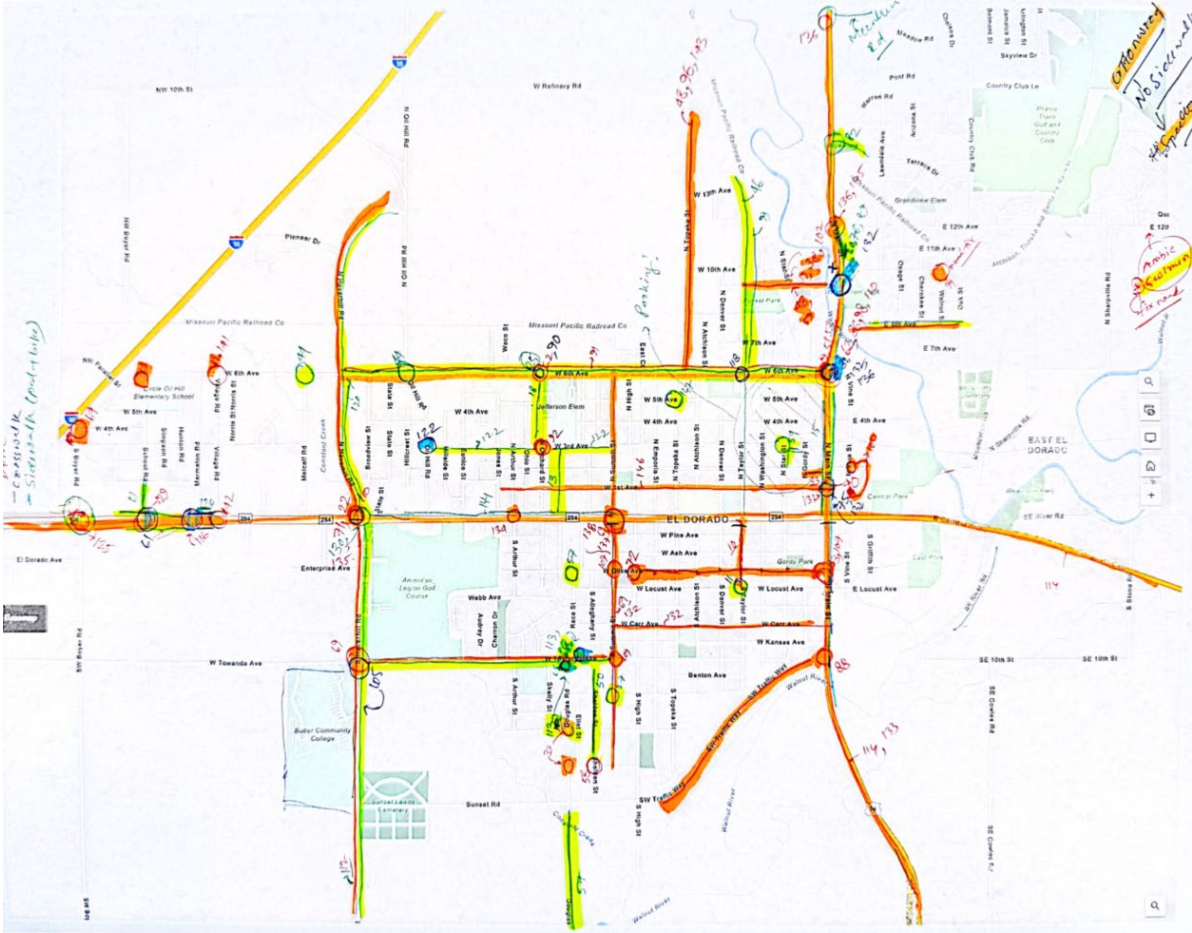


Figure 26: Public comment map



High Injury Network

A key component of Safe Streets 4 All El Dorado is identifying the city's High Injury Network (HIN), the intersections and street segments with a disproportionate concentration of injury-producing crashes. The HIN helps prioritize locations where safety improvements are most likely to reduce both the frequency and severity of crashes. This section describes the process used to develop the HIN, summarizes the highest-risk locations, and supports the selection of targeted countermeasures.

Methodology

HIN development began with filtering the crash dataset to include FI crashes. Each community's crash history presents different analytical constraints. The available crash data classified 45 KSI crashes. Because KSI crashes are relatively low, a KSI-based representation ratio would be unstable, adding or subtracting one or two KSI crashes at a single location could disproportionately shift results. To improve reliability, the analysis used FI crashes (679 total). This larger sample produces more stable, repeatable results while still focusing the HIN on crashes with injury outcomes.

The HIN score was developed using two components: (1) a Fatal and Injury Representation Ratio (FIRR) to identify locations with above-average FI crash concentration and (2) a severity-weighted crash score to emphasize locations with more serious injury outcomes.

To evaluate intersection crash risk, crash records were spatially associated with intersection locations using an 80-foot buffer around each intersection. FI crashes captured

within each buffer were then summarized to calculate the total number of FI crashes and the number of FI crashes by injury type at each intersection. These summarized counts were used to compute the Fatal and Injury Representation Ratio (FIRR) as follows:

$$FIRR_{int,i} = \frac{FI_{int,i}}{\left(\frac{\sum FI_{int}}{N_{int}} \right)}$$

Where:

$FI_{int,i}$ = FI crashes at intersection i

$\sum FI_{int}$ = total FI crashes across intersections with FI crashes

N_{int} = number of intersections with FI crashes

A value greater than 1.0 indicates the intersection has more FI crashes than the systemwide intersection average.

To evaluate crash risk along street segments, crash records were spatially associated with roadway segments using a 100-foot buffer around each segment. FI crashes captured within each buffer were summarized by segment and by injury type, then normalized by segment length (miles) to reduce bias toward longer segments. These length-adjusted crash rates were used to compute the Fatal and Injury Representation Ratio (FIRR) for each segment as follows:

$$FIRR_{seg,i} = \frac{\left(\frac{FI_{seg,i}}{L_i} \right)}{\left(\frac{\sum FI_{seg}}{\sum L} \right)}$$



Where:

$FI_{seg,i}$ = FI crashes on segment i

L_i = length of segment i (miles)

$\sum FI_{seg}$ = total FI crashes across segments with FI crashes

$\sum L$ = total miles of segments with FI crashes

A value greater than 1.0 indicates the segment has more FI crashes per mile than the systemwide average.

To ensure the HIN reflects not only where FI crashes are concentrated but also how severe those crashes are, a severity-weighted crash score was calculated and applied alongside FIRR. Severity weights were based on local crash data, engineering judgement, and the equivalent property damage only ratio with Type A weighted at 15, Type B at 10, and Type C at 5. Using these values, the severity-weighted score was calculated as follows:

$$WF_i = 15A_i + 10B_i + 5C_i$$

Where A_i , B_i , and C_i are the counts of Type A, B, and C injury crashes at location i .

The final HIN score was then calculated by applying the severity-weighted score to FIRR:

$$HIN_i = FIRR_i \times WF_i$$

This approach produces a stable, comparable HIN score across locations, highlighting both where injury crashes are concentrated (FIRR) and where injury outcomes are most severe (WF), even in the absence of fatalities.

Road Segment High Injury Network

[Figure 27](#) illustrates the location of El Dorado's high-injury roadway segments. The analysis shows a strong concentration of risk along W Central Avenue, which accounts for seven of the top 10 ranked segments and nine of the top 15 overall, underscoring its role as the city's most critical corridor for safety improvement. The highest-ranked segment, W Central Avenue from S Village Road to S Hogaboom Drive, recorded 28 total crashes, including 2 KSI crashes, and received a HIN score of 523.66. Other top-ranked segments on W Central Avenue include S Summit Street to S High Street, Oil Hill Road to Eunice Street, N Haverhill Road to State Street, and S Main Street to S Vine Street. Outside of Central Avenue, elevated-risk segments are concentrated on N Main Street, with additional priority locations on McCollum Road, E 3rd Avenue, W 3rd Avenue, and W 6th Avenue. Several of these corridors also involve crashes involving VRUs, underscoring the need for safety improvements that address both vehicle conflicts and multimodal travel. The ranking of the HIN corridor can be found in [Figure 28](#).



High Injury Network,
Road Segments

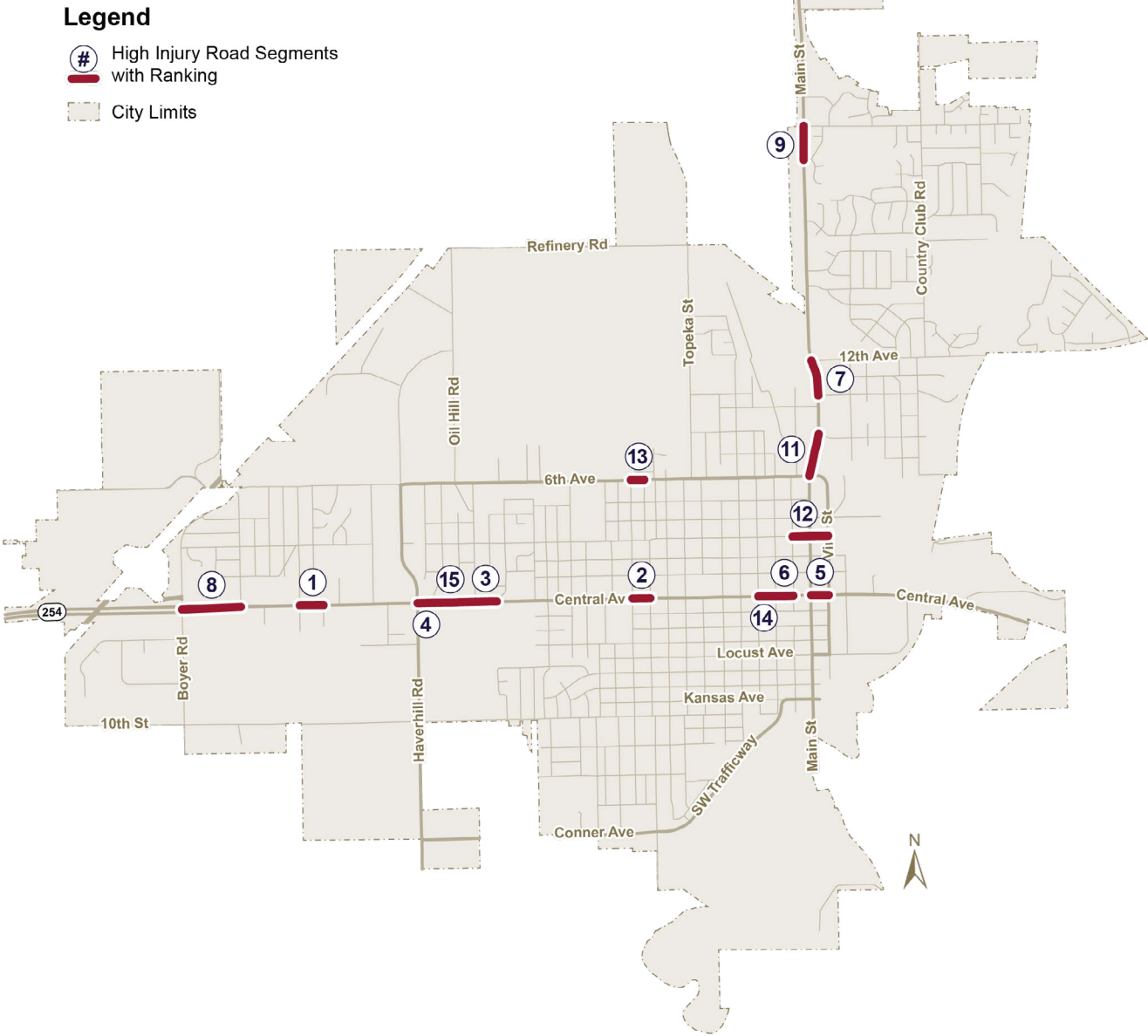


Figure 27: High Injury Network segments



Rank	HIN Corridor Location	All Crashes	VRU	KSI	FI	FI/Mi	Length (Mi)	HIN
1	W Central Ave from S Village Rd to S Hogaboom Dr	28	0	2	28	276	0.10	523.66
2	W Central Ave from S Summit St to S High St	14	3	1	14	183	0.08	240.37
3	W Central Ave from Oil Hill Rd to Eunice St	11	1	1	11	120	0.09	106.05
4	W Central Ave from N Haverhill Rd to State St	10	0	0	10	142	0.07	96.63
5	W Central Ave from S Main St to S Vine St	8	2	2	8	106	0.08	86.65
6	W Central Ave from S Star St to S Gordy St	6	1	0	6	80	0.07	39.85
7	N Main St from E 10th St to E 12th St	7	2	0	7	46	0.15	32.02
8	W Central Ave from S Boyer Rd to School Rd	11	0	0	11	44	0.25	26.77
9	McCollum Rd from N Main St to Debra Dr	6	0	1	6	41	0.15	26.54
10	E 3rd Save from N Main St to No Vine St	6	0	0	6	78	0.08	24.60
11	N Main St from W 6th Ave to E 8th Ave	7	3	2	7	38	0.18	19.91
12	W 3rd Ave from N Gordy St to N Main St	4	2	0	4	54	0.07	19.40
13	W 6th Ave from N Summit St to N High St	3	1	0	3	52	0.06	17.69
14	W Central Ave from S Washington St to S Star St	4	0	0	4	54	0.07	14.57
15	W Central Ave from State St to Oil Hill Rd	5	2	1	5	28	0.18	13.51

Figure 28: Segment High Injury Network corridors



High Injury Network, Intersections



Figure 29: High Injury Network intersections



Intersection High Injury Network

Figure 29 illustrates the location of El Dorado’s high-injury intersections. The analysis shows a strong concentration of risk along the Central Avenue corridor, where 8 of the top 10 ranked intersections are located. The highest-ranked location, W Central Avenue & Village Road, recorded 29 total crashes, including 2 KSI crashes, and received a HIN score of 70.49. Other top-ranked intersections along Central Avenue include S Summit Street, N Oil Hill Road, S Main Street, S Haverhill Road, and SW Boyer

Road, reinforcing this corridor as the city’s most critical area for intersection safety improvement. Several of these intersections also recorded VRU, particularly at S Summit Street, N Oil Hill Road, and S Arthur Street. Outside of Central Avenue, notable higher-ranking intersections are concentrated along N Main Street, with additional priority locations on W 6th Avenue. Figure 30 summarizes the scoring and ranking of the intersection HIN.

Rank	Intersection	All Crashes	KSI	FI	VRU	HIN
1	W Central Ave & Village Rd	29	2	29	0	70.49
2	W Central Ave & S Summit St	15	0	15	3	20.88
3	W Central Ave & N Oil Hill Rd	13	2	13	3	17.24
4	E Central Ave & S Main St	9	2	9	1	9.75
5	W Central Ave & S Haverhill Rd	11	0	11	0	9.72
6	W Central Ave & SW Boyer Rd	11	0	11	0	8.26
7	N Main St & E McCollum Rd	6	1	6	0	4.91
8	N Main St & E 3rd Ave	7	0	7	0	3.56
9	W Central Ave & S Arthur St	5	0	5	3	2.43
10	W Central Ave & S Gordy St	5	0	5	0	1.77
11	N Main St & E 8th Ave	4	1	4	1	1.68
12	W 6th Ave & N Summit St	4	0	4	1	1.50
13	W 6th Ave & N Oil Hill Rd	4	0	4	1	1.50

Figure 30: Intersection High Injury Network



HIGH RISK NETWORK

While the High-Injury Network identifies locations with a documented history of injury crashes, the High-Risk Network takes a more proactive approach. It is intended to identify the streets and intersections where injury crashes are most likely to occur in the future so that improvements can be made before additional serious crashes occur. In El Dorado, the HRN was developed by layering several types of analysis to understand not only where crashes have occurred, but also where crash patterns, severity trends, and roadway conditions suggest a greater likelihood of future injury crashes. The process began with a review of crash severity, crash density, and crash risk maps, as well as a predicted crash risk heatmap. Together, these tools helped highlight locations with concentrated crash activity, higher crash severity, and patterns that suggest future injury risk.

A key part of that process was the risk score used to screen and rank locations. The risk score is calculated as:

Risk Score = 15 × (Fatal + Serious Injury) + 5 × (Minor Injury) + 2 × (Possible Injury) + 1 × (PDO)

This weighting places greater emphasis on crashes with more serious outcomes while still recognizing the broader pattern of crash occurrence at a given location.

Each crash was assigned a risk score. These scores were then aggregated to compute a Total Risk Score (TS) for each segment and intersection by summing the risk scores of all crashes occurring at that location.

The HRN tables then pair that severity score with each location’s share of total crashes citywide, shown as:

X = $\frac{\text{Crashes at that location (Segment/intersection)}}{\text{Total city crashes (Segment/intersection)}}$

The final ranking metric was then computed as:
Final score = Total Risk Score (TS) × X

The final ranking metric (**TS×X**) combines severity-weighted crash scores with each location’s proportion of total citywide crashes. This approach prioritizes locations with both high crash severity and systemic importance.

This approach helps elevate corridors and intersections that are notable not just because crashes occur there, but because they combine high crash frequency with a greater potential for severe outcomes. As shown in [Figure 31](#), this method identifies corridors such as KS 254, Main Street (US 77), 6th Street, US 54, and Haverhill Road as among the highest-risk segments in the network.

As shown in [Figure 32](#), this method identifies intersections such as along Central Avenue (K-254) at Village Road, Oil Hill Road, Haverhill Road, Boyer Road, and Main Street as among the highest-risk intersections in the network



Rank	Segment Name	Total Risk Score (TS)	K	A	B	C	PDO	Crash Number	Crashes/ Total Crashes (x)	TS×X
1	254	310	1	1	18	10	170	200	0.21	65.61
2	Main	175	1	1	11	8	74	95	0.10	17.59
3	6th	75	0	0	2	4	57	63	0.07	5.00
4	54	82	0	3	1	1	30	35	0.04	3.04
5	Haverhill	66	0	1	4	4	23	32	0.03	2.23
6	3rd	36	0	0	2	2	22	26	0.03	0.99
7	Towanda	36	1	0	0	1	19	21	0.02	0.80
8	Taylor	24	0	0	0	0	24	24	0.03	0.61
9	Emporia	26	0	0	2	0	16	18	0.02	0.50
10	Arthur	19	0	0	0	0	19	19	0.02	0.38
11	Village	19	0	0	0	0	19	19	0.02	0.38
12	Orchard	21	0	0	1	1	12	15	0.02	0.33
13	Metcalf	21	0	0	1	3	10	14	0.01	0.31
14	Washington	24	0	1	0	0	9	10	0.01	0.25
15	Olive	18	0	0	1	1	11	13	0.01	0.25
16	Topeka	15	0	0	0	0	15	15	0.01	0.24
17	Vine	17	0	0	1	0	12	13	0.01	0.23
18	Summit	17	0	0	1	1	10	12	0.01	0.22
19	Traffic Way	25	0	0	4	1	3	8	0.01	0.21
20	12th	19	0	0	2	1	7	10	0.01	0.20
21	Boyer	21	1	0	0	0	6	7	0.01	0.16
22	Denver	12	0	0	0	0	12	12	0.01	0.15
23	High	12	0	0	0	0	12	12	0.01	0.15
24	Star	11	0	0	0	1	9	10	0.01	0.12
25	Gordy	12	0	0	1	0	7	8	0.01	0.10
26	2nd	10	0	0	0	1	8	9	0.01	0.10
27	Oil Hill	12	0	0	1	1	5	7	0.01	0.09
28	Edgemoor	10	0	0	1	0	5	6	0.01	0.06
29	Southwest	15	1	0	0	0	0	1	0.00	0.02
30	Marmaton	15	0	1	0	0	0	1	0.00	0.02

Figure 31: Top-ranked high-risk street segments within El Dorado’s HRN



Rank	Intersection Name	Total Risk Score (TS)	K	A	B	C	PDO	Crash Number	TS*X
1	K254 (Central) & Village	208	0	2	12	15	88	117	19.33
2	Central Ave (K254) & Oil Hill Rd	122	0	2	8	5	42	57	5.52
3	Central Ave (K254) & Haverhill Rd	91	0	0	6	5	51	62	4.48
4	Central Ave (K254) & Boyer Rd	86	0	0	4	7	52	63	4.30
5	Central Ave (K254) & Main St	99	0	2	5	2	40	49	3.85
6	Central Ave (K254) & Summit St	85	0	0	11	4	22	37	2.50
7	Main St & W 6th Ave	64	0	1	1	2	40	44	2.24
8	Central Ave (K254) & Diagonal Rd	31	0	0	0	3	25	28	0.69
9	Main St & E 3rd Ave	39	0	0	4	4	11	19	0.59
10	Central Ave (K254) & Arthur St	37	0	0	4	1	15	20	0.59
11	Main St & McCollum Rd	45	1	0	4	1	8	14	0.50
12	Haverhill Rd & W 6th Ave	30	0	0	2	2	16	20	0.48
13	Main St & E 12th Ave	26	0	0	2	0	16	18	0.37
14	Central Ave (K254) & Commerce St	23	0	0	1	2	14	17	0.31
15	Central Ave (K254) & Metcalf Rd	22	0	0	1	2	13	16	0.28
16	S Haverhill Rd & W Towanda Ave	21	0	0	1	2	12	15	0.25
17	Oil Hill Rd & W 6th Ave	25	0	0	3	1	8	12	0.24
18	E Central Ave & SE River Rd	17	0	0	0	2	13	15	0.20
19	Central Ave & Vine St	25	0	1	0	1	8	10	0.20
20	Central Ave (K254) & Gordy St	22	0	0	2	3	6	11	0.19
21	N Taylor St & W 3rd Ave	17	0	0	0	3	11	14	0.19
22	Central Ave (K254) & Eunice St	18	0	0	1	1	11	13	0.19
23	Central Ave (K254) & Emporia St	20	0	0	2	1	8	11	0.17
24	Central Ave (K254) & Taylor St	27	0	1	1	1	5	8	0.17
25	W Olive Ave & S Denver St	24	0	1	0	1	7	9	0.17
26	Central Ave (K254) & Denver St	19	0	0	2	0	9	11	0.17
27	N Main St & 2nd Ave	19	0	0	2	1	7	10	0.15
28	Main St & E 8th Ave	27	0	1	1	2	3	7	0.15
29	Central Ave (K254) & S Hogaboom Dr	16	0	0	1	1	9	11	0.14
30	Central Ave (K254) & S Star St	21	0	0	3	1	4	8	0.13
31	N Gordy St & W 3rd Ave	18	0	0	2	1	6	9	0.13
32	W Olive Ave & S Emporia St	21	0	1	0	0	6	7	0.12
33	Central Ave (K254) & High St	24	0	1	1	0	4	6	0.11
34	W 6th Ave & N Summit Rd	20	0	0	3	1	3	7	0.11
35	Central Ave (K254) & School Rd	17	0	0	2	1	5	8	0.11
36	Central Ave (K254) & Orchard St	16	0	0	2	0	6	8	0.10
37	Main St & E Carr Ave	23	0	1	1	0	3	5	0.09
38	N Main St & E 10th Ave	16	0	0	2	1	4	7	0.09
39	Star St & Ash Ave	26	0	1	2	0	1	4	0.08
40	SW Boyer Rd & W 4th Ave	19	1	0	0	0	4	5	0.08
41	Residence St & W 2nd Ave	19	0	1	0	0	4	5	0.08
42	N Emporia St & W 4th Ave	19	0	1	0	1	2	4	0.08

Figure 32: Top-ranked intersections within El Dorado's HRN



The methodology also looked beyond location alone to better understand the kinds of conditions associated with more serious crashes. A crash severity model was used to evaluate which roadway, driver, vehicle, and environmental factors were most closely tied to severe crash outcomes. That analysis found that the most serious crashes in El Dorado are associated with factors such as driver distraction, peak-period travel, intersections, teen and older drivers, commercial vehicles, dark conditions with street lighting, and state routes. Injury crashes were also strongly associated with intersections, nighttime conditions, roadway departures, speed-related factors, motorcycles, and higher-speed routes. In addition, the crash data were grouped into four recurring crash patterns, which helped explain the types of risks present across the system, from routine intersection crashes to speed- and aggression-related corridor crashes to rear-end and parked-vehicle crashes on local streets to severe nighttime crashes involving impairment and roadway departure.

Together, these layers of analysis were used to establish the HRN ([Figure 33](#)) as a ranked system of roadway segments and intersections with elevated combined crash risk. In other words, the HRN reflects both where crashes have occurred and where the underlying conditions suggest that future injury crashes are likely to occur. This gives the City a more forward-looking framework for implementation. Rather than waiting for additional serious crashes to confirm a problem, the HRN helps direct investment toward locations where proactive safety improvements may have the greatest benefit. The draft also connects each high-risk location back to the dominant crash patterns identified in the cluster analysis so that countermeasures can be matched to the type of risk present at that location. That means the

HRN is not simply a list of problem spots; it is a tool for moving from systemwide safety analysis to targeted, data-informed action.



High Risk Network Corridors and Intersections



Figure 33: HRN priority corridors and intersections



PRIORITY NETWORK

The Priority Network serves as the bridge between analysis and action in the Safe Streets 4 All El Dorado process. It brings together the findings of the HIN, which shows where injury crashes have occurred, the HRN, which identifies corridors and intersections with characteristics associated with future crash potential, the Transportation Study’s documentation of key operational and connectivity needs, and community input that revealed near-misses, barriers, and lived experiences not captured in crash records alone. By layering these sources, the Priority Network identifies the locations where safety investment is most needed and most likely to make a meaningful difference ([Figure 34](#)). In the next phase of the project, this network will guide the selection of spot studies, corridor-specific strategies, and project recommendations, helping the City focus resources on the streets and intersections where targeted countermeasures, systemic improvements, and future funding efforts can have the greatest impact in reducing fatal and serious-injury crashes.



Transportation Study HIN/Priority Network

Legend

- Priority Intersections
- Priority Corridors
- ▭ City Limits

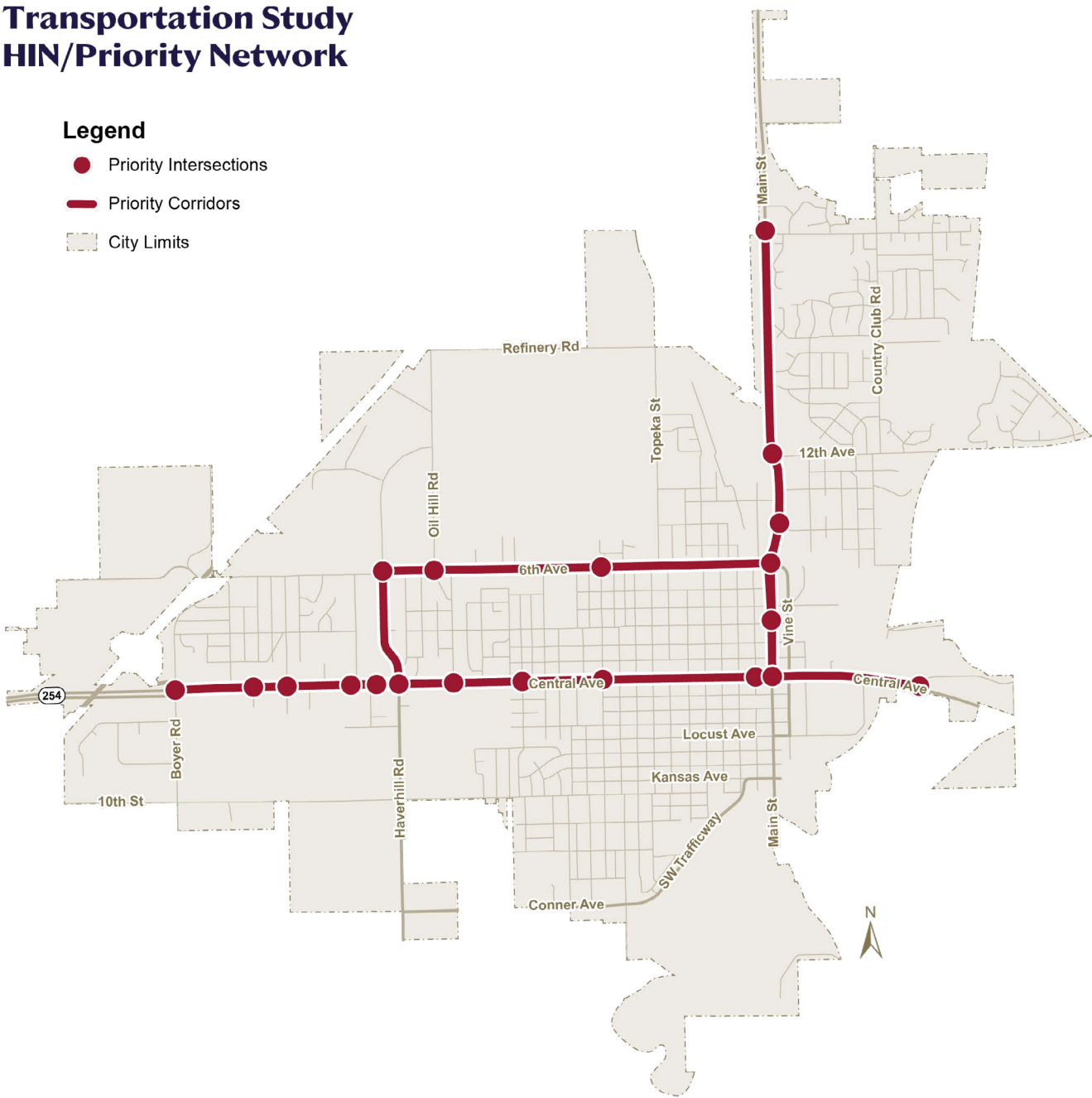


Figure 34: El Dorado’s priority network



CRASH DATA ANALYSIS SUMMARY

The data analysis shows that El Dorado’s most serious crash risk is concentrated on a relatively focused set of corridors and intersections. Severe crashes are overrepresented on arterial roadways, particularly in 35 to 45 mph environments, and are strongly associated with intersection-related conflict, including angle crashes, right-of-way violations, and locations with traffic signals and stop signs. The analysis also highlights elevated severity risk under low-light conditions, in crashes involving driver distraction or impairment, and in crashes involving VRUs, which are far more likely to result in serious injury. These findings help inform problem diagnosis and countermeasure selection, emphasizing arterial corridor safety, intersection improvements, speed management, lighting and visibility, and multimodal protections in locations where crash history, future risk, and community concerns overlap. This work directly informs the Priority Network and provides a data-driven framework for selecting and prioritizing projects that can most effectively reduce fatal and serious-injury crashes.

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Community Engagement

Chapter 3



PLANNING FOR ENGAGEMENT

A Safety Action Plan requires engagement and collaboration to gather community representation and feedback, and to analyze and incorporate that feedback into actionable recommendations. The consultant team collaborated with El Dorado’s Steering Committee to develop a comprehensive public participation plan, which included goals of: introducing the Safe System Approach, reflecting the community’s needs and values, identifying safety issues and concerns, fostering support for the study and further projects, maintaining the project team’s awareness of input received, and reporting back on how the project team responded to the community’s need and values.

The International Association of Public Participation’s Spectrum of Public Participation was used to determine engagement levels and corresponding tactics, as shown in [Figure 35](#). The plan committed to a “consult” level of engagement through outreach to the general public and an “involve” level through focus groups.

The plan identified vulnerable road users as pedestrians, micromobility users, and bicyclists, and outreach activities were designed to reach a broad audience with a clear purpose, relevant topics, accessible formats, and strategic timing.

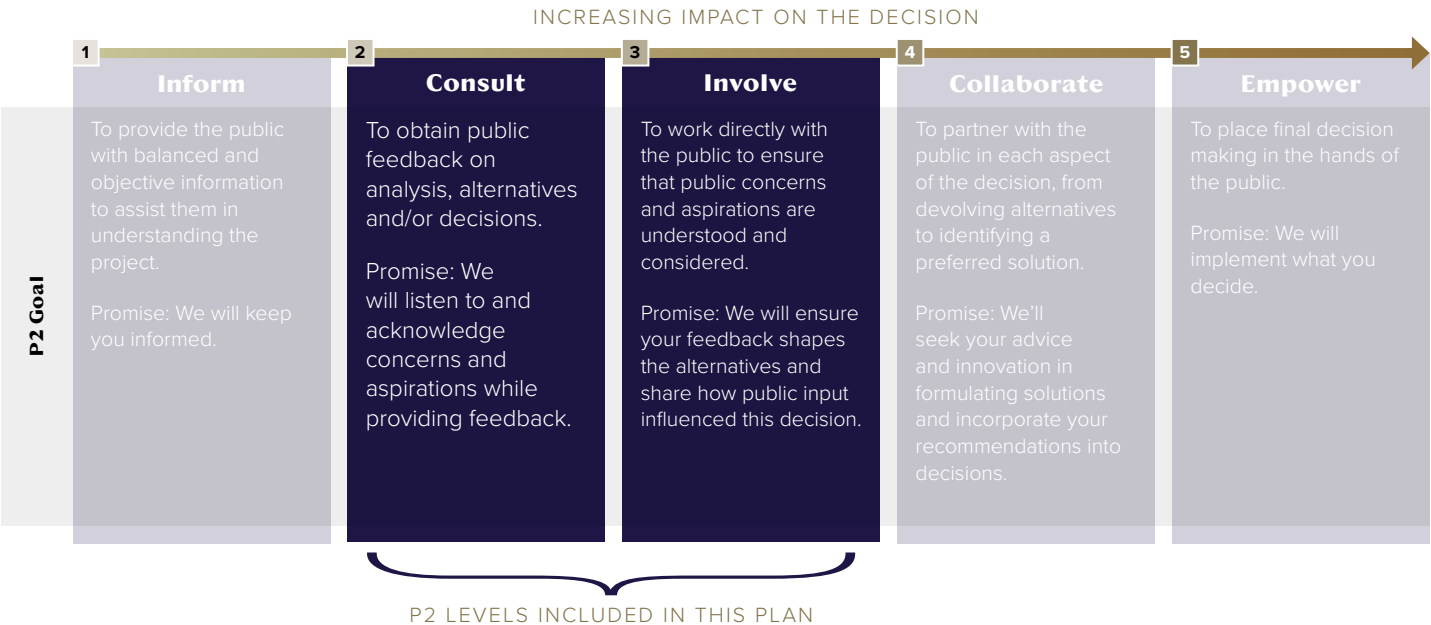


Figure 35: Spectrum of Public Participation



ENGAGEMENT OPPORTUNITIES

The City offered several engagement opportunities to involve the community in shaping transportation and street-safety improvements for this project, including pop-up events, focus group discussions, surveys, and a project website. Each provided participants with a unique opportunity to discuss their safety concerns and values as residents and users of El Dorado’s street network. Engagement took place in two phases:

Phase 1: Fall of 2025

- Centered on location- and modality-specific problem identification

Phase 2: Late Winter of 2026

- Gathered more stories and experiences on identified risk factors and ideas for potential solutions

FALL 2025

PROJECT WEBSITE

A StoryMap was developed in the city’s ArcGIS mapping system and included the project overview, existing conditions, an interactive “Pin-A-Comment” map, and the latest project news, providing a broad overview of the overall project initiative.

Pop-up Event

The first event took place in September, during El Dorado’s Gold Fest community festival, as part of the Artisan Market and Kid Zone downtown. This event introduced the project to the community through interactive boards, where participants highlighted specific safety concerns by location and mode of travel.

Online Survey

An online survey collected feedback on driving and multimodal travel experiences, safety concerns, desired improvements, and individual driving preferences. Written responses were collected at the pop-up event, with a QR code displayed that provided an option to complete the survey online. City communications staff shared the survey link on social media and through the local newspaper as well. These efforts resulted in 146 responses, 96% of which were from residents living within the city. Their ages range from teenagers to older adults, with a median age of 43, and most have decades of driving experience.

Media Outreach

To promote the project and gather initial feedback, an article was published in the Butler County Times-Gazette, and content was delivered through the City’s newsletter. Informational graphics were shared through the City’s social media channels to educate followers on the plan, raise awareness of pop-up events and focus groups, and invite online feedback via the project website and surveys.



▲ A social media post promoting the survey



WINTER 2026

Risk Factor Prioritization

In the new year, the Steering Committee was asked to prioritize all risk factors identified from crash data, high-injury network analysis, and community feedback to inform the upcoming focus group discussions. Distracted driving and inattention emerged as the most frequently prioritized risk factor, with uncontrolled intersections being the next most cited concern. Speeding was identified as another major contributor to crashes and perceived danger. Sidewalk infrastructure and continuity ranked fourth, underscoring the importance of safe, complete pedestrian networks. Teen drivers and older drivers were also frequently identified as risk factors requiring focused attention.

Focus Group Meetings

The City offered four focus group meetings in February 2026 to gather more in-depth input from specific community members and leaders. The first focus group was held at the Senior Center, where approximately 35 attendees responded to prompts from the presenters about their unique experiences with identified risk factors. Paper surveys were used to gather written responses and to rank behavioral and design countermeasures most likely to improve safety in El Dorado.

A second focus group was held with 10 officers from El Dorado’s Police Department to gather their professional perspectives on the identified risk factors and included an activity to rank the behavioral and design countermeasures using interactive display boards.

Two other focus group meetings were planned and advertised: an in-person meeting for those who responded to the first survey indicating their interest in further engagement with the project, and another virtual meeting specifically

for school travel. However, both were poorly attended.

Pop-up Event 2: A second pop-up event was held in February 2026 at El Dorado High School, focusing on obtaining feedback from teen drivers on behavioral and design countermeasures most likely to improve safety in El Dorado. Approximately 100 students participated in the countermeasure ranking activity.

Online Survey 2: Another online survey was available to the public and mirrored the questions posed in the focus groups. It was distributed through the City’s communications channels and received 28 responses.

Online Survey 3: A third survey focused on school travel and was distributed through the school districts’ communication application, receiving 78 responses.



▲ A social media post promoting the survey

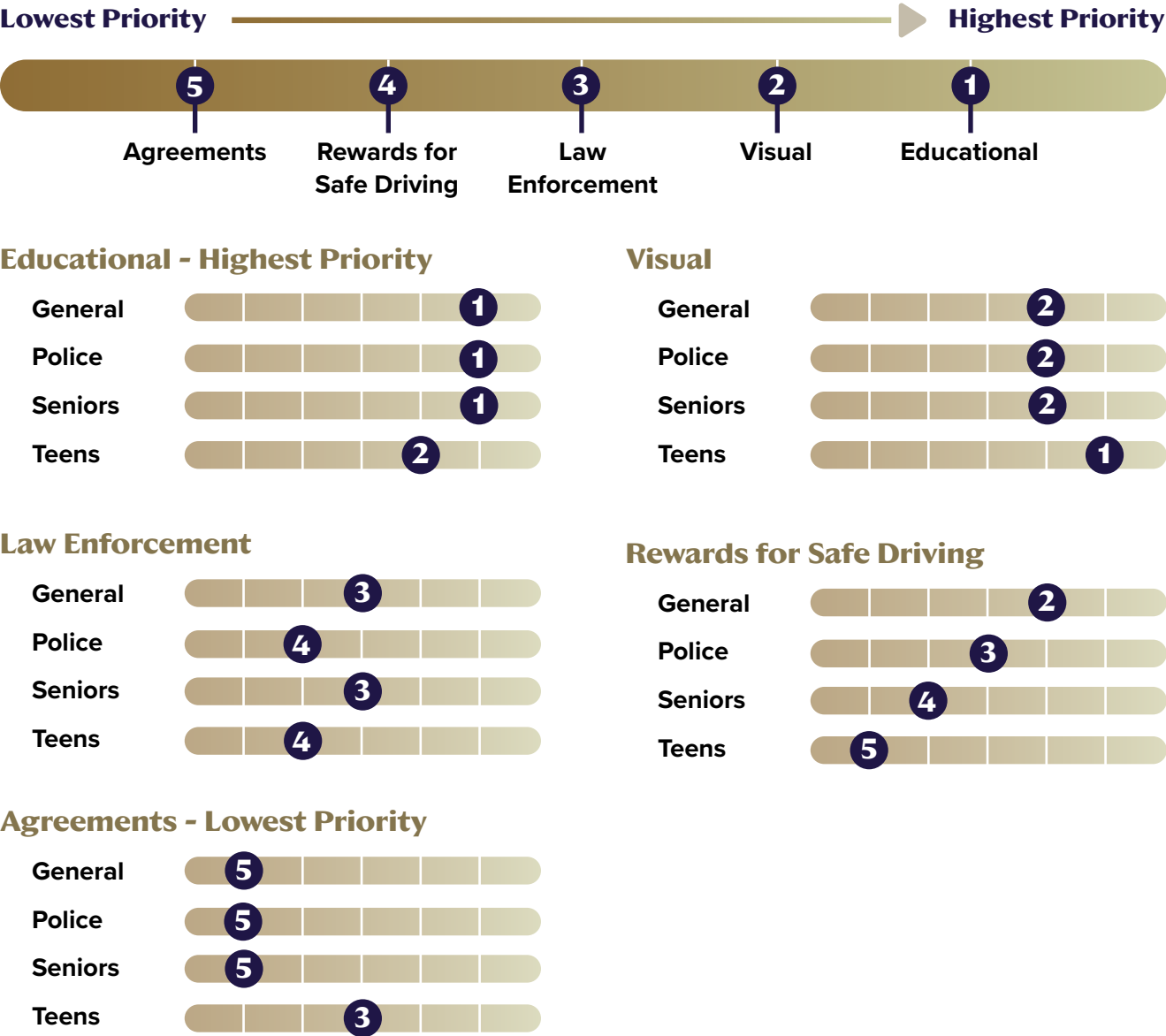


Figure 36: Behavioral countermeasure ranking

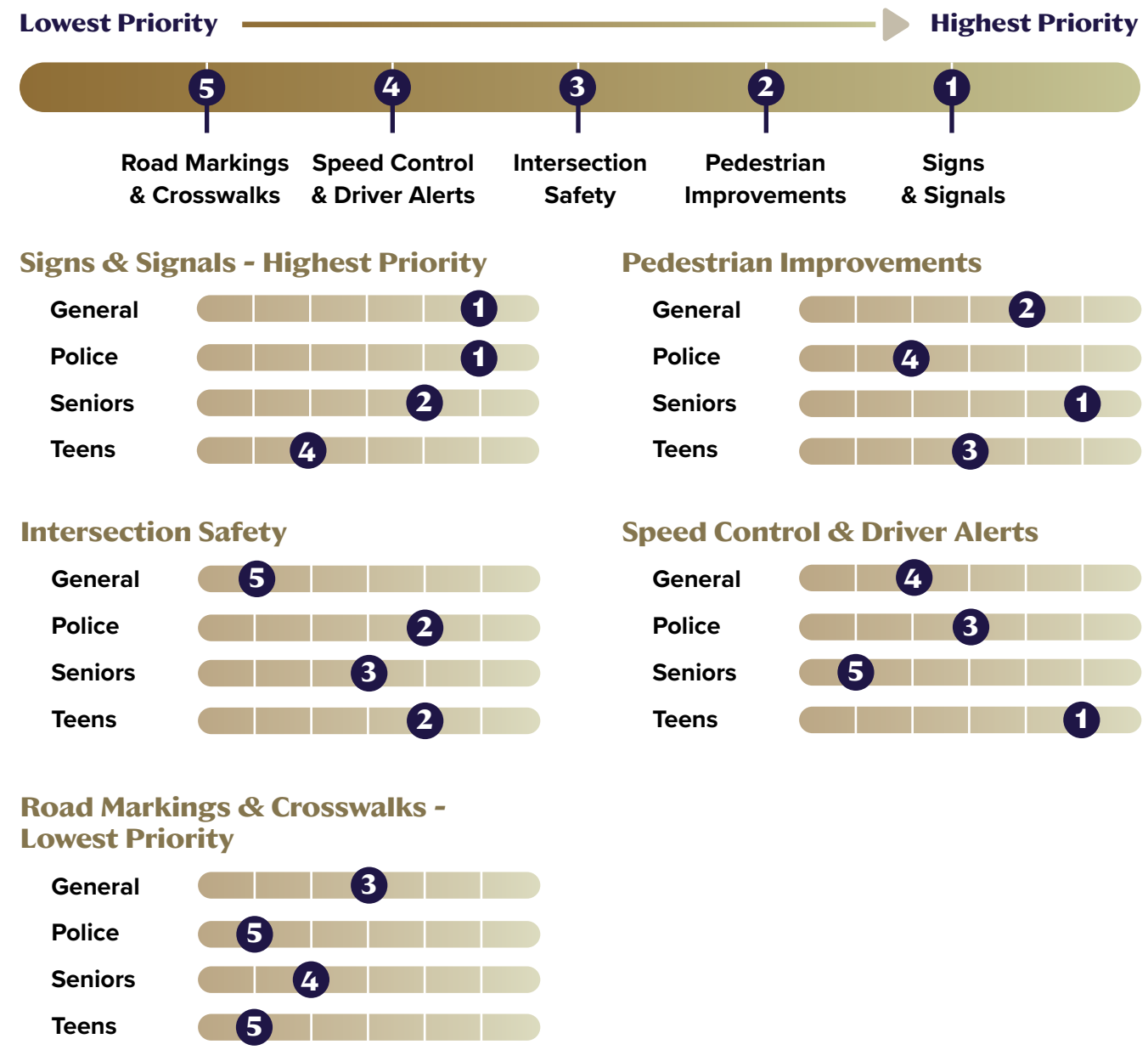


Figure 37: Design countermeasures ranking



252
Total responses
collected through
online surveys



2 In-person,
interactive
pop-up events



Takeaways

The themes raised through community feedback for Phase 1 align closely with the city's crash severity analysis. Both point to the same safety priorities: addressing distracted driving, improving intersection safety, enhancing visibility, repairing and expanding pedestrian infrastructure, managing speeds on major routes, and focusing on vulnerable groups such as youth, older adults, and people using mobility devices.

The second round of El Dorado's Safe Streets 4 All engagement efforts—including senior, law enforcement, general public, school traveler, and a teen driver pop-up event—revealed a consistent and unified set of transportation safety concerns across residents of all ages and backgrounds. Residents typically agreed on the types of solutions they believe will make a meaningful difference. These shared priorities provide a strong foundation for the city's Safe Streets 4 All strategy and the development of targeted engineering, policy, enforcement, and education initiatives.

Infrastructure Conditions

In addition to behavioral concerns, the community identified substantial issues with the built environment, particularly the condition and continuity of pedestrian infrastructure. Many sidewalks were described as uneven, cracked, missing, or obstructed by vegetation, making walking difficult or unsafe. Residents also cited visibility challenges—such as overgrown weeds or poor lighting—that reduce the ability of both drivers and pedestrians to see hazards in time to react.

Speeding & Driver Behavior

Residents overwhelmingly identified driver behavior as their most pressing concern. Speeding, distracted driving—especially phone use—and failure to yield were the issues most frequently mentioned across neighborhoods, school zones, and major intersections. Many participants emphasized the need for improved driver education and more consistent enforcement, noting that inattentive or aggressive driving threatens the safety of motorists, pedestrians, cyclists, and mobility device users alike.

Seniors reported seeing drivers roll through red lights or fail to yield in crosswalks, while law enforcement officers shared that texting at stoplights and rushed, impulsive decisions were common. Teen drivers also expressed concern about distracted driving, ranking visual reminders and law enforcement presence as the most important behavioral improvements.

Signage & Visibility

Several respondents in southern El Dorado highlighted uncontrolled intersections as a source of confusion and near-miss crashes, requesting additional stop signs or improved intersection controls. Locations such as Village & 6th and North Main & McCollum were repeatedly named as uncomfortable or unsafe due to limited visibility or erratic driver behavior.



School Zones

School area safety emerged as another prominent theme. Families described how the lack of bus service within 1 one mile of Blackmore School leaves many children walking or biking along routes without sidewalks, marked crosswalks, or safe crossing points. Participants called for continuous sidewalk networks, better crosswalk markings, and enhanced visibility to ensure children can safely travel to and from school.

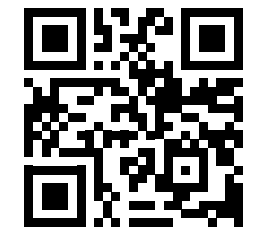
Families described unsafe conditions along McCollum, Orchard, Main, Boyer, Towanda, Country Club, and 6th Street. Many parents indicated they would allow their children to walk or bike if crossings were safer, sidewalks were more continuous, and traffic was slower.

Vehicle Safety

Another major insight from the survey involved the low availability and awareness of vehicle safety technologies. Many residents drive older vehicles without features like Anti-lock Braking Systems (ABS) or Advanced Driver Assistance Systems (ADAS), and some drivers were unsure whether their vehicles included them. This limited use of safety technology may increase risks related to distraction, loss of control, and failure to yield—factors frequently linked to severe crashes.

Looking Ahead

The SAP will be presented to the City Council and available to the public on the project website, <https://arcg.is/1HbXW12>. The website can be maintained by the City to ensure continual access to the SAP as an informational resource for future grant applications, selected projects, and programs.



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Diagnosis & Countermeasure Selection

Chapter 4

DIAGNOSIS & COUNTERMEASURE SELECTION

Comprehensive crash data analysis for El Dorado (2015–2024) reveals distinct patterns in crash severity, contributing factors, and high-risk locations, helping identify targeted safety countermeasures. The analysis categorizes crashes by severity and clusters, highlighting behavioral, environmental, and roadway risk factors to support data-driven safety improvements.

This chapter presents the diagnosis of safety issues and corresponding countermeasures through four parts.

Part one focuses on risk factor analysis, identifying prominent factors related to crash occurrence and severity.

Part two presents the crash pattern analysis (cluster analysis), which supports the development of systemic countermeasures.

Part three includes 14 targeted spot studies, including the pedestrian crossing study at Central Avenue and Arthur Street, to evaluate site-specific safety concerns and countermeasures.

Part four includes other focused safety reviews, such as railroad-grade crossing evaluations and traffic signal reviews, along with associated countermeasures.

The chapter concludes with a countermeasures summary that combines the recommendations from all four parts into a unified safety improvement framework for the City of El Dorado.

RISK FACTORS AND SAFETY DIAGNOSIS

To effectively reduce crashes and improve roadway safety, it is important to understand the key factors that contribute to crash occurrence and severity. Identifying these risk factors helps reveal why crashes occur and allows safety strategies to target the most critical issues in the transportation system.

To support this evaluation, a crash severity model was developed using machine learning (ML) techniques. The model estimates the likelihood that a crash will result in different outcomes—such as property damage only (PDO), injury, or fatal crashes—based on factors including roadway characteristics, driver behavior, vehicle types, and environmental conditions. The model results were further interpreted to identify which variables most strongly influence crash severity. The ML models are useful for this type of analysis because they can capture complex relationships among multiple variables and analyze large datasets more effectively than traditional methods.

In addition to the data-driven analysis, key safety concerns were also identified through community engagement activities, including public input, stakeholder meetings, and focus group discussions described in Chapter 3. Integrating both analytical results and community perspectives helps ensure that the identified risk factors reflect not only crash data patterns but also the safety concerns experienced by residents and road users.

To organize these findings and guide the development of targeted countermeasures, the identified risk factors were grouped according to the Safe System Approach, which considers safety across four of the key elements: Safe Road Users, Safe Vehicles, Safe Speeds, and Safe Streets (shown in [Figure 38](#)).

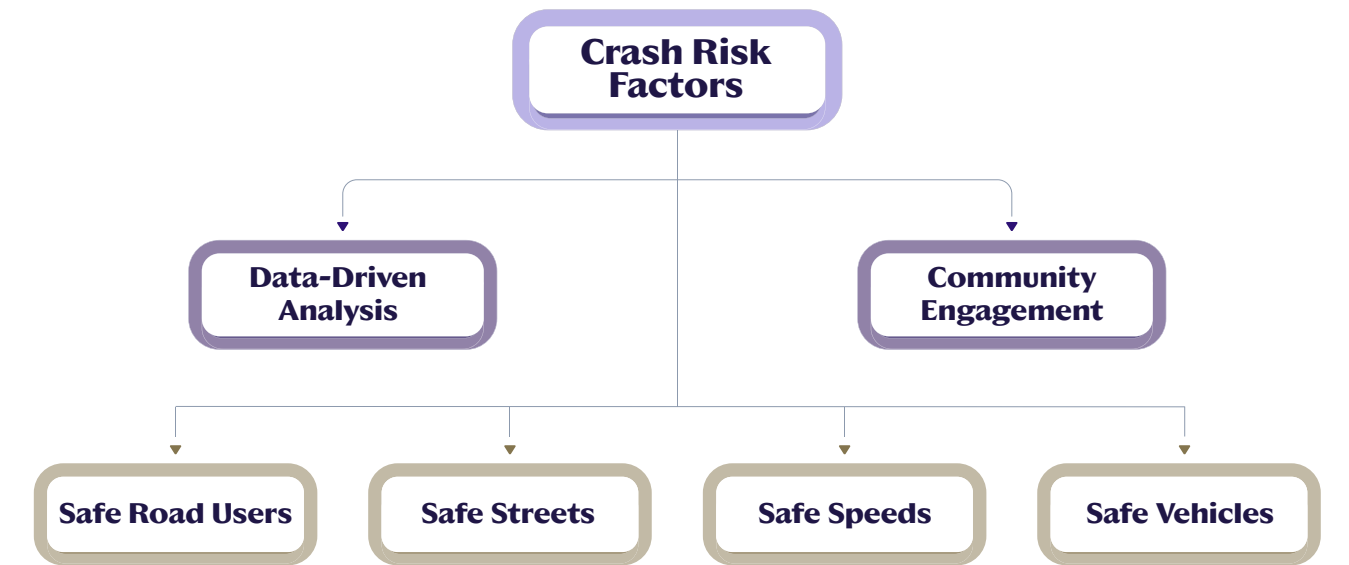


Figure 38: Safe System Risk Factor Hierarchy

The following sections present the prominent crash risk factors under each Safe System element and outline potential strategies to mitigate those risks.

Safe Road Users

Driver behavior emerged as one of the most significant contributors to crash risk in El Dorado. The crash severity model identified factors such as driver distraction, failure to yield, and risky driving behavior as important contributors to severe crash outcomes.

These findings are consistent with feedback received through community engagement activities. Survey participants frequently cited speeding, driver inattention, and failure to yield as major safety concerns throughout the city. Residents also noted distracted and impaired driving as recurring risks, particularly in areas

with pedestrian activity. Additionally, community members emphasized the need for stronger driver education and enforcement to address unsafe driving behavior and improve awareness of pedestrian and bicyclist safety.

Key Risk Factors

- Distracted driving
- Failure to yield
- Speeding and aggressive driving behavior
- Impaired driving
- Teen and older drivers (limited driving experience or reduced reaction time)
- Limited driver awareness of pedestrians and bicyclists
- Limited awareness of safe walking and bicycling interactions near schools



Countermeasure Opportunities

Enforcement and Policy Actions

- Targeted enforcement programs during high-risk periods (e.g., nighttime, peak travel times) and high-crash locations.
- Enforcement campaigns addressing distracted driving, speeding, and failure-to-yield violations

Education and Awareness Programs

- Public education campaigns on distracted driving and safe driving behaviors
- Public education on right-of-way rules for drivers, pedestrians, and bicyclists
- Driver awareness programs focused on pedestrian and bicycle safety

Community and School-Based Programs

- Community outreach programs promoting safe driving practices
- Teen driver safety education and awareness programs
- Outreach and educational programs supporting safe driving for older adults
- Support Safe Routes to School programs including pedestrian safety education and school-zone awareness initiatives

Safe Streets

Roadway design, traffic control devices, operational characteristics, and overall infrastructure conditions play a major role in crash occurrence and severity. The crash analysis identified intersections, visibility constraints, and roadway geometry as important contributors to crash risk.

Community feedback echoed many of these concerns. Residents frequently mentioned missing or uneven sidewalks, overgrown vegetation blocking visibility, and uncontrolled intersections as safety issues affecting walking, biking, and driving conditions. Moreover, residents also reported confusion regarding permissive left-turn operations at signalized intersections, where drivers may not fully understand that they must yield to opposing traffic when turning left on a circular green signal. This lack of clarity can increase the likelihood of angle and turning crashes.

Participants also highlighted the need for better pedestrian crossings, improved lighting, and clearer traffic control at intersections, particularly near schools and areas with higher pedestrian activity. In addition, community engagement identified concerns related to Safe Routes to School, noting that the lack of bus service within approximately one mile of Blackmore School requires many students to walk or bike along routes that may lack continuous sidewalks, marked crossings, or adequate pedestrian visibility. These conditions increase potential conflicts between vehicles and students traveling to and from school.

Key Risk Factors

- Intersection conflict points (specifically left turn angle and rear-end crashes)
- Limited sight distance from vegetation or roadside obstacles
- Missing or uneven sidewalks
- Limited safe routes to school and incomplete pedestrian infrastructure near schools
- Inadequate pedestrian crossing facilities
- Uncontrolled intersections strike in some areas



- Faded or unclear pavement markings in some areas
- Lighting conditions

Addressing these roadway design, traffic control, and visibility issues can significantly reduce driver confusion, improve traffic operations, and lower the risk of intersection-related crashes.

Countermeasure Opportunities

Traffic Control Improvements

- Evaluate signal timing and operations at signalized intersections
- Consider protected or protected-permissive left-turn phasing where appropriate
- Review and optimize all-red clearance and yellow change intervals
- Improve signal visibility and clarity
- Use flashing yellow arrow for permitted left turns
- Evaluate traffic control warrants

Signage and Markings

- Install or upgrade regulatory and warning signs with appropriate size and placement
- Improve pavement markings and lane guidance at intersections and along corridors
- Maintain clear and visible crosswalk markings

Visibility and Maintenance

- Remove or trim vegetation that blocks sight distance
- Maintain or add sidewalks and pedestrian facilities, particularly along school routes
- Improve lighting and pedestrian visibility in key locations

- Upgrade lighting and retroreflective markings to address nighttime severe crash risk

Safe Speeds

Analysis of the past 10 years of crash data in El Dorado shows that speeding and impaired driving significantly increase crash severity. When speeding is involved, fatal crashes become about 13 times more likely, and injury crashes also increase noticeably compared to crashes without speeding or impairment (nearly 63% increase). Impaired driving alone has a similar effect, making fatal crashes about 11 times more likely and increasing the likelihood of injury crashes by 44%. The most dangerous situation occurs when both speeding and impairment are present together. In these crashes, fatalities become about 60 times more likely, and the majority of crashes result in injuries (230% increase) rather than minor property damage. Overall, the findings clearly show that speeding substantially shifts the severity distribution toward more harmful outcomes. Moreover, the coexistence of speeding and driver impairment exhibits a synergistic effect, magnifying severity far beyond the additive influence of either factor alone. A map identifying these segments can be found in [Figure 39](#).



Speed & Alcohol Related Crashes

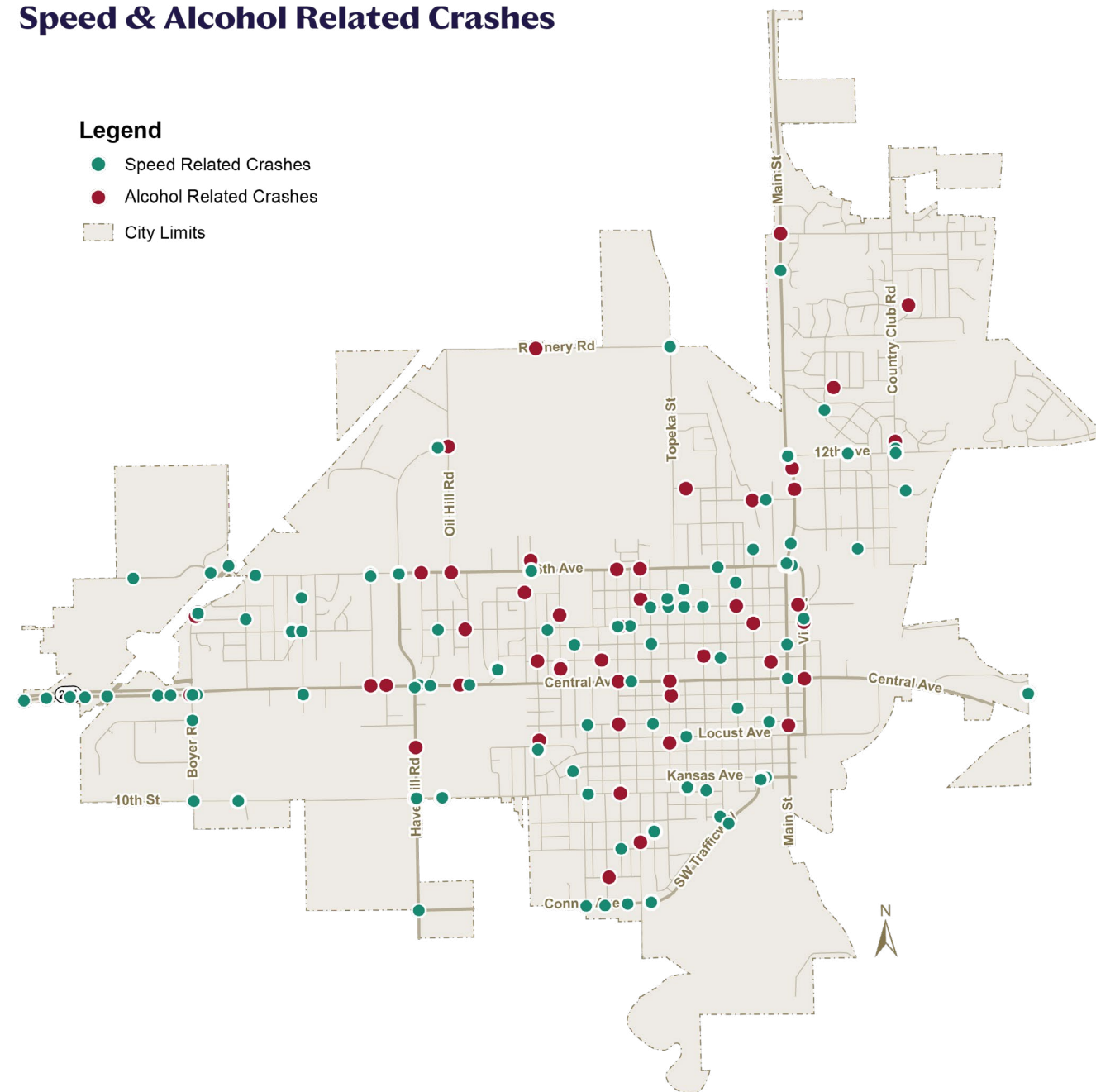


Figure 39: Speed and alcohol-related crashes



Key Risk Factors

The machine learning analysis identified several conditions and behaviors that are strongly associated with speed-related crashes (SRC) in El Dorado. The risk factors related to SRC are:

- Single-vehicle crashes, often associated with loss of control or roadway departure
- Snowy or icy road conditions
- Reckless or aggressive driving behavior
- Impaired driving
- Rainy or wet roadway conditions
- Intersection-related conflicts at higher approach speeds
- Dark conditions (street lights on)
- Weekend travel periods
- Motorcycle involvement
- Disregard for traffic control devices (e.g., signal or stop sign violations)

Countermeasure Opportunities

Engineering Strategies

- Install dynamic speed feedback signs along high-risk corridors
- Apply high-friction surface treatments on curves and locations prone to wet or icy conditions
- Improve intersection lighting and signal visibility where speeding or traffic control violations are common
- Develop policy for the pre-treatment of roads and bridges before winter weather

Enforcement and Policy Actions

- Increase speed enforcement along corridors and locations with frequent speed-related crashes
- Conduct joint enforcement campaigns targeting both speeding and impaired driving, especially during nighttime and weekend periods
- Implement sobriety checkpoints and impaired-driving enforcement during high-risk times
- Deploy mobile speed enforcement trailers or radar feedback devices in areas with frequent speed-related crashes
- Use data-driven enforcement strategies targeting locations with high speed-related crash concentrations

High-risk locations for speed and impairment related crashes are shown in Figures 60 and 61 by analyzing the crash data of last 10 years.

Behavioral and Education Strategies

- Public awareness campaigns highlighting the dangers of speeding and impaired driving, particularly under adverse weather or nighttime conditions
- Education programs focusing on safe driving speeds, stopping distances and loss-of-control risks
- Motorcycle safety awareness programs encouraging speed compliance and protective gear use
- Driver awareness campaigns to improve visibility and interaction with motorcycles on higher-speed corridors



Safe Vehicles

Vehicle characteristics can influence both crash occurrence and crash severity. While the crash severity model highlighted behavioral and roadway factors as dominant contributors, the analysis also identified vehicle-related factors associated with higher injury outcomes.

The machine-learning severity analysis found that commercial motor vehicles (heavy trucks) and motorcycles are associated with higher injury severity compared to typical passenger-vehicle crashes. Larger vehicles generate greater impact forces during collisions, increasing the likelihood of serious injuries. Similarly, motorcycles are more vulnerable because riders have limited physical protection, making even moderate-speed crashes more likely to result in injuries.

Community engagement findings also revealed that many residents operate older vehicles that may lack modern safety technologies, such as Anti-lock Braking Systems (ABS) or Advanced Driver Assistance Systems (ADAS). Several participants also reported uncertainty about whether their vehicles contain these features. Limited availability or awareness of vehicle safety technologies can increase crash risk, particularly in situations involving sudden braking, loss of control, or driver inattention.

Key Risk Factors

- Heavy vehicle (commercial motor vehicle) involvement in crashes
- Motorcycle involvement with higher injury vulnerability
- Limited presence of modern vehicle safety systems (ABS, ADAS)
- Older vehicle fleet in the community

- Limited awareness of vehicle safety technologies

Countermeasure Opportunities

Vehicle Technology and Awareness

- Public education on vehicle safety technologies such as ABS and ADAS
- Awareness programs on the benefits of modern vehicle safety systems
- Promote safe vehicle maintenance and braking system awareness

Commercial Vehicle Safety

- Targeted enforcement of speed and lane discipline for commercial vehicles
- “Share the Road” education campaigns to improve interaction between passenger vehicles and trucks
- Evaluate truck routes and signage along corridors with higher commercial motor vehicle (CMV) activity

Motorcycle Safety

- Motorcycle safety awareness campaigns for both riders and drivers
- Support community and state motorcycle safety education and training programs
- Promote the impact and encourage the use of appropriate protective gear
- Improve driver awareness of motorcycles at intersections and during lane changes
- Support community and state motorcycle safety education and training programs



CRASH PATTERN AND SYSTEMIC SAFETY ANALYSIS

In the last section, the crash contributing factors related to different elements of safe system approach have been explored. However, crashes are rarely caused by a single factor; they usually occur due to a combination of driver behavior, roadway characteristics, environmental conditions, and traffic operations. To better understand these interactions, a clustering approach was used to analyze crash patterns in El Dorado. Clustering is a data analysis method that groups crashes with similar characteristics such as crash severity, driver behavior, vehicle type, roadway environment, lighting conditions, and crash type. Instead of examining crashes by one variable at a time, clustering helps identify patterns of crashes that tend to occur together, revealing the underlying conditions that lead to specific types of crashes.

Identifying these crash patterns is important because it allows safety practitioners to understand why crashes happen and under what conditions they occur most frequently. For example, some crashes may be linked to intersection conflicts during daytime traffic, while others may occur at night on rural highways due to speeding or impaired driving.

This approach also supports systemic safety analysis. Systemic analysis focuses on identifying common risk patterns across the transportation network, rather than only addressing locations with the highest number of crashes. By understanding recurring crash patterns, cities can implement proactive safety improvements at similar locations before severe crashes occur.

Using this approach, the clustering analysis of El Dorado crash data identified four distinct crash patterns, each characterized by unique combinations of roadway context, driver behavior, severity, and timing. These clusters help explain how different types of crashes occur and guide the selection of targeted systemic countermeasures aligned with each crash pattern.

Crash Patterns: Cluster Profiles

The clustering analysis grouped crashes with similar characteristics into four crash patterns. These patterns help explain the common situations in which crashes occur in El Dorado and guide the selection of targeted safety improvements.



Cluster 0 Routine Intersection Crashes (Baseline Systemic Pattern)

This cluster represents the largest share of crashes and spans all severity levels, with property-damage-only (PDO) crashes dominating (approximately 70% PDO, 20% injury, and 10% severe/fatal). These crashes primarily involve multi-vehicle conflicts at intersections, with angle and turning collisions (left-turn and right-turn movements) being most common.

Most crashes occur in clear weather and daylight conditions, although some occur in rain or nighttime conditions with street lighting. Driver behaviors such as speeding, impairment, and reckless driving are rarely identified, but red-light running and driver distraction are present in several cases. Crashes occur throughout the day, with slightly lower frequencies on weekends.

Primary Safety Concerns:

Intersection conflict exposure under routine traffic conditions, particularly related to turning movements, yielding conflicts, and red-light violations.

Countermeasures (4E Framework)

Engineering

- Conduct a focused signal operations review at intersections with recurring permissive left-turn crashes to determine whether left-turn phasing modifications are appropriate. Potential strategies may include protected left-turn phasing, protected-permissive phasing with flashing yellow arrow, or

targeted time-of-day protection, while balancing safety benefits with operational impacts such as longer cycle lengths and added delay.

- Improve signal visibility by installing larger signal heads, retroreflective backplates, and ensuring proper signal placement.
- Evaluate yellow change intervals and all-red clearance intervals to ensure they meet current design guidelines and reduce red-light violations.
- Improve intersection sight distance by trimming vegetation and removing visual obstructions.
- Install or refresh lane guidance and turn-lane pavement markings to better guide turning movements.
- Evaluate raised medians or channelization where appropriate to organize turning movements and reduce conflict points.

Enforcement

- Targeted enforcement for red-light running and failure-to-yield violations at high-crash intersections.
- Periodic intersection safety enforcement during peak travel periods.

Education

- Public campaigns addressing yielding behavior, distraction, and red-light running.
- Public campaigns explaining safe left-turn behavior and yielding requirements at signalized intersections.

Emergency Response

- Improved Emergency Medical Services (EMS) access and signal preemption at high-volume intersections.



Cluster 0 Routine Intersection Crashes

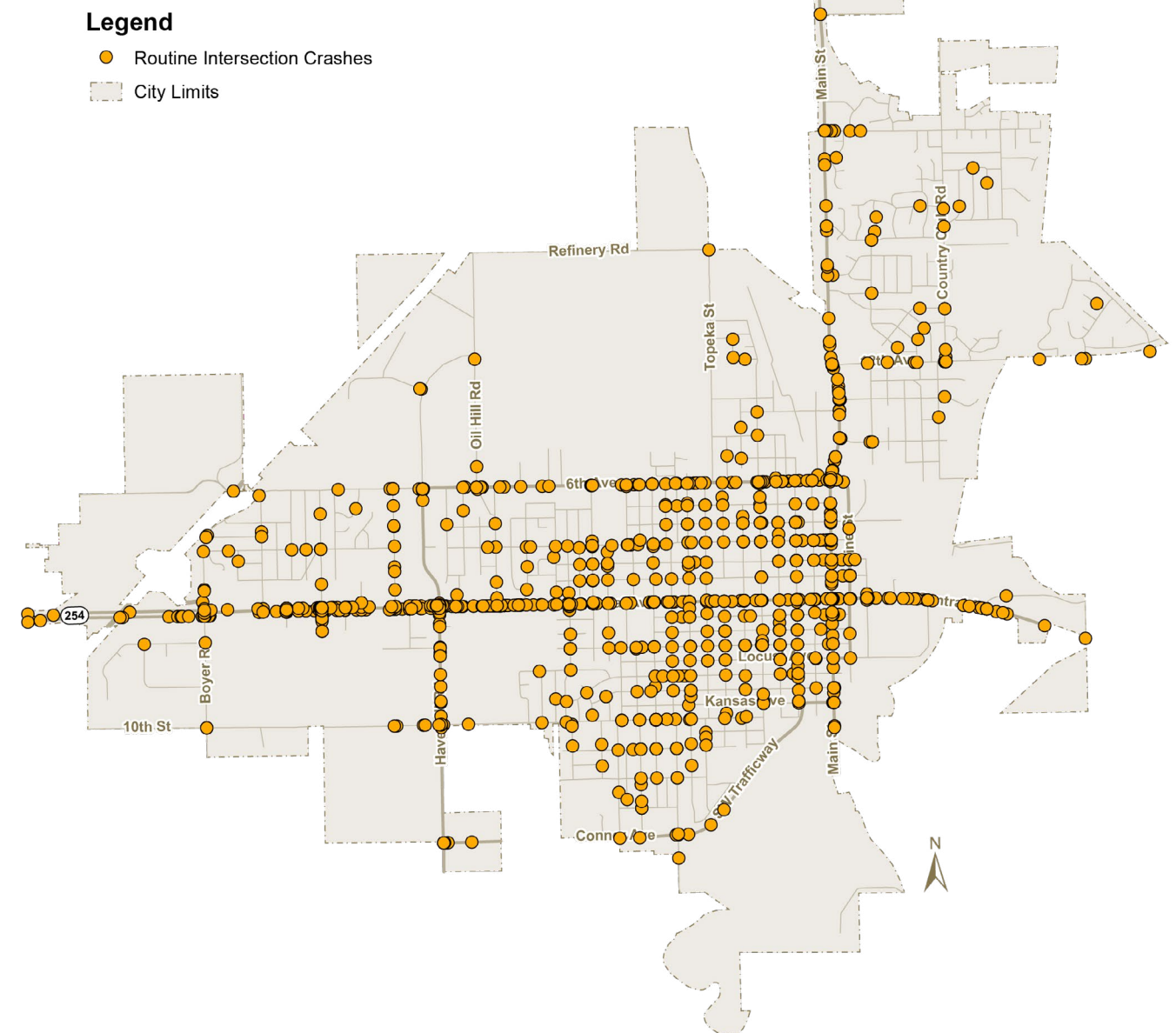


Figure 40: Cluster 0 Routine Intersection Crashes



Cluster 1 Speeding and Aggressive Driving Crashes

This cluster represents approximately 10–15% of crashes and is strongly associated with speeding, aggressive driving behavior, and lane-change conflicts. Injury crashes account for a larger share of this cluster (approximately 35%) compared to its proportion of PDO crashes.

Collision types include single-vehicle loss-of-control crashes, sideswipe crashes, and some head-on collisions. Approximately 73% of single-vehicle crashes and 70% of sideswipe crashes are associated with this cluster. Driver behaviors such as speeding, reckless driving, and fatigue are prominent contributing factors. Crashes of this group frequently occur during PM peak periods, weekends, and nighttime travel, and high-speed corridors. Commercial motor vehicles (CMVs) are involved in a notable portion of these crashes.

Primary Safety Concerns

Speeding and aggressive lane interactions, amplified during peak traffic periods, weekends, and nighttime conditions.

Countermeasures (4E Framework)

Engineering

- Install dynamic speed feedback signs along corridors with recurring speed-related crashes.
- Evaluate lane configuration and merge areas to reduce lane-change conflicts and improve traffic flow.
- Improve lane markings and delineation to encourage proper lane discipline.

Enforcement

- Conduct targeted speed enforcement during high-risk periods such as PM peak hours, weekends, and nighttime.
- Increase commercial motor vehicle (CMV) speed and lane-discipline enforcement on truck routes.
- Deploy mobile speed trailers at high-risk locations.

Education

- Public campaigns addressing speeding, aggressive driving, and safe lane-changing behavior.
- “Share the Road” outreach programs to improve interaction between passenger vehicles and commercial trucks.
- Driver awareness programs addressing fatigue and high-speed crash risks.

Emergency Response

- Implement quick clearance policies and incident management programs to reduce secondary crashes on high-speed corridors.



Cluster 1 Speeding and Aggressive Driving Crashes

Legend

- Speeding and aggressive driving crashes
- ▭ City Limits

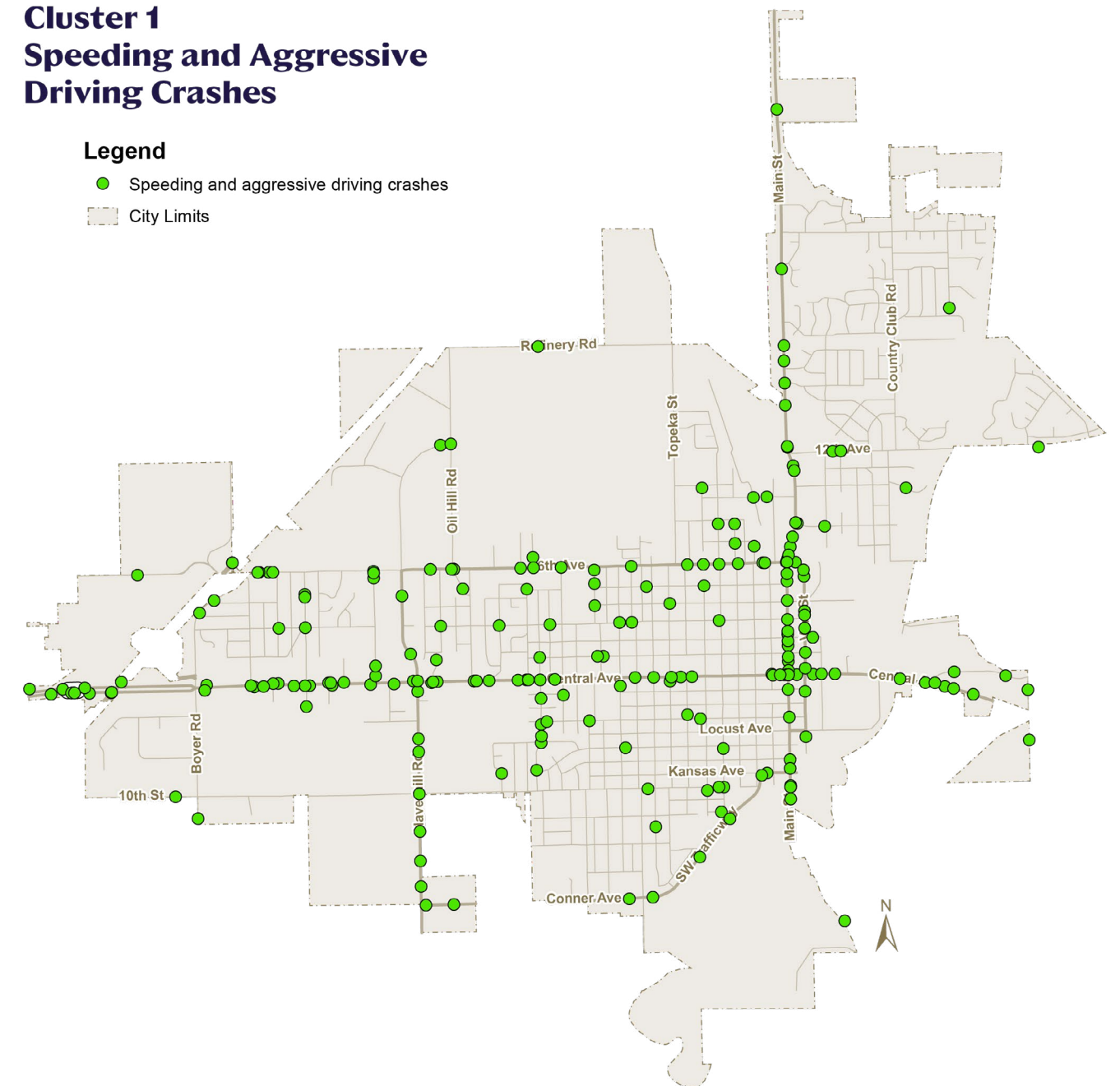


Figure 41: Cluster 1 Speeding and Aggressive Driving Crashes



Cluster 2 Rear-End and Parking-Related Crashes

This cluster accounts for approximately 10–12% of crashes and is dominated by property-damage-only crashes, with injury and severe crashes being relatively rare.

The cluster is characterized by rear-end collisions and parked-vehicle impacts, with approximately 55% rear-end crashes and the majority of parked-vehicle crashes occurring in this cluster. These crashes occur primarily under clear weather and daylight conditions on local and urban streets, where stop-and-go traffic, queuing, and roadside parking activity are common.

Driver behavior factors such as impairment and speeding are generally low, but driver distraction appears frequently.

Primary Safety Concerns

Queuing conditions, inattentive driving, and parking/loading maneuvers in stop-and-go urban traffic.

Countermeasures (4E Framework)

Engineering

- Evaluate signal coordination and timing adjustments along corridors with recurring rear-end crashes.
- Consider queue detection or queue warning systems where sudden stopping occurs.
- Review parking and loading zone locations to reduce conflicts between parked vehicles and through traffic.

- Improve pavement markings and lane guidance in areas with frequent parking maneuvers.

Enforcement

- Targeted enforcement of distracted driving violations.
- Enforcement of parking regulations and loading zone compliance.

Education

- Public awareness campaigns addressing following distance and distracted driving risks.
- Outreach on safe parking and loading practices in busy corridors.

Emergency Response

- Ensure emergency vehicle access is maintained in areas with heavy parking activity.



Cluster 2 Rear-End and Parking-Related Crashes

Legend

- Rear-end and parking-related crashes
- City Limits

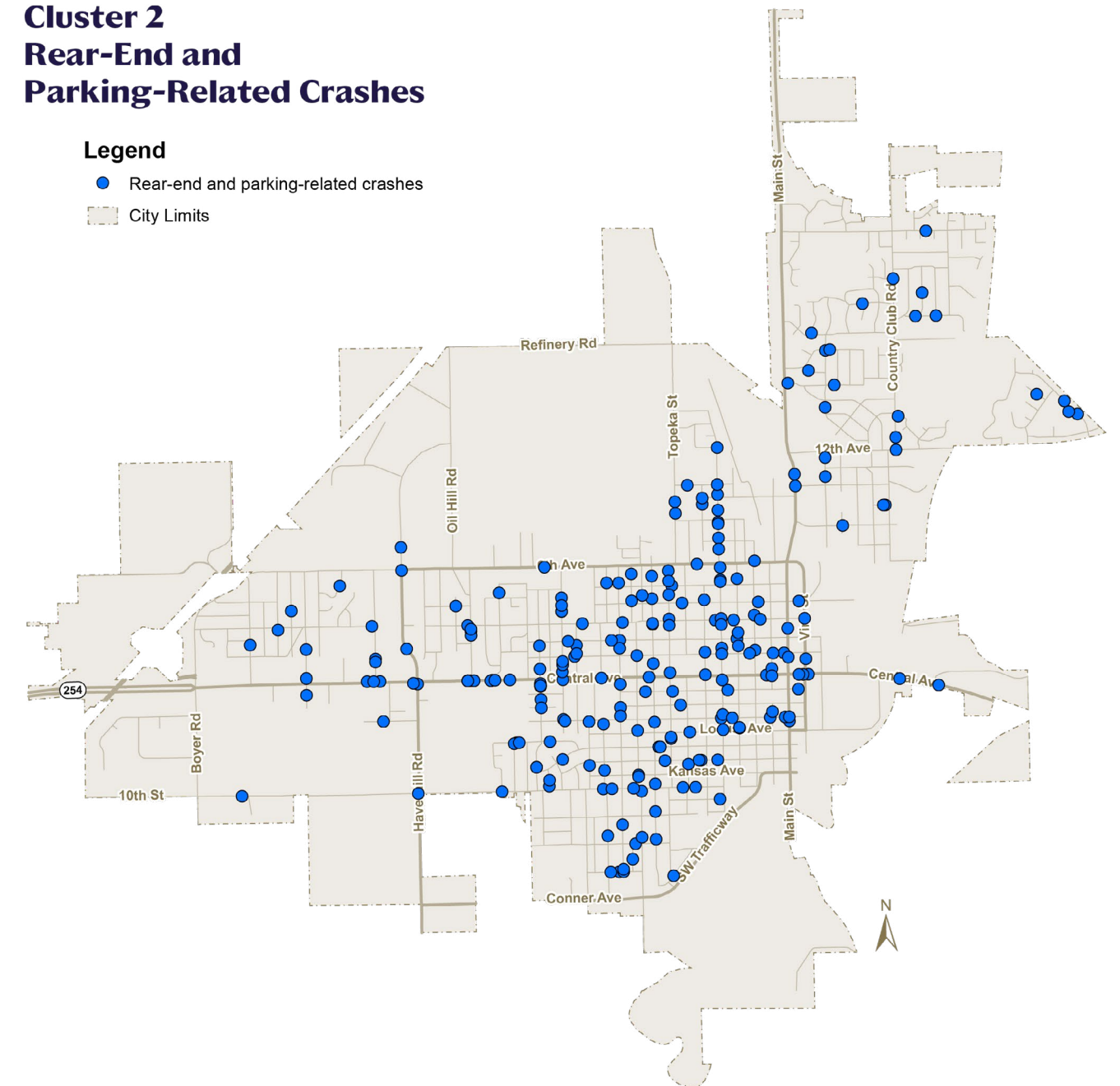


Figure 42: Cluster 2 Rear-End and Parking-Related Crashes



Cluster 3 Nighttime Impaired Driving and Severe Crashes

This cluster represents the smallest share of crashes (approximately 5–7%), but it contains the highest proportion of fatal and serious injury crashes (approximately 60–65%).

Crashes in this cluster occur primarily during nighttime conditions, often on rural highways and higher-speed arterial roadways.

Driver behaviors frequently include impaired driving combined with speeding, with some overlap involving fatigue and reckless driving. Common crash types include single-vehicle run-off-road crashes, head-on collisions, and nighttime angle crashes. Weather conditions are typically clear, indicating that severity is driven more by behavioral factors and visibility conditions rather than environmental factors.

Key Risk Driver

Nighttime impaired driving combined with excessive speed, primarily occurring at night on rural highways and higher-speed roads, leading to severe run-off-road and head-on crashes.

Countermeasures (4E Framework)

Engineering

- Improve roadway lighting at high-risk rural intersections and segments where feasible.
- Apply high-friction surface treatments (HFST) on curves or locations with repeated run-off-road crashes.

Enforcement

- Conduct Driving Under the Influence (DUI) checkpoints and nighttime saturation patrols, particularly on weekends.
- Increase speed enforcement during nighttime periods on rural corridors.
- Support ignition interlock programs for repeat impaired-driving offenders.

Education

- Public campaigns addressing the dangers of impaired driving and nighttime speeding.
- Outreach programs targeting young drivers and high-risk groups.

Emergency Response

- Improve emergency response coverage on rural corridors, including quicker detection and reporting of nighttime crashes.



Cluster 3 Nighttime Impaired Driving and Severe Crashes

Legend

- Nighttime impaired driving and severe crashes
- City Limits

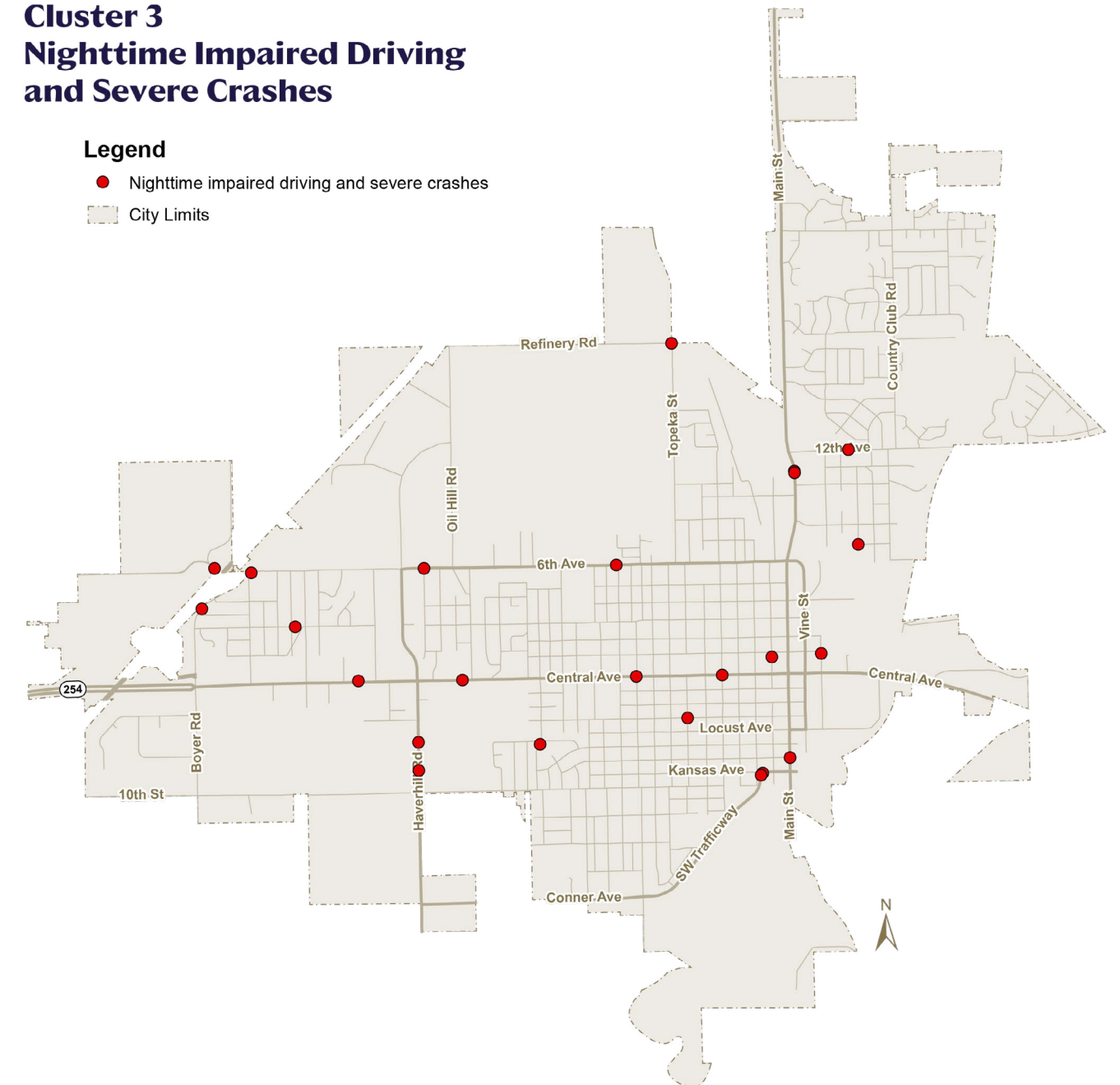


Figure 43: Cluster 3 Nighttime Impaired Driving and Severe Crashes



Cluster	Crash Severity	Risky Conditions	Key Characteristics
0 Multi-Vehicle/ Intersection Baseline	~70% PDO, 20% Injury, 10% Fatal	Intersection conflicts, turning/yield errors, red- light running	Largest cluster; intersection angle and turning crashes; clear weather and daylight common; some distraction and red-light running

Countermeasures (4E)

Engineering: Evaluate left-turn phasing (protected or protected-permissive where appropriate); improve signal visibility; adjust yellow/all-red intervals; improve sight distance; refresh lane guidance markings.
Enforcement: Targeted red-light and failure-to-yield enforcement.
Education: Driver awareness on yielding and intersection safety.
Emergency Response: Maintain EMS access and signal preemption at major intersections.

Figure 44: Summary of Crash Patterns & Systemic Countermeasures Cluster 0

Cluster	Crash Severity	Risky Conditions	Key Characteristics
1 Speeding & Aggressive Driving/Lane Interaction	~35% Injury; mix of PDO and severe crashes	Speeding, aggressive driving, fatigue, CMV interactions	Arterial corridors; ~70% of sideswipe crashes and ~73% of single-vehicle crashes; CMV involvement; weekends and PM peak

Countermeasures (4E)

Engineering: Dynamic speed feedback signs; improve merge areas and lane discipline markings
Enforcement: Targeted speed enforcement and CMV enforcement during peak and weekend periods.
Education: Speed management campaigns and “Share the Road” programs for truck–vehicle interaction.
Emergency Response: Corridor incident management and quick-clearance programs.

Figure 45: Summary of Crash Patterns & Systemic Countermeasures Cluster 1



Cluster	Crash Severity	Risky Conditions	Key Characteristics
2 Rear-End & Parked Vehicle PDO	>85% PDO	Queuing traffic, inattentive driving, parking/loading maneuvers	Rear-end crashes and majority of parked-vehicle crashes; local/urban roads; daytime; distraction-related

Countermeasures (4E)

Engineering: Review signal timing and coordination; consider queue warning systems; evaluate parking/loading zone layout and visibility; improve pavement markings.
Enforcement: Distracted-driving enforcement and parking compliance patrols.
Education: Campaigns on safe following distance and distraction risks.
Emergency Response: Maintain clear emergency access near parking and loading areas.

Figure 46: Summary of Crash Patterns & Systemic Countermeasures Cluster 2

Cluster	Crash Severity	Risky Conditions	Key Characteristics
3 Nighttime Impaired Severe	~70% Fatal/Severe	Impaired driving combined with speeding at night; fatigue or reckless behavior	Nighttime conditions; impaired driving and speeding; rural highways; run-off-road, head-on, and angle crashes

Countermeasures (4E)

Engineering: Improve roadway lighting where appropriate; apply high-friction surface treatments on curves.
Enforcement: DUI checkpoints and nighttime patrols; speed enforcement during late-night periods.
Education: Anti-DUI and nighttime speed awareness campaigns targeting high-risk drivers.
Emergency Response: Improve emergency response coverage and crash detection in rural corridors.

Figure 47: Summary of Crash Patterns & Systemic Countermeasures Cluster 3



TARGETED INTERSECTION SAFETY REVIEWS & KEY IMPROVEMENT STRATEGIES

In addition to the system-level crash analysis, fourteen intersections were selected for detailed safety review based on crash history, network screening results, and Steering Committee's suggestion. Each location was evaluated through a safety analysis that included crash pattern analysis, field observations, and targeted countermeasure recommendations. Full reports for each location are provided in [Appendix B](#), while this section summarizes the key findings and improvement themes identified across the reviewed locations.

Key Safety Findings

The intersection reviews identified several recurring crash patterns across the network:

- Left-turn failure-to-yield conflicts were a dominant crash pattern at several signalized intersections, particularly where permissive left-turn movements interact with opposing through traffic. This pattern was most prominent at Central & Village, Central & Summit, Central & Main, and Central & Boyer.
- Rear-end crashes at signalized intersections were another recurring crash pattern. These crashes generally occurred when drivers failed to recognize slowing or stopped traffic approaching a signalized intersection. The pattern was most prominent at 6th &

Haverhill and Central & Haverhill. Similar rear-end conditions were also observed at Haverhill & Towanda, Central & Oil Hill, and Central & Boyer, particularly on higher-speed or high-volume approaches where vehicles encountered queuing.

- Lane-use confusion and sideswipe crashes were identified at several multi-lane intersections where complex geometry, skewed approaches, or closely spaced turning lanes created driver uncertainty. This issue was most notable at 6th & Main, where sideswipe crashes were associated with vehicles traveling straight from turn lanes or merging between lanes. Similar lane-discipline issues were observed at Central & Main, where late lane changes and turning movements contributed to sideswipe conflicts and at Central & Boyer, where complex turning movements and lane assignments contributed to driver confusion.
- Driver judgment and sight-distance limitations at stop-controlled intersections contributed to crashes at locations where vehicles entered major roadways from minor approaches. This condition was most evident at Main & McCollum, where turning vehicles pulled into the path of through traffic on Main Street. Similar visibility and judgment challenges were also noted at Central & Arthur, particularly where drivers must move forward beyond the stop line to see approaching traffic.
- Vulnerable road user conflicts, including bicycle and micromobility interactions with vehicles, were observed at a small number of locations. These crashes typically occurred near crosswalk areas or during turning movements where drivers and non-motorized users entered the same conflict space. Examples include 6th & Summit and Central & Arthur.



- Several intersections experienced very low crash frequencies, suggesting generally stable operations. Locations such as 12th & Country Club, 3rd & Main, and 6th & Summit recorded few or no crashes during the study period, indicating that safety improvements at these locations primarily relate to visibility, accessibility, or minor operational enhancements rather than major geometric changes.

Summary of Recommended Improvements

Across the fourteen intersection reviews, several improvement strategies emerged repeatedly. These strategies are consistent with the broader Safe System and systemic safety approaches identified earlier in this study.

Intersection Operations and Signal Improvements

- Review left-turn signal phasing where permissive turning conflicts occur.
- Improve signal visibility and conspicuity, including retroreflective backplates and improved signal head alignment.
- Evaluate signal timing and queue recognition to reduce rear-end crashes near signals.

Lane Guidance and Driver Expectancy

- Improve lane-use signing and pavement markings, particularly at multi-lane intersections with turning movements.
- Refresh or upgrade lane arrows, stop bars, and crosswalk markings to improve driver guidance and intersection recognition.
- Address skewed or complex intersection layouts with clearer channelization and signing.

Sight Distance and Intersection Visibility

- Review sight-distance limitations caused by parking, roadside objects, or roadside infrastructure.
- Improve intersection lighting and nighttime visibility where needed.
- Install advance warning or supplemental signage where drivers encounter unexpected stopping conditions.

Pedestrian and Bicycle Safety

- Improve crosswalk visibility and markings, especially near schools or pedestrian activity areas.
- Upgrade pedestrian signals, pushbuttons, and timing where accessibility or operation issues exist.
- Enhance bicycle and micromobility visibility at crossings and turning conflict areas.

Maintenance and Accessibility Improvements

- Refresh pavement markings and crosswalks.
- Correct ADA/PROWAG accessibility issues, including curb ramps, detectable warning surfaces, and pushbutton placement.
- Repair or replace damaged signal equipment and signage.



Rank	Intersection	Primary Issue	Key Improvement Theme
1	Central & Village	Dominant left-turn failure-to-yield crashes	Evaluate left-turn phasing and turning conflict mitigation (addressed in 2025)
2	Central & Summit	Permissive left-turn conflicts	Review protected or protected-permissive left-turn operations
3	Central & Haverhill	Rear-end crashes with secondary angle conflicts	Improve queue recognition and review signal operations
4	Central & Boyer	Rear-end and turning conflicts; driver confusion	Improve lane-use clarity and signal compliance
5	Central & Main	Angle crashes from red-light violations and turning conflicts	Improve signal visibility and lane guidance
6	Central & Oil Hill	Rear-end crashes on Central approaches	Improve signal visibility and queue awareness
7	6th & Haverhill	Rear-end crashes at signal	Improve queue recognition and approach markings
8	Haverhill & Towanda	Rear-end crashes approaching signal	Improve signal visibility and approach markings
9	Main & 6th	Sideswipe crashes from lane-use confusion	Improve lane-use guidance and channelization
10	Main & McCollum	Left-turn judgment and limited sight distance	Improve intersection visibility and stop control guidance
11	Central & Arthur	Low crash frequency; isolated events	Minor visibility and pavement marking improvements
12	6th & Summit	Isolated driver judgment and bicycle conflict	Improve crosswalk definition and pedestrian visibility
13	3rd & Main	Isolated crash	Improve signal visibility and pedestrian accommodations
14	12th & Country Club	No crashes recorded	Minor pedestrian visibility and crosswalk improvements

Figure 48: Summary of Crash Patterns & Systemic Countermeasures



Additional Traffic Operations & Safety Evaluations

Traffic Signal Review

Signal Warrants and Roundabouts

Following guidance from the Manual on Uniform Traffic Control Devices (MUTCD) two traffic signal warrant analyses were performed for 17 signalized intersections. The two warrants examined were:

Warrant 1: Eight-Hour Vehicular Volume

Warrant 2: Four-Hour Vehicular Volume

Using data from the Kansas Department of Transportation (KDOT) online mapping platform, KanPlan, and data from the Transportation Study each intersection was evaluated for potential satisfaction of one or both warrants listed. Factors affecting traffic control signal warrants were Average Daily Traffic (ADT), speed limit, population, and number of through lanes at each approach.

In addition to traffic signal warrants, each location was evaluated for roundabout feasibility based on key screening factors such as traffic volumes and geometric constraints of the intersection. Four types of roundabouts were considered. These were: mini, compact, single-lane, and two-lane.

Clearance and Pedestrian Intervals

All 17 traffic signals, including three pedestrian signals were studied for appropriate yellow and all red intervals. Pedestrian intervals were also calculated where applicable. The equations for the yellow change interval, all red clearance interval, and the pedestrian flashing don’t walk interval follow. Grade was assumed negligible.

Yellow Change Interval

Yellow clearance times are typically between 3 and 5 seconds. They should never be less than 3 seconds.

$$Y = t + \frac{1.47v}{2(a + Gg)}$$

Y = length of yellow interval, sec

t = perception-reaction time (use 1 sec)

v = speed of approaching vehicles, in mph

a = deceleration rate in response to the onset of a yellow indication (use 10 ft/sec^2)

g = acceleration due to gravity (use 32.2 ft/sec^2)

G = grade (percent grade/100)

All-Red Clearance Interval

The all-red clearance interval should not be larger than 6 seconds.

$$R = \frac{W + L}{1.47v}$$

R = length of all-red interval, sec

W = total traversed width, from the approach stop bar to the far side of no conflict point

L = length of vehicle (use 20 ft)

v = speed of approaching vehicles, in mph

Pedestrian flashing don’t walk interval

$$FDW = \frac{W}{S}$$

W = Crossing distance, ft

L = Walking speed (Use 3.5 ft/sec)



Reviewed Traffic Signals



Results

Signal Warrants and Roundabouts

The results from the signal warrant and roundabout feasibility analyses can be seen in the following table.

Warrant 1 is potentially satisfied at three intersections. Warrant 2 is potentially satisfied at eight intersections. There are three locations that meet requirements to satisfy both warrants. The three pedestrian signals cannot be appropriately evaluated as an intersection under Warrants 1 and 2.

Twelve of the seventeen intersections evaluated are potential candidates for roundabouts. Two intersections meet first considerations for a mini roundabout based only on ADT of less than 15,000 vehicles per day and inscribed circle diameter between 70 and 90 feet. Nine intersections meet first considerations for a single-lane roundabout based only on ADT less than 20,000 vehicles per day and inscribed circle diameter between 100 and 130 feet. Central & Haverhill meets first consideration for a multi-lane roundabout based only on ADT greater than 20,000 and inscribed circle diameter between X and Y.

Further study of each intersection is required to make definitive conclusions on whether the intersection is an appropriate location for a roundabout. Additional factors to consider are crash history and safety; site conditions including right-of-way, driveway density and topography; proximity to other roundabouts; truck volumes; and balancing of approach volumes.

Figure 49: Reviewed Traffic Signals



Intersection	Traffic Signals Warranted?		Intersection a Roundabout Candidate?			
	Warrant 1	Warrant 2	Mini RDBT	Compact RDBT	Single Lane RDBT	Multi-Lane RDBT
Central & Boyer	Y	Y	N	N	N	N
Central & Village	N	Y	N	N	Y	N
Central & Haverhill	Y	Y	N	N	Y	N
Central & Oil Hill	Y	Y	N	N	N	Y
Central & Summit	N	Y	N	N	N	N
Central & Denver	N	N	Y	N	N	N
Central & Gordy	N	N	N	N	Y	N
Central & Main	N	Y	N	N	Y	N
Central & Vine	N	N	N	N	Y	N
Main & 12th	N	Y	N	N	Y	N
Main & 6th	N	Y	N	N	Y	N
Main & 3rd	N	N	Y	N	N	N
Haverhill & Towanda	N	N	N	N	Y	N
Haverhill & 6th	N	N	N	N	Y	N
Towanda & Maplewood Ped Signal	NA	NA	N	N	N	N
6th & West of Taylor Ped Signal	NA	NA	N	N	N	N
12th & Crescent Ped Signal	NA	NA	N	N	N	N

Figure 51: High-level signal warrant analysis and roundabout analysis



Clearance and Pedestrian Intervals

Using the equations from the previous page, the clearance intervals and pedestrian intervals were calculated for all 17 traffic and pedestrian signals.

Intersection	Clearance Intervals											
	Yellow Change				All Red				Flashing Don't Walk			
	SB	NB	WB	EB	SB	NB	WB	EB	SB	NB	WB	EB
Central & Boyer	3.9	3.9	4.7	4.7	3.3	3.3	1.0	1.0	NA	NA	NA	NA
Central & Village	3.2	3.2	3.9	3.9	3.7	3.4	1.8	1.7	33.7	27.7	14.3	33.1
Central & Haverhill	3.9	4.3	3.9	3.9	2.5	1.9	2.2	2.4	32.9	36.0	32.3	32.9
Central & Oil Hill	3.2	3.2	3.6	3.6	2.5	2.4	1.7	1.7	24.6	25.4	18.6	18.6
Central & Summit	3.2	3.2	3.6	3.6	2.5	2.4	1.6	1.5	20.9	24.0	12.9	15.4
Central & Denver	3.2	3.2	3.2	3.2	2.3	2.5	1.9	1.5	22.0	22.6	12.6	12.6
Central & Gordy	2.5	2.5	2.8	2.8	3.7	3.6	2.5	2.4	23.1	22.0	14.9	16.9
Central & Main	2.8	2.8	2.8	2.8	2.9	2.9	2.7	2.7	21.1	21.1	20.6	20.6
Central & Vine	2.8	2.8	2.8	2.8	3.1	3.2	3.3	3.0	22.9	20.9	20.3	18.3
Main & 12th	3.6	3.6	3.6	NA	2.3	2.2	2.2	NA	NA	16.6	15.7	NA
Main & 6th	3.6	3.6	3.2	3.2	2.5	2.5	3.5	3.7	18.3	20.3	25.7	21.1
Main & 3rd	2.8	2.8	3.2	3.2	2.3	2.3	2.2	2.2	10.9	13.1	17.4	19.7
Haverhill & Towanda	4.3	4.3	3.6	3.6	1.8	1.8	2.3	2.2	18.6	17.1	18.3	17.1
Haverhill & 6th	3.9	3.9	3.6	3.6	1.6	1.9	2.9	3.0	NA	NA	NA	23.7
Towanda & Maplewood Ped Signal	NA	NA	3.2	3.2	NA	NA	1.6	1.6	11.4	11.4	11.4	11.4
6th & West of Taylor Ped Signal	NA	NA	3.2	3.2	NA	NA	1.0	1.0	12.6	12.6	12.6	12.6
12th & Crescent Ped Signal	NA	NA	3.6	3.6	NA	NA	1.0	1.0	13.7	13.7	13.7	13.7

Figure 52: Signal Warrants and Roundabouts



Grade Railroad Inventory

A list of the active and passive at grade railroad crossings in the city was obtained from KDOT. This list includes the owner and location of the crossing as well as what type of warning device is present at the crossing. A site visit was made to each location where observations were recorded such as warning signs, yield signs, retroreflective sheeting, and if there was anything that stood out as needing attention or further review. The table below shows a combination of data received from KDOT about each crossing as well as the observations made while at each location.

KDOT manages the federally funded Railway Highway Crossing Program (Section 130). Projects are awarded for this program based exclusively on a grade crossing inventory, which prioritizes projects based on trains per day and road traffic volume. Based on information received from KDOT in March 2026 no crossings in El Dorado are near potential for funding. KDOT updates the inventory annually and will account for any changes in volume and thus inventory ranking. Additional information on rail-grade crossings can be found on the USDOT’s Federal Railroad Administration website (<https://safetydata.fra.dot.gov/gxaps-app/#/>) which includes an annual average predicted crashes for the top 15 crossings in El Dorado.

Crossing #	Operating Railroad Company	Road	Warning Device	W10-1s Present?	Yield Signs Present?	Retro-reflective Sheeting Present?	Notes
009566D	BNSF Railway	S High St	Flashing Light Signals Straight Post w Gates (SPWG)	Y	N	N	1
009575C	BNSF Railway	Oak St	Crossbucks	Y	Y	Y	2,3
009576J	BNSF Railway	E 11th Ave	Crossbucks	Y	Y	Y	4,5
009579E	BNSF Railway	W 9th Ave	Crossbucks	N	Y	N	-
009580Y	BNSF Railway	W 6th Ave	Flashing Light Signal Cantilevered (CS)	Y	N	N	-
009581F	BNSF Railway	W 5th Ave	Crossbucks	N	Y	Y	-
428358H	Union Pacific Railroad	N Haverhill Rd	SPWG	Y	N	N	-
439285F	Union Pacific Railroad	N Vine St	SPWG	Y	N	N	-
439286M	Union Pacific Railroad	N Main St	Flashing Light Signal Cantilevered w Gates (CSWG)	Y	N	N	6



439287U	Union Pacific Railroad	Between N Gordy/N Main	Crossbucks	N	Y	Y	-
439288B	Union Pacific Railroad	N Gordy St	Crossbucks	N	Y	Y	7
439289H	Union Pacific Railroad	N Star St	Flashing Light Signal Straight Post (SP)	Y	N	N	5
439290C	Union Pacific Railroad	N Washington St	Crossbucks	Y	Y	Y	2
439291J	Union Pacific Railroad	W 6th and N Taylor St	Flashing Light Signals Cantilevered 2 (CS) 2 (SP)	Y	N	N	8
439293X	Union Pacific Railroad	N Atchison St	Crossbucks	Y	Y	Y	2
439295L	Union Pacific Railroad	N Topeka St	SP	Y	N	N	-
439300F	Union Pacific Railroad	Oil Hill Rd	SP	Y	N	N	-

Figure 53: Grade Railroad Inventory

Notes

1. W10-1 is present on the north side only

2. W10-1 is present on the south side only

3. Yield sign is present on the north side only

4. Crossbucks are faded and need replacing
5. W10-1 is present on the west side only

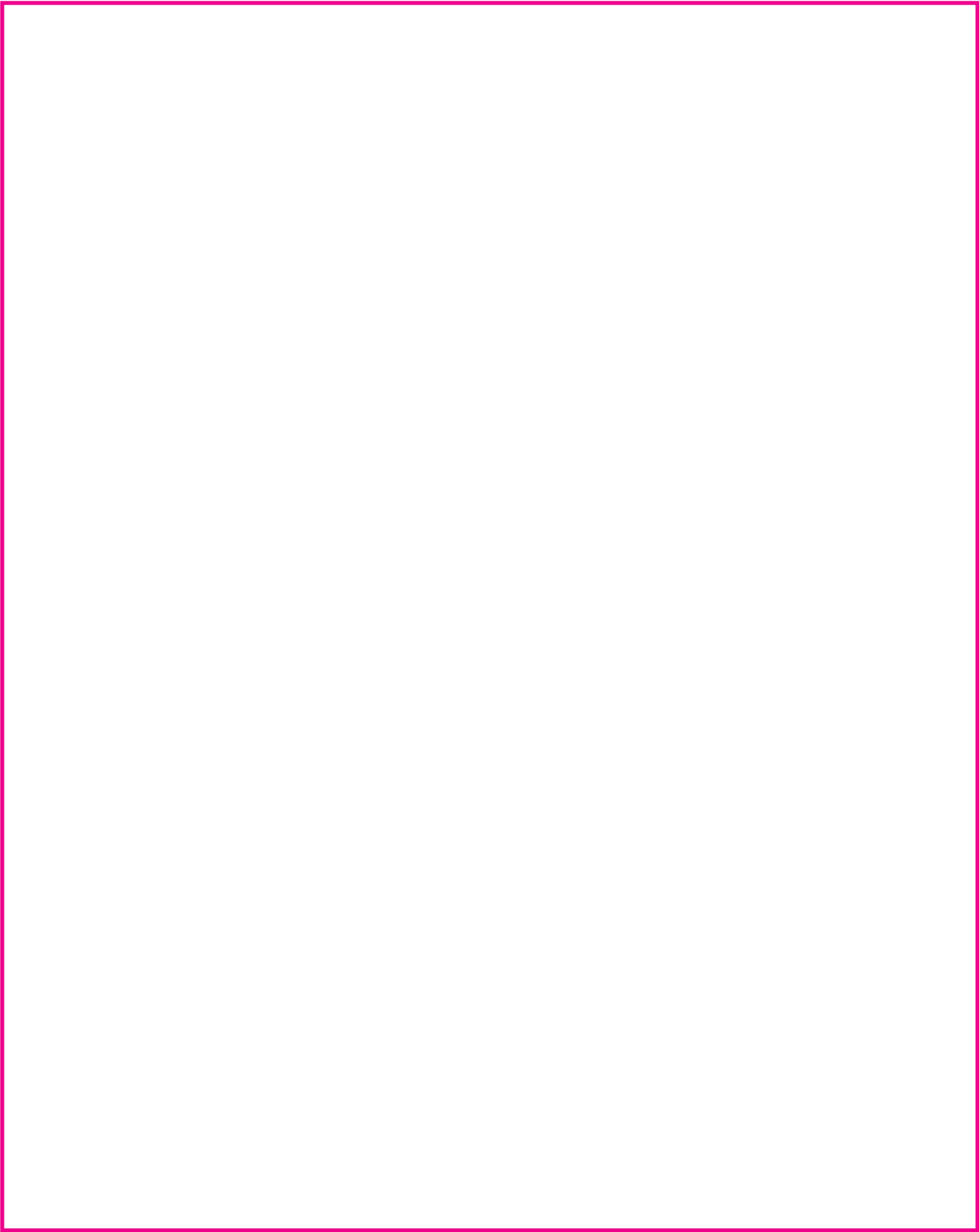
6. There are only W10-1s on Main Street and not on 4th Street. 4th Street is a stopped approach

7. Sight distance compromised by overgrowth

8. W10-1s are present on all legs except for the south leg



Figure 54: Reviewed Railroad Crossing Locations





SUMMARIZED COUNTERMEASURES FOR EL DORADO

Across the risk-factor analysis, cluster analysis, spot studies, traffic signal review and railroad review, the recommended countermeasures for El Dorado can be consolidated into the following citywide categories.

Intersection Safety Improvements

These are the strongest recurring need, especially along Central Avenue and Main Street.

- Review left-turn operations at intersections with recurring turning conflicts. This can include evaluating protected left-turn phases, left-turn flashing yellow, protected-permissive phasing, or time-of-day protected operation where warranted.
- Improve signal visibility through larger signal heads, retroreflective backplates, improved placement, and replacement of dim or malfunctioning indications.
- Review yellow change and all-red clearance intervals to improve signal compliance and reduce late-entry and red-light-related crashes.
- Improve lane-use clarity with refreshed arrows, turn-lane markings, stop bars, crosswalk markings, and better advance lane assignment signing.
- Improve intersection sight distance by addressing vegetation, parking, roadside obstructions, and access-management issues.
- Consider channelization, raised medians, or geometric refinements where intersection conflicts are recurring.

- Improve queue recognition on higher-speed signalized approaches through markings, signing, and signal conspicuity improvements.

Speed Management and Roadway Departure Reduction

These are especially important for high-speed corridors and nighttime severe-crash locations.

- Install dynamic speed feedback signs on corridors with recurring speed-related crashes.
- Increase targeted speed enforcement, especially during nights, weekends, and peak-risk periods.
- Improve lighting and nighttime visibility at high-risk corridors and intersections where feasible.
- Pair speed management with impaired-driving enforcement.

Driver Behavior, Enforcement, and Education

A large share of El Dorado's severe crash patterns are tied to distraction, yielding errors, speeding, impairment, and driver confusion.

- Consider targeted enforcement for red-light running, failure to yield, distracted driving, speeding, and impaired driving.
- Promote public education on permissive left-turn yielding, pedestrian right-of-way, distracted driving, and nighttime driving risks.
- Promote teen and older driver outreach focused on intersection judgment, speed awareness, and safe interaction with pedestrians and bicyclists.
- Promote "Share the Road" campaigns for



truck-passenger vehicle interaction and motorcycle awareness.

- Promote fatigue and aggressive-driving awareness on higher-speed corridors.

Pedestrian, Bicycle, and School-Area Safety

These countermeasures show up in both the community engagement and the location-specific studies.

- Fill sidewalk gaps and improve sidewalk condition.
- Upgrade crosswalk visibility using high-visibility markings and improved placement.
- Improve pedestrian signal timing, pushbuttons, countdown displays, and accessibility features.
- Improve school-route walking conditions with better crossings, lighting, signage, and visibility.
- Improve bicycle and micromobility visibility at crossings and turning-conflict locations.
- At Central & Arthur, pursue the recommended crossing improvement and visibility measures based on the gap study and operational review.

Parking, Loading, and Local Street Operations

These are especially relevant for low severity but frequent crashes.

- Review parking and loading zone placement to reduce visibility problems and parked-vehicle conflicts.
- Improve local corridor signal coordination and queue management.

- Maintain emergency access in areas with heavy parking activity.
- Enforce parking compliance where parked vehicles block visibility or pedestrian space.

Maintenance, Visibility, and ADA/PROWAG Accessibility Improvements

These are smaller in scale but highly recurring across the spot studies.

- Refresh faded pavement markings, stop bars, lane lines, and crosswalks.
- Repair or replace damaged signal equipment, pushbuttons, signs, and lighting.
- Trim vegetation and remove sight obstructions.
- Correct Americans With Disabilities Act (ADA) issues including ramps, detectable warnings, and pushbutton placement.
- Upgrade retroreflective markings and signing where nighttime visibility is an issue.

Traffic Control and Operational Evaluations

These come from the signal review and supporting studies.

- Use signal warrant findings, interval reviews, and roundabout screening to identify locations needing further engineering study.
- Continue evaluating intersections where operations may be improved through phasing, signal timing, or alternative control.
- Use the railroad review to identify any crossing devices, signing, or operational needs that should be advanced separately or bundled into corridor projects.

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Project Prioritization & Implementation

Chapter 5



IMPLEMENTATION FRAMEWORK

The countermeasures identified in Chapter 4 were synthesized from multiple analytical components, including crash risk factor analysis, crash pattern clustering, intersection mini-studies, traffic signal evaluations, and railroad crossing reviews. These analyses identified recurring safety issues across the City of El Dorado’s roadway network. In this chapter, countermeasures are restated as actionable strategies recommended for implementation. These strategies are listed below. They are organized by engineering, education, and enforcement activities, and further indicated as program, policy, action, and further study opportunities.

From Transportation Study

The number of lanes on each of the main arterial streets is adequate to carry existing and expected future year traffic. Traveler delays and areas of congestion are associated with traffic signals. The needs of pedestrians crossing major streets is an important consideration. Review the timings and phasing for the traffic signals located along Central Avenue, Main Street, and 6th Avenue. The review should include the timings for green, yellow change, and all-red clearance intervals with the goals of reducing delays and improving safety. This work can be done with the upcoming SS4A project.

#	Strategy	Type	Reference
1	Review left turn phasing for warrants and operation at signalized intersections.	Study	-
2	Install retroreflective backplates on mast-arm-mounted signal heads.	Policy	-
3	Routinely inspect traffic and pedestrian signals for visibility, operation, and hardware.	Policy	-
4	Apply recommended yellow change and all-red clearance intervals.	Action	C4
5	Convert left-turn signals to flashing yellow arrow.	Policy	-
6	Apply recommended pedestrian signal flashing don’t walk intervals.	Action	C4

Recommended Projects

All engineering strategies can be considered as part of larger projects. For the purpose of this plan, projects are defined as physical infrastructure improvements that modify roadway design, traffic control devices, or intersection operations to reduce crash risk and improve safety. The projects below are framed by corridor recommendations in the 2024 El Dorado Transportation Study. Within each corridor, smaller projects are scoped at the intersection level as potential stand-alone projects based on findings in the traffic studies ([Appendix B](#)).



7	Prioritize critical intersections for pavement marking refresh with emphasis on arrows, stop bars, crosswalks, and delineation.	Policy	-
8	Maintain sight triangles at signalized intersections and uncontrolled approaches to all intersections.	Policy	-
9	Install dynamic speed feedback signs on corridors with recurring speed-related crashes.	Program	-
10	Improve or install lighting at locations with pattern of nighttime crashes.	Program	
11	Establish cost-share program for maintenance of existing sidewalks.	Program	-
12	Evaluate for new sidewalk construction to fill gaps and promote connectivity.	Program	-
13	Establish policy for the use of high visibility crosswalks.	Policy	-
14	Study school-route walking conditions for sidewalks, crosswalks, lighting, signing, and visibility within one-mile radius. (Safe Routes to School (SRTS))	Study	-
15	Evaluate passive pedestrian crosswalks for feasibility of Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB).	Study	-
16	Evaluate existing pedestrian signals for need, location, and upgrade to RRFB or PHB.	Study	-
17	Routinely inspect for vegetation that blocks regulatory and warning signs.	Policy	-
18	Identify and correct ADA/PROWAG issues including ramps, detectable warnings, and pushbutton placement.	Study	-
19	Routinely inspect pavement markings for minimum retroreflectivity.	Policy	-
20	Routinely inspect signing for minimum retroreflectivity.	Policy	-
21	Evaluate signalized intersections for traffic signal warrants.	Study	C4
22	Evaluate signalized intersections for roundabout feasibility.	Study	C4
23	Address the findings of the rail-grade crossing review.	Action	C4
24	Establish policy for the pre-treatment of roads for winter weather.	Policy	C4
25	Establish access management policy.	Policy	-
26	Repurpose 41-foot-wide collector roads with pavement markings and traffic calming for speed reduction and active transportation.	Study	-
27	Routinely inspect signing along the truck route corridors.	Policy	-
28	Establish policy for traffic control at what are currently uncontrolled intersections.	Policy	-

Figure 55: Engineering Strategies for El Dorado

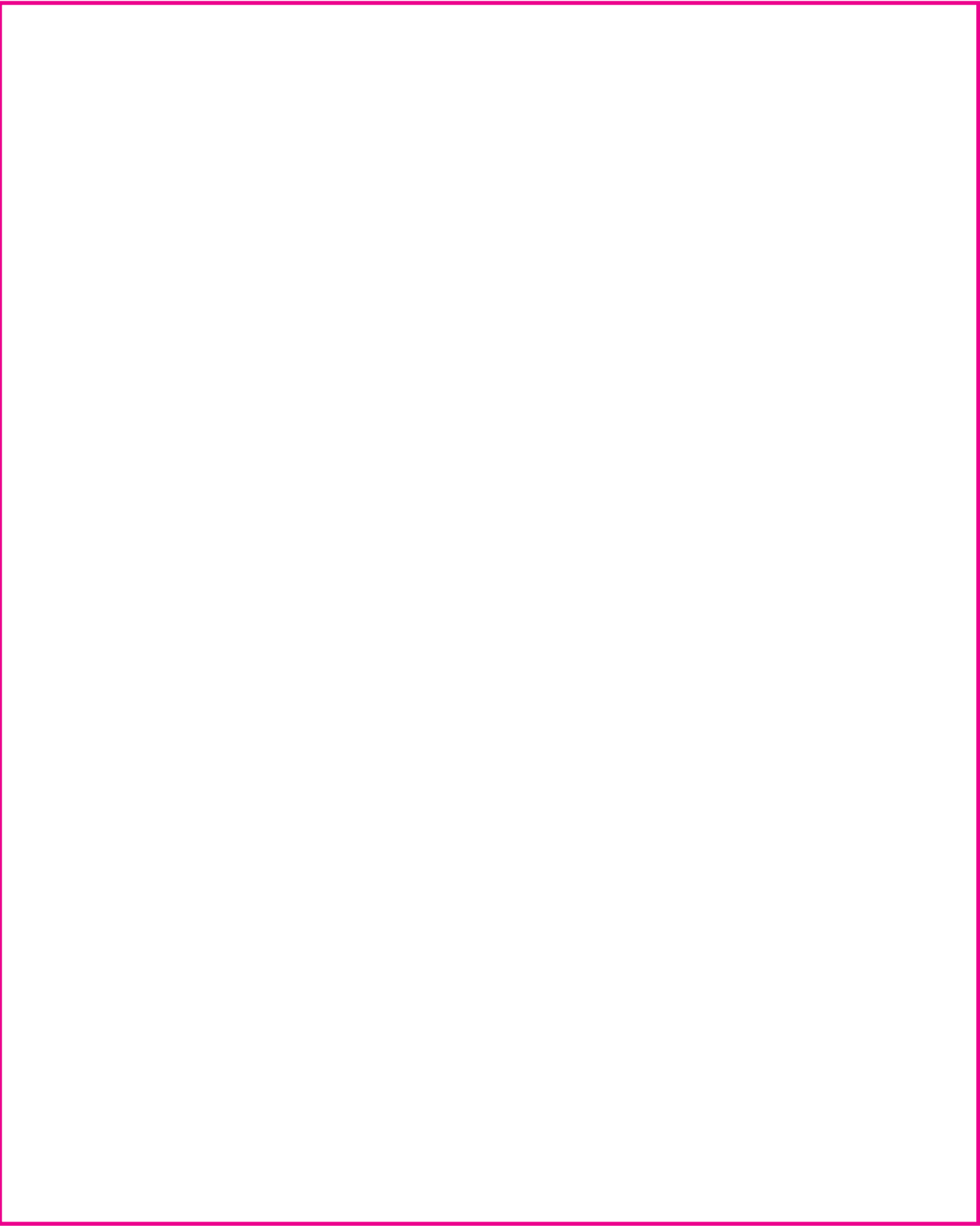


#	Strategy	Type	Reference
F1	Utilize data-driven targeted speed enforcement.	Program	-
F2	Utilize data-driven targeted impaired driving enforcement.	Program	-
F3	Promote enforcement of distracted driving.	Policy	-
F4	Promote enforcement of red light running.	Policy	-
F5	Promote enforcement of lane discipline.	Policy	-
F6	Promote enforcement of parking restrictions.	Policy	-
F7	Review parking and loading zone placement.	Study	-
F8	Maintain emergency access in areas with heavy parking activity.	Policy	-

Figure 56: Enforcement Strategies for El Dorado

#	Strategy	Type	Reference
D1	Implement educational campaign on aggressive driving	Program	-
D2	Implement educational campaign on safe speeds	Program	-
D3	Implement educational campaign on driver distraction	Program	-
D4	Implement educational campaign on rules of the road	Program	-
D5	Establish teen driver safety program at local high schools.	Program	-
D6	Establish educational program for older drivers.	Program	-
D7	Promote “Share the Road” campaigns for truck-passenger vehicle interaction.	Program	-
D8	Promote “Share the Road” campaigns for motorcycle awareness.	Program	-
D9	Promote motorcycle safety including gear and training.	Program	-

Figure 57: Education Strategies for El Dorado





Project 1

Central, Boyer to Haverhill

Relevant strategies

While most strategies could be implemented as part of a project of this scope, it provides particular advantage to consider signal upgrades (3), sight distance (8), lighting (10), sidewalk (12), ADA/PROWAG (18), roundabouts (22), and access management (25)

Project 1A – Central & Boyer

- Strategies: Left turn phasing (1), retroreflective backplates (2), clearance intervals (4), flashing yellow arrow (5), and markings (7).
- Review left-turn signal phasing and timing (1), and consider use of flashing yellow arrow (5)
- Review signal clearance intervals (4) And consider retroreflective backplates (2).
- Review signing (), pavements markings (7), and channelization at yield-controlled right-turn movements.
- Improve lane-use clarity and turning guidance, particularly on westbound Central, through enhanced lane-use signing (), pavement arrows, and turn-lane markings (7)
- Verify correct sign sizes for eastbound advance warning signs and consider fluorescent-yellow sign sheeting (X).
- A previous study conceptualized turnpike access to K-254/Central at a new interchange west of Boyer.

Project 1B – Central & Village

- Strategies: Retroreflective backplates (2), signal upgrades (3), pedestrian interval (6), markings (7), sight triangles (8), and roundabout (22).
- Evaluate the effectiveness of the change in left-turn phasing on Central to protected only (3).
- Restripe left-turn pavement arrows to improve lane guidance (7).
- Maintain and repair (replace if needed) the pedestrian features.
- Continue monitoring left-turn conflicts at the intersection.

Project 1C – Central & Haverhill

- Strategies: Left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), clearance intervals (4), markings (7), pavement marking retroreflectivity (19), roundabout (22), and access management (25).
- Conduct signal optimization study (3).
- Review permissive left-turn operations and considering targeted restrictions or phasing adjustments during high-risk periods (1).
- Enhance signal visibility (3), advance warning signage (X), and high-contrast stop-bar (19) and lane markings (7, 19) specially on west leg.
- Improve lane discipline on eastbound Central by refreshing lane arrows, lane lines, and turn-lane guidance (7).
- Relocate bank access on Central in the southwest corner (25).



From Transportation Study

Boyer Road to East of Haverhill Road: Reconstruct Central Avenue as a 5-lane arterial street with two through lanes in each direction and a center two-way left-turn lane. This revised cross-section eliminates the raised median and provides space for parallel, separated bicycle facilities and “protected intersections”. This cross-section may also support a lower speed limit. This project should consider the construction of “Protected Intersections” for intersections with traffic signals.

Project 1 Central, Boyer to Haverhill





Project 2

Central, Oil Hill to Main

Relevant strategies

Much of this project has been addressed in this SAP including a pedestrian hybrid beacon (PHB) (15), and all traffic signals in the city have been evaluated for clearance intervals (4) and pedestrian intervals (6). Consideration of left turn phasing (1) and a crossing at Topeka (16) are also recommended.

Project 2A – Central & Oil Hill

- Strategies: Retroreflective backplates (2), signal upgrades (3), markings (7), Lighting (10), crosswalks (13), ADA/PROWAG (18), and roundabout (22).

Project 2B – Central & Arthur

- Strategies: Markings (7), sight distance (8), crosswalks (13), PHB (15).
- A previous study evaluated traffic control at this intersection and at Central & Arthur but did not consider pedestrian accommodations. Install a PHB at Central or near Arthur (15).

Project 2C – Central & Summit

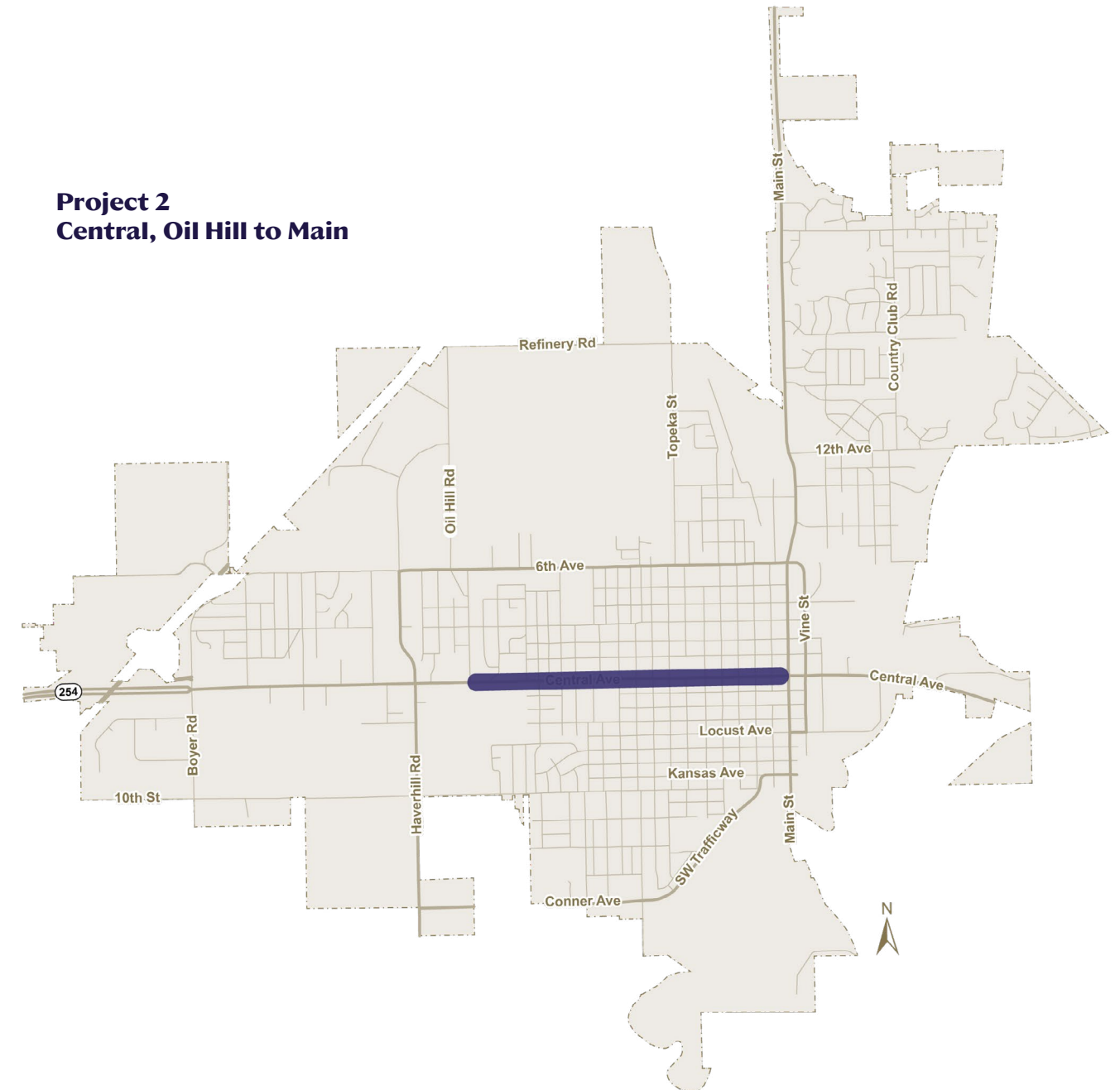
- Strategies: Left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), pedestrian intervals (6), markings (7), sight triangles (8), lighting (10), crosswalks (13), ADA/PROWAG (18), and access management (25).
- Prohibit right-turn on red for eastbound approach on Summit.
- Consider full traffic signal upgrade (3).

From Transportation Study

Pedestrian Crossings, Oil Hill to Summit Road: Investigate opportunities to construct safe pedestrian crossings along this corridor with the city's upcoming Safe Streets 4 All (SS4A) grant. Intersections with Traffic Signals – Signal Timings: Review the traffic signal phasing and signal timings for the intersections along Central Avenue and adjust as needed. A traffic study should be conducted to review the traffic control devices for the pedestrian crossings on Central Avenue at Topeka Street. As Central Avenue is the city connecting link for highway K-254, a request for a study can be made to KDOT's District Engineer and a study will be scheduled.



Project 2 Central, Oil Hill to Main





Project 3

Main, Locust to 3rd

Relevant strategies

A project of this scope allows consideration of left-turn phasing (1), signal upgrades (3), markings (7), crosswalks (13), ADA/PROWAG (18), pavement marking retroreflectivity (19), signal warrants (21), and roundabouts (22), and from enforcement, parking (7), Road diet, lateral shift, raised crosswalks, raised intersection, corner extensions/bulbouts, chokers.

Project 3A - Locust to 3rd

This project addresses the transition from a wide, higher-speed corridor into the downtown area, where the existing four-lane cross-section and lack of transition treatments contribute to speed carryover and reduced pedestrian safety. A combination of geometric, operational, and visual traffic calming measures is recommended to create a clear gateway into downtown and reinforce a low-speed environment.

- Strategies: Road diet, lateral shift, raised crosswalks, raised intersection, corner extensions/bulbouts, chokers, and markings (7).
- Consider a road diet (X) on Main Street from Locust to 3rd, converting the existing four-lane roadway to a three-lane section with one lane in each direction and a center two-way left-turn lane.
- Introduce upstream gateway treatments prior to Locust (e.g., lateral shift () and visual narrowing).
- Provide strong gateway treatments at both Locust and 3rd using raised intersections () or raised crosswalks (), with additional

raised crosswalks at selected intersections between Locust and 3rd.

- Add corner extensions/bulbouts (X) at key intersections.
- Use high-visibility, retroreflective pavement markings (19), including ladder-style crosswalks and refreshed lane-use markings (7).
- Consider selective midblock narrowing or chokers (X) where additional speed control is needed within the corridor.

Project 3B - Central & Main

- Strategies: Left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), pedestrian intervals (6), markings (7), sight distance (8), and roundabout (22).
- Review parking and loading zone placement (8).
- Enhance left-turn and lane-use guidance on Central Ave by refreshing lane arrows, and improving advance lane assignment signing (X).
- Evaluate Main for feasibility of conversion to 3-lane section (road diet)(X).

Project 3C - 3rd & Main

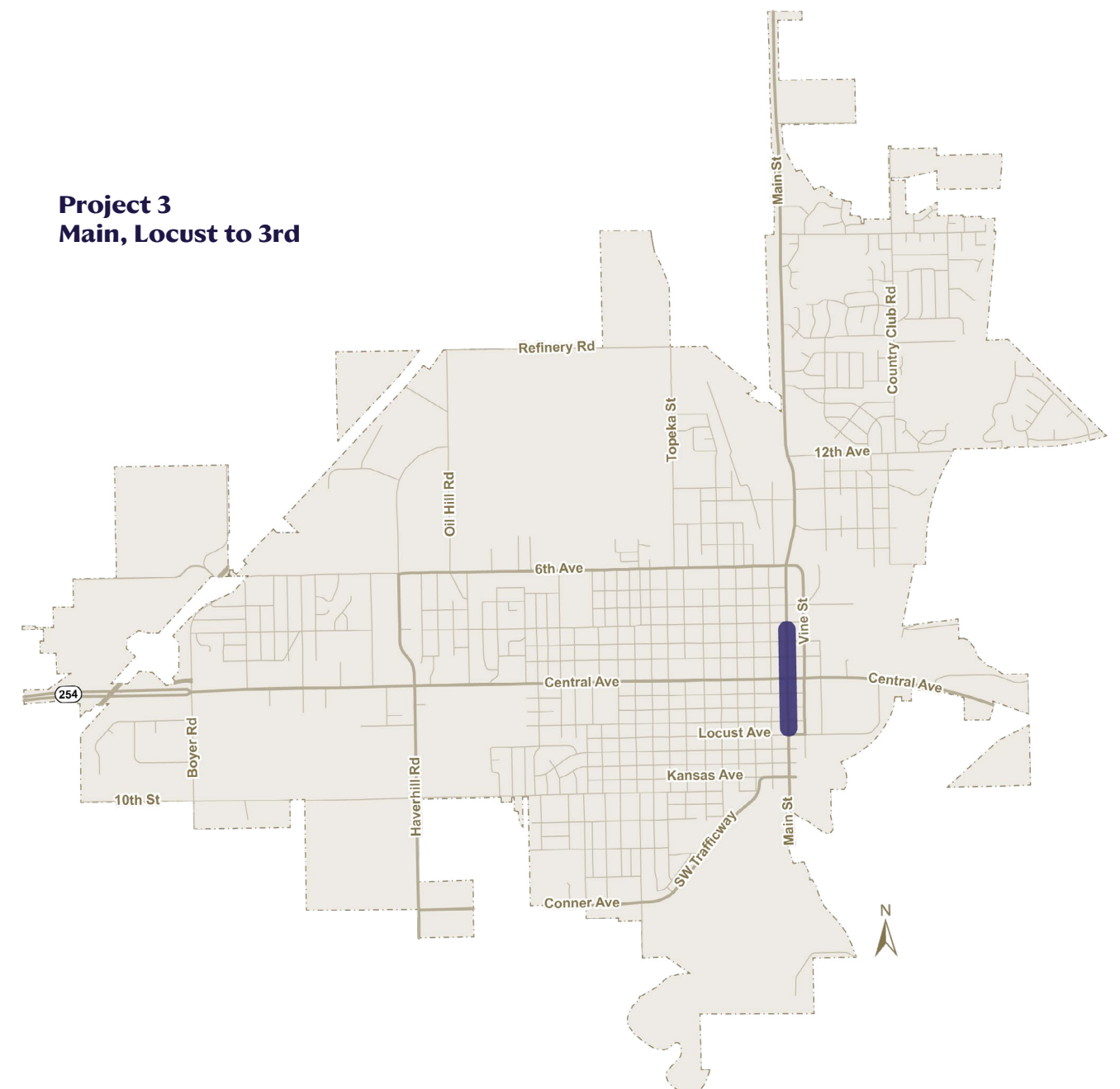
- Strategies: Retroreflective backplates (2), signal upgrades (3), pedestrian intervals (6), markings (7), sight distance (8), ADA/PROWAG (18), signal warrants (21), raised intersections, raised crosswalks, and roundabout (22).
- If warranted, upgrade signal system to include pedestrian signal indications and pushbuttons (3).
- Provide raised intersections() or raised crosswalks(X) for gateway treatment.



From Transportation Study

Main Street Downtown: This section of Main Street is four lanes with parallel parking on each side. At the intersection with Central Avenue, Main Street restricts parking and adds a left turn lane. With approximately 6,000 vpd, Main Street would be a candidate for a “road diet” reducing the number of lanes from four to three. The middle lane would allow a left turn lane at each intersection, possibly reduce the number of crashes, and allow options for expanding the sidewalk area in front of the businesses.

Project 3 Main, Locust to 3rd





Project 4

Main, 6th & Main

Relevant strategies

A project of this scope allows consideration of left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), flashing yellow arrow (5), markings (7), lighting (10), crosswalks (13), and access management (25).

- Strategies: Retroreflective backplates (2), signal upgrades (3), markings (7), roundabout (22), and access management (25).
- Reinforce lane discipline on Main with signing, arrows (7), and channelization.
- This intersection received Highway Safety Improvement Program (HSIP) funding to increase the radius in the southwest corner and signal reconfiguration on the eastbound approach.

From Transportation Study

Main Street and 6th Avenue:
Intersection geometry and traffic signal changes can improve traffic flow and safety. To address the high volume of eastbound traffic turning to go north, lanes on the west leg will be reassigned to create dual left turn lanes, plus a shared lane for through and right turning traffic. The curb radius in the northwest quadrant will be reconstructed to allow southbound, right-turning trucks to avoid hitting the curb. The traffic signal installation would be replaced to accommodate these changes. Improvements should consider the needs of bicyclists and pedestrians.



Project 4 Main, 6th & Main





Project 5

Main, 12th to McCollum

Relevant strategies

A project of this scope on Main allows consideration at 12th of left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), flashing yellow arrow (5), markings (7), lighting (10), and ADA/PROWAG (18); and consideration at McCollum of markings (7), sight distance (8), lighting (10), SRTS (14), ADA/PROWAG (18), and roundabout (22).

Project 5A - Main & McCollum

- Strategies: Sight distance (8), crosswalks (13), ADA/PROWAG (18), and roundabout (22).
- Relocate and improve alignment of the ramps (18), crosswalk (13), and stop bar (7) on the east leg.
- A previous study conceptualized a two-lane roundabout (22).

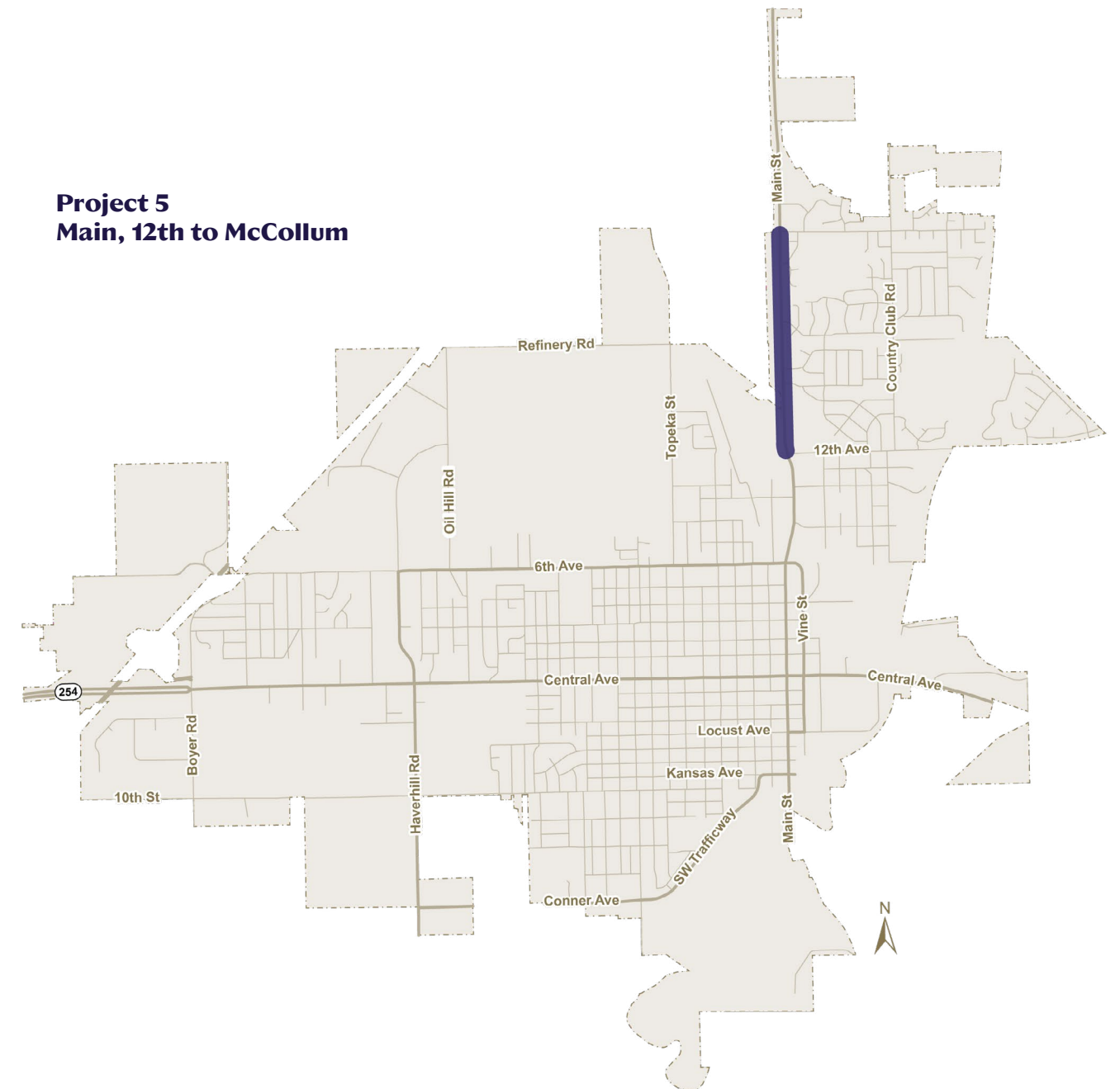
From Transportation Study

Main Street and McCollum Road: The construction of a roundabout is recommended for this location. The roundabout would carry two lanes northbound and southbound, and a single lane eastbound and westbound. The west leg would provide a connection to a future Northwest bypass. The east leg would serve traffic to and from the residential area, high school, and elementary school.

Main Street and 12th Avenue: The construction of a southbound left turn lane will significantly improve traffic operations for southbound traffic movements and for the intersection as a whole.



Project 5 Main, 12th to McCollum





Project 6

6th, Haverhill to Main

Relevant strategies

A project of this scope on 6th allows consideration of left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), markings (7), lighting (10), ADA/PROWAG (18); access management (25), and truck route signing (27).

Project 6A - 6th & Haverhill

- Strategies: Left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), markings (7), crosswalks (13), and roundabout (22).
- Enlarge radius in southeast corner to accommodate large trucks.

Project 6B - 6th & Summit

- Strategies: Markings (7), sight distance (8), signal warrants (21), and roundabout (22).
- Evaluate for traffic signal warrants or roundabout feasibility.

From Transportation Study

6th Avenue, School Road to Hunton Road and the South Leg of Haverhill Road: Remove the narrow segments of raised medians at these locations. The narrow median segments show evidence of being repeatedly struck by vehicles and provide no access management benefits. 6th Avenue, West of Haverhill Road to Oil Hill Road (east intersection): Implement a road diet to convert 6th Avenue from a 4-lane street to a 3-lane street. This has the potential to reduce the number of crashes, provide a consistent cross-section throughout the 6th Avenue corridor, and better accommodate left turns.

Option 1: Remove and replace pavement markings to provide three lanes on 6th Avenue with dedicated left turn lanes at Haverhill Road and a center, two-way left turn lane for the remainder of the segment. One eastbound and one westbound through lane would be provided. Signal heads on the mast arms over 6th Avenue at Haverhill Road would need to be adjusted.

Option 2: Reconstruct 6th Avenue to provide a 3-lane roadway. Intersection improvements and widening Haverhill Road to a 3-lane roadway between 6th Avenue and Oil Hill Road could be part of this project.



Project 6 6th, Haverhill to Main





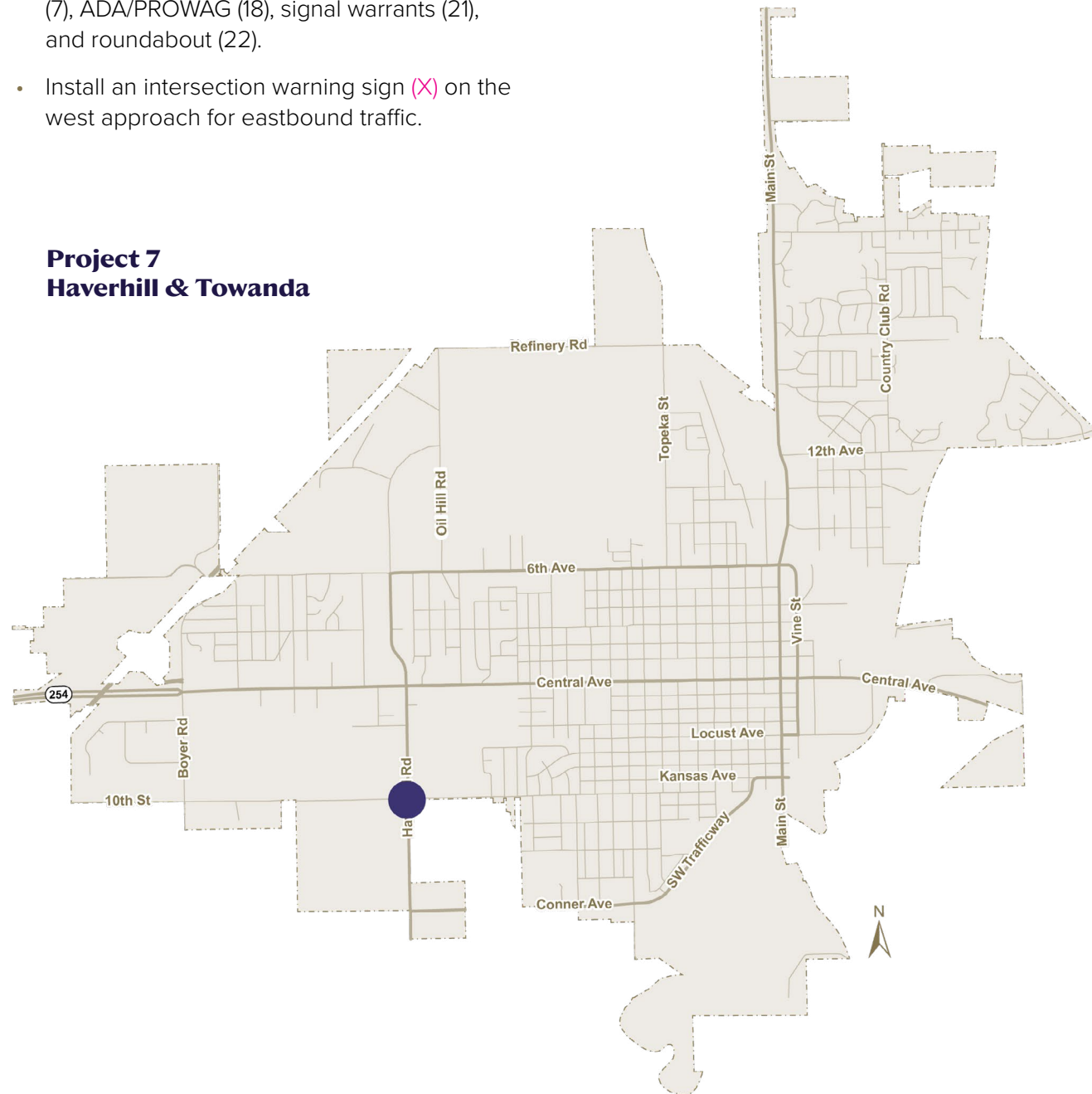
Project 7

Haverhill & Towanda

Relevant strategies

- Strategies: Left-turn phasing (1), retroreflective backplates (2), signal upgrades (3), markings (7), ADA/PROWAG (18), signal warrants (21), and roundabout (22).
- Install an intersection warning sign (X) on the west approach for eastbound traffic.

Project 7 Haverhill & Towanda



Project 8

Country Club Road, 12th to McCollum

Relevant strategies

- Strategies: Markings (7), sight distance (8), crosswalks (13), ADA/PROWAG (18), repurpose collectors (26).
- Consider Country Club Road for a demonstration project to study alternatives for repurposing existing 41-foot collector streets

Project 8 Country Club Road, 12th to McCollum





PROJECT PRIORITIZATION

A prioritization framework was developed to help the city plan for the identified projects that most effectively reduce fatal and serious injury crashes while also aligning with Safe Streets and Roads for All (SS4A) program objectives.

Corridor projects and intersection projects were ranked separately and scored based on the following criteria on a scale of 1 to 5 with 5 being highest:

- **Safety Impact (S)** – Priority given to projects addressing fatal and serious injury risk or recurring crash patterns and crash rate.
- **Consistency with Action Plan Findings (C)** – Projects that directly address identified crash factors and clusters.
- **Implementation Readiness (R)** – Projects that can be implemented with reasonable cost and minimal right-of-way needs.
- **Network Importance (N)** – Locations along key corridors or major intersections.
- **Multimodal and Community Benefits (M)** – Projects improving pedestrian, bicycle, and school-area safety.

Rank	Project	S	C	R	N	M	Total
1	Main, Locust to 3rd	-	-	-	-	-	-
2	Central, Boyer to Haverhill	-	-	-	-	-	-
3	Main, 12th to McCollum	-	-	-	-	-	-
4	Central, Oil Hill to Main	-	-	-	-	-	-
5	6th, Haverhill to Main	-	-	-	-	-	-
6	Country Club Road, 12th to McCollum	-	-	-	-	-	-

Figure 58: Corridor Projects - Score and Rank



Rank	Project	S	C	R	N	M	Total
1	Central and Boyer	-	-		-		-
2	Main and McCollum	-	-		-		-
3	Central and Haverhill	-	-		-		-
4	Central and Oil Hill	-	-		-		-
5	Central and Arthur	-	-		-		-
6	Central and Summit	-	-		-		-
7	Central and Main	-	-	-	-	-	-
8	3rd and Main	-	-	-	-	-	-
9	6th and Main	-	-	-	-	-	-
10	Central & Village	-	-	-	-	-	-
11	6th and Haverhill	-	-	-	-	-	-
12	6th and Summit	-	-	-	-	-	-
13	Haverhill and Towanda	-	-	-	-	-	-

Figure 59: Intersection Projects - Score and Rank



POLICY IMPLEMENTATION

While many countermeasures categorized as policies can be implemented with projects, stand-alone city policy or practice documents are also key to the long-term success of this plan. For the purpose of this plan, policies are defined as institutional or regulatory actions that support long-term safety improvements by integrating safety into planning practices, roadway design standards, and transportation decision-making. Policies are prioritized starting with those listed in [Appendix A](#), which lists the Federal Highway Administration (FHWA) Proven Safety Countermeasures (PSC) and NHTSA Countermeasures that Work (CTW). After that, policies are prioritized with consideration given to the MUTCD, community input, potential impact on safety, and ease of implementation.

Prioritized Policies:

- 1. Install retroreflective backplates on mast-arm-mounted signal heads. (PSC)
- 2. Establish policy for the use of high visibility crosswalks. (PSC)
- 3. Establish access management policy. (PSC)
- 4. Promote enforcement of distracted driving. (CTW)
- 5. Routinely inspect pavement markings for minimum retroreflectivity.
- 6. Routinely inspect signing for minimum retroreflectivity.
- 7. Establish policy for traffic control at what are currently uncontrolled intersections.
- 8. Promote enforcement of red light running.

- 9. Prioritize critical intersections for pavement marking refresh with emphasis on arrows, stop bars, crosswalks, and delineation.
- 10. Routinely inspect traffic and pedestrian signals for visibility, operation, and hardware.
- 11. Maintain sight triangles at signalized intersections and uncontrolled approaches to all intersections.
- 12. Convert left turn signals to flashing yellow arrow.
- 13. Routinely inspect for vegetation that blocks regulatory and warning signs.
- 14. Promote enforcement of lane discipline.
- 15. Establish policy for the pre-treatment of roads for winter weather.
- 16. Routinely inspect signing along the truck route corridors.
- 17. Promote enforcement of parking restrictions.
- 18. Maintain emergency access in areas with heavy parking activity.

Policy Recommendations

Four policy examples are shown as recommendations for the city. These were selected based on their efficacy (crosswalks), MUTCD mandate (minimum retroreflectivity), and local input (uncontrolled intersections).

Establish policy for the use of high visibility crosswalks (PSC)

Policy Statement



Routinely inspect pavement markings and signing for minimum retroreflectivity

In the United States, retroreflectivity is maintained across pavement markings, traffic signs, and supplemental devices through systematic, program-based approaches consistent with MUTCD requirements. Pavement markings are typically managed using hybrid programs that combine nighttime visual inspections, targeted measurements, and scheduled restriping cycles, while traffic signs rely on inventory-based and lifecycle management systems with defined minimum retroreflectivity levels. State DOTs and cities have implemented these practices through routine maintenance programs, asset management systems, and upgrades to durable materials. Additional retroreflective applications such as delineators, raised pavement markers, and pedestrian treatments are widely used to enhance nighttime visibility and reduce lane departure and pedestrian-related crashes, aligning with FHWA Proven Safety Countermeasures and Safe System principles.

Uncontrolled Intersections

Best practices for uncontrolled intersections in the United States focus on improving visibility, managing speeds, and clarifying right-of-way through a combination of low-cost engineering treatments, education, and targeted enforcement. Common strategies include sight distance improvements, installation of stop or yield control where warranted, enhanced signage and pavement markings, and traffic calming measures. Many agencies also implement public education campaigns on right-of-way rules and conduct targeted enforcement of failure-to-yield and speeding violations. These approaches are supported by FHWA, MUTCD, and Vision Zero guidance and

align with Safe System principles for proactively reducing intersection-related crashes.

Pavement Markings

Best practices for pavement markings in the United States emphasize maintaining high visibility, consistency, and durability through systematic programs aligned with MUTCD standards. Agencies commonly use a combination of inspection, scheduled restriping, and strategic material selection, while enhancing lane delineation, intersection markings, and pedestrian crossings to improve driver awareness and reduce conflicts. Increasingly, agencies prioritize high-risk locations such as High-Injury Networks and integrate pavement marking management into asset management systems, supporting proactive, data-driven safety improvements consistent with the Safe System Approach.



PROGRAM IMPLEMENTATION

While some countermeasures categorized as programs can be implemented with projects, dedicated programs with a local champion are key to the long-term success of this plan, in particular in addressing safe people and safe speeds. For the purpose of this plan, programs are defined as education, enforcement, and operational initiatives aimed at improving driver behavior, increasing public awareness, and supporting roadway safety initiatives. Programs are prioritized starting with those listed in [Appendix A](#), which lists the NHTSA Countermeasures that Works (CTW) and FHWA Proven Safety Countermeasures (PSC). After that, programs are prioritized with consideration given to community input, potential impact on safety, and ease of implementation.

Prioritized Programs:

1. Utilize data-driven targeted speed enforcement. (CTW)
2. Utilize data-driven targeted impaired driving enforcement. (CTW)
3. Install dynamic speed feedback signs on corridors with recurring speed-related crashes. (CTW)
4. Promote motorcycle safety including gear and training. (CTW)
5. Establish teen driver safety program at local high schools. (CTW)
6. Establish educational program for older drivers. (CTW)
7. Implement educational campaign on driver distraction (CTW)

8. Improve or install lighting at locations with pattern of nighttime crashes. (PSW)
9. Establish cost-share program for maintenance of existing sidewalks. (PSC)
10. Implement educational campaign on aggressive driving
11. Implement educational campaign on safe speeds
12. Implement educational campaign on rules of the road
13. Promote “Share the Road” campaigns for truck-passenger vehicle interaction.
14. Promote “Share the Road” campaigns for motorcycle awareness.

Program Recommendations:

Three program examples are shown below as recommendations for the city. These were selected based on their readiness (SAFE), practicality (CarFit), and local input.

SAFE

SAFE (Seatbelts Are For Everyone) is a free, student-led program for high school students focusing on peer-to-peer promotion of traffic safety. It is coordinated by the Kansas Traffic Safety Resource Office (KTSRO) under contract with KDOT. Through education, rewards, and enforcement, SAFE highlights the importance of wearing a seatbelt, staying focused and aware of your surroundings while driving, and following traffic laws with the goal of decreasing the number of teen injuries and deaths from vehicle crashes. (KTSRO.org/safe)

CarFit

CarFit is an educational program developed by AARP and the American Occupational Therapy Association that offers older adults the



opportunity to check how well their personal vehicles “fit” them. The program provides information and materials on community-specific resources that could enhance their safety as drivers and/or increase their mobility in the community. (car-fit.org)

Sidewalk Cost Share

El Dorado should pursue a city-administered sidewalk repair program that combines shared cost participation with targeted public investment to address the most critical safety and accessibility needs across the community. A 50/50 residential cost-share model is recommended as the most practical starting point because it provides a clear and easily understood framework while reinforcing shared responsibility between the City and adjacent property owners. Program implementation should prioritize locations where sidewalk deficiencies create the greatest public burden, including ADA barriers, major trip hazards, routes to schools and parks, downtown connections, senior housing, and other priority corridors identified through the Action Plan. To support equitable implementation, the program should also include affordability measures such as grants, deferred payment options, or installment plans for eligible property owners. As the program is developed, the City should clearly define responsibility for curb ramps, corner lots, and other special conditions, and consider a pilot phase to evaluate administrative needs, funding levels, and long-term scalability.

Supporting peer policy research, program examples, and implementation considerations are provided in appendix [X](#).



Program for speeding and impaired crashes



Speed-Related Crashes

Location	Overall Priority Scoring
1 W Central Ave; N Haverhill Rd to S Vine St	High
2 SW Hwy 254; Toll Booth 71 to W Central Ave	High
3 W 6th Ave; N Haverhill Rd to N Main St	High
4 N Main St; W Central Ave to E 6th Ave	Moderate
5 S Vine St; W Central Ave to E Locust Ave	Moderate
6 SW Trafficway; W Kansas Ave to W Conner Ave	Moderate
7 S Haverhill Rd; W Central Ave to W Sunset Rd	Lower
8 N Haverhill Rd; W 6th Ave to W Central Ave	Lower
9 S Summit St; W Central Ave to W Conner Ave	Lower
10 W 4th Ave; N Haverhill Rd to N Main St	Lower

Figure 60: Speed-Related Crashes

Impaired Driving Crashes

Location	Overall Priority Scoring
1 W Central Ave; N Haverhill Rd to S Vine St	High
2 N Main St; W Central Ave to E 6th Ave	High
3 W 6th Ave; N Haverhill Rd to N Main St	High
4 S Vine St; W Central Ave to E Locust St	Moderate
5 SW Trafficway; W Kansas Ave to W Conner Ave	Moderate
6 S Topeka St; W Central Ave to W Kansas Ave	Moderate
7 N Main St; E 6th Ave to North City Limits	Lower
8 S Summit St; W Kansas Ave to W Conner Ave	Lower
9 Downtown grid (Central, Locust, and 6th area local streets)	Lower

Figure 61: Impaired Driving Crashes



FURTHER STUDY IMPLEMENTATION

While some countermeasures categorized as further study can be implemented with projects, all would benefit from further study. For the purpose of this plan, further study strategies are items that would have been considered with this plan had budget and time allowed. Studies are prioritized based on progress in this plan, cost, potential impact on safety, and ease of implementation. Studies are also noted as being listed in [Appendix A](#), which lists the NHTSA Countermeasures that Works (CTW) and FHWA Proven Safety Countermeasures (PSC).

Prioritized Studies

1. Evaluate signalized intersections for traffic signal warrants.
2. Evaluate signalized intersections for roundabout feasibility. (PSC)
3. Evaluate passive pedestrian crosswalks for feasibility of RRFB or PHB. (PSC)
4. Study school-route walking conditions for sidewalks, crosswalks, lighting, signing, and visibility within one-mile radius. (SRTS)
5. Repurpose 41-foot-wide collector roads with pavement markings and traffic calming for speed reduction and active transportation. (PSC)
6. Evaluate for new sidewalk construction to fill gaps and promote connectivity. (PSC)
7. Review left turn phasing for warrants and operation at signalized intersections.
8. Evaluate existing pedestrian signals for need, location, and upgrade to RRFB or PHB. (PSC)

9. Identify and correct ADA/PROWAG issues including ramps, detectable warnings, and push button placement.
10. Review parking and loading zone placement.

Study Recommendations

Three study examples are shown below as recommendations for the city. These were selected based on their readiness (SRTS), practicality (collectors), and local input.

Safe Routes to School

Community engagement indicated safety concerns related to students walking to school. Because school transportation is not provided within one mile of the school, improving pedestrian infrastructure along school travel routes is critical to reducing exposure risk for students walking to school. However, several walking routes have discontinuous sidewalks, deteriorated sidewalk conditions, missing pedestrian facilities, and limited crosswalk markings. In some areas, pavement markings are faded or missing, reducing pedestrian visibility and increasing safety concerns.

To improve safety for students traveling to and from school, the City may consider developing Safe Routes to School initiatives that combine infrastructure improvements and education programs.

- **Potential improvements include:**
 - » Infrastructure Improvements
 - » Construct missing sidewalk segments to improve network connectivity
 - » Repair or replace deteriorated sidewalks



- » Install high-visibility crosswalk markings near school routes
- » Refresh faded pavement markings along school walking corridors
- » Improve pedestrian signage and warning signs near school zones
- » School zone safety awareness campaigns
- » Pedestrian safety training for students and families

These improvements would help create safer and more accessible walking routes for students traveling to school.

- **Programs and Education**
 - » School safety education programs
 - » Crossing guard programs where needed

Collectors

41 Foot, 4 to 3 lane conversion with bike lanes

Peer communities across the country have shown that a 4-lane undivided street can often be reconfigured into a 3-lane section with a center two-way left-turn lane while creating space for bicycle facilities within the existing roadway footprint. FHWA defines this classic road diet as converting four undivided lanes into two through lanes and a center turn lane, with the reclaimed width used for elements

such as bicycle lanes, pedestrian refuge islands, parking, or transit accommodations. Case studies from Chicago, Des Moines, and northern Virginia demonstrate that these projects have been used to calm traffic, improve multimodal access, and create safer, more comfortable streets without requiring full roadway widening.

For a 41-foot curb-to-curb street, a conventional 3-lane section with 5-foot bike lanes is a realistic planning-level fit, and a one-sided buffered bike lane is another planning-level option that can fit within 41 feet on paper.



Figure 62: Conceptual 41-foot curb-to-curb fit test

Illustrative 41-foot curb-to-curb fit test for a 3-lane road diet with conventional bike lanes. This is a planning-level concept only, not a final design.



A one-sided two-way bikeway with an 8-foot riding area, 2-foot buffer, and 11-foot center turn lane is also worth studying within a 41-foot envelope, especially where one side of the street has fewer intersections and driveways and where the city wants modest space for flexible delineators or similar separation

treatments. That type of asymmetrical treatment may still be attractive where one side of the street has fewer intersections and driveways, but it requires more deliberate design at intersections, driveways, and transitions so turning conflicts are managed clearly.



Figure 63: Alternative 41-foot curb-to-curb fit test

Alternative 41-foot curb-to-curb fit test showing an 8-foot two-way bike lane, 2-foot buffer, two 10-foot through lanes, and an 11-foot center TWLTL. This concept fits within 41 feet on paper and illustrates a more separated side-bikeway option, but it would require special intersection and driveway design because one direction of bicycle travel operates opposite the adjacent motor-vehicle lane.

A one-sided one-way bikeway with a 5-foot bike lane, 3-foot buffer space, and 3-lane conventional section is also worth considering. This provides greater separation between

bike and vehicle traffic and may be a good alternative near other facilities for travel in the opposite direction.



Figure 64: Alternative 41-foot curb-to-curb fit test

Alternative 41-foot curb-to-curb fit test showing one-way buffered bike lane concept: 5-foot bike lane + 3-foot buffer + 10-foot through lane + 13-foot center TWLTL + 10-foot through lane. This is a planning-level concept only, not a final design.



This direction is consistent with El Dorado’s Transportation Study, which found that existing streets generally do not require additional travel lanes to accommodate future traffic growth, identified opportunities to expand bicycle facilities for transportation trips, and specifically recommended a road diet on a segment of 6th Avenue. Taken together, these findings support the evaluation of road diets and lane narrowing as practical strategies for converting excess pavement into safer, more multimodal streets.

Multimodal Recommendations

The Strava all-sports heatmap provides a useful snapshot of where walking, running, and bicycling activity is occurring in El Dorado today. Activity appears strongest in the northeast part of the community, particularly around El Dorado State Park and the trail connection back toward town, with additional east-west movement visible along Central Avenue and, to a lesser extent, 6th Avenue. Activity in the core of El Dorado appears lighter and more dispersed, suggesting that recreational use and a few key corridors currently drive most recorded active travel. As the El Dorado Transportation Study notes, Strava does not capture every trip, but it does help illustrate where people are already choosing to walk and ride and where stronger multimodal connections may have the greatest immediate value.

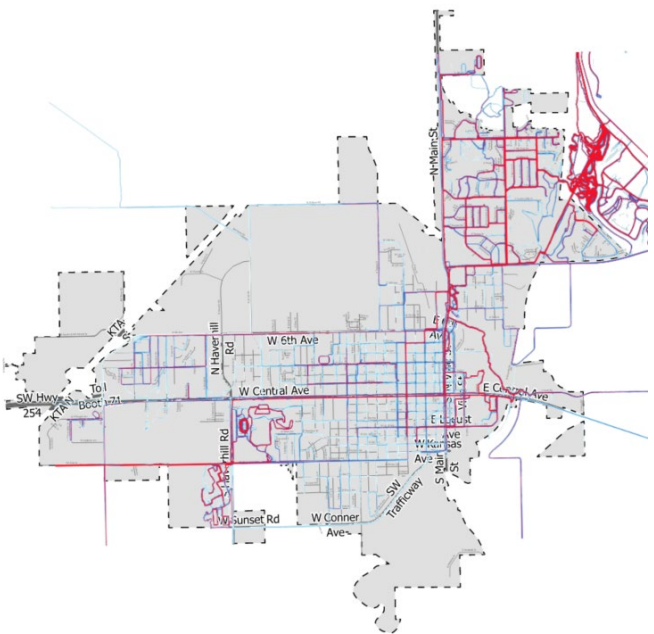


Figure 65: Strava Global Heatmap (All Sports) in El Dorado.

The map illustrates recorded walking, running, and bicycling activity in El Dorado, with blue indicating lower activity and red indicating higher activity. Activity appears most concentrated in the northeast part of the community, particularly around El Dorado State Park and the trail connection into town, with additional activity visible along key east-west corridors. The heatmap provides a useful snapshot of where active transportation and recreational travel are occurring today and helps inform future multimodal network planning.



Looking ahead, a future Multimodal Transportation Plan should build from these observed patterns to define a connected, all-ages-and-abilities network that supports both everyday travel and recreation. At a minimum, the plan should include a citywide inventory and pavement condition assessment of sidewalks, trails, bicycle facilities, crossings, and curb ramps; identify missing links and ADA/PROWAG deficiencies; evaluate connectivity and level of traffic stress; incorporate public input; and develop phased, data-driven project recommendations with funding and implementation strategies. Consistent with prior El Dorado planning, the plan should focus on establishing a small number of spine routes that connect neighborhoods to downtown, schools, parks, Butler Community College, and El Dorado Lake/State Park, with Central Avenue, 6th Avenue, Haverhill Road, Southwest Trafficway, and the 12th Avenue connection standing out as strong candidates for priority multimodal investment. This direction aligns with the El Dorado Transportation Study's goals to improve connected bikeways and sidewalks, eliminate sidewalk gaps and non-ADA ramps, and expand access to key destinations, as well as Connect 2025's emphasis on better trail connectivity and the Kansas Active Transportation Plan's focus on accessible facilities, maintenance, data tools, performance measures, and implementation resources.

Action Implementation

A few countermeasures categorized as action can be implemented immediately based on work performed as part of this plan. Recommendations are recorded in Chapter 4. One action is listed in [Appendix A](#), which lists the NHTSA Countermeasures that Works (CTW) and FHWA Proven Safety Countermeasures (PSC).

Action-ready items:

- Apply recommended yellow change and all-red clearance intervals. (PSC)
- Apply recommended pedestrian signal flashing don't walk intervals.
- Address the findings of the rail-grade crossing review.

IMPLEMENTATION

The Safe Streets 4 All El Dorado SAP was developed through analysis of crash trends, community engagement, development of the priority network, and collaboration with City staff and stakeholders. The recommendations identified throughout this plan provide a framework for improving transportation safety in El Dorado. However, meaningful progress will depend on the City's continued commitment to implementation. This chapter outlines how El Dorado can advance the recommended safety strategies through ongoing coordination, progress reporting, policy development, and phased investment in safety improvements.

Commitment to Safety

Adoption of this SAP reflects the City of El Dorado's commitment to improving safety for all users of its transportation system and to pursuing zero fatal and serious injury crashes within the community. The recommendations outlined in this plan position the City to pursue additional funding opportunities, including implementation funding through the USDOT SS4A and other state and federal sources.

As El Dorado continues to grow and invest in its transportation network, safety should remain a central consideration in project selection, ongoing maintenance operations,



and future infrastructure improvements. The recommendations in this plan are intended to provide a flexible framework for implementation, rather than a fixed construction program. This approach allows the City to advance safety improvements through stand-alone countermeasures, broader corridor-based project packages, policy changes, and coordination with future development projects.

Achieving the goals of this plan will require continued support from City staff, elected officials, partner agencies, and the community. Maintaining a strong commitment to safety and prioritizing investments that reduce crash risk are central to this SAP's goals and will help El Dorado continue making progress toward eliminating fatal and serious-injury crashes within the community.

Progress Reporting

Regular reporting and communication of progress toward this plan's goals will be an important component of implementation. The City of El Dorado should continue to monitor crash trends, with particular attention to fatal and serious injury crashes, vulnerable road users, and locations identified in the City's priority network. Tracking this information will help the City identify emerging safety concerns, evaluate the effectiveness of implemented improvements, and guide future safety investments. In addition to monitoring crash trends, the City should also track progress toward implementing the recommendations identified in this SAP.

The Priority Network should be revisited in future Action Plan updates to ensure safety priorities remain aligned with the most current crash data. El Dorado should also continue to coordinate with KDOT, the Kansas Highway Safety Office, and other partners to evaluate safety trends and implement improvements across the transportation network.

Taking Action

The implementation of this plan will require ongoing focus and commitment by the City to safety in everyday decision-making and long-term planning. Through the engagement process conducted as part of this plan, community members made it clear that deaths and serious injuries on El Dorado's streets are not acceptable.

The recommendations identified in this SAP are intended to provide a flexible set of strategies and countermeasures that can be implemented over time as resources allow. Some improvements may be implemented as stand-alone safety projects, while others may be incorporated into larger corridor improvements or delivered incrementally through roadway maintenance, resurfacing, reconstruction, or redevelopment efforts.

By advancing the strategies identified in this plan and maintaining a persistent commitment to safety, El Dorado can continue to make steady progress toward reducing crash risk and improving safety for all roadway users. Through continued leadership, investment, and collaboration, El Dorado can move closer to achieving its goal of zero fatal and serious injury crashes.



EL DORADO

KANSAS

TO: City Commission
FROM: Scott Rickard
SUBJ: Greens at Prairie Trails Reimbursement Interest and Conditional Release
DATE: April 15, 2026

Background:

This item is for consideration of an interim method to better protect the City's financial interest as Greens at Prairie Trails Phase 2 continues to move forward. The Commission has already discussed this project and the desire to keep infrastructure design, development agreement work, CID, RHID, and related authorizations moving while also making sure the City is not left exposed if costs are advanced ahead of the final reimbursement documents.

Greens at Prairie Trails Phase 2 is the remaining unimproved portion of the subdivision. The land use actions for this phase have already been completed, including the final plat and Planned Development overlay amendment. Public infrastructure is still needed to serve the phase, including streets, water, sanitary sewer, storm drainage, grading, and related improvements. Detailed engineering plans are needed before construction can occur. At the March 11 work session, staff brought forward a request to continue BHC design services while the larger administrative and financing documents were still being worked through. BHC's proposal for surveying and construction documents is \$58,900 plus reimbursable expenses.

In response to the Commission's discussion, staff is bringing forward a proposed Notice of City Reimbursement Interest and Conditional Release as a possible tool to help address that concern. The concept is straightforward. With the owner's consent, the City would record a notice against the lots in Greens at Prairie Trails 2nd Addition stating that the City has a reimbursement interest for engineering, surveying, design, and related reimbursable project initiation costs advanced for the benefit of the development. The notice would stay in place until the City is reimbursed, a later development agreement or other approved reimbursement mechanism takes over, or the City records a release.

This would not replace the need for a development agreement, CID, RHID, or any later project authorization. It would simply be an interim way to better document and protect the City's position while the rest of the package is still being completed. It would also make clear that recording such a notice does not obligate the City to approve any future plat, permit, agreement, CID, RHID, or other authorization.

Attachments:

1. NOTICE OF CITY REIMBURSEMENT INTEREST

Advisory Board Recommendation:

NA

Policy Issue:

Recording a notice of reimbursement interest would not create a major operational impact beyond staff time and legal review needed to finalize the document, obtain owner consent, and coordinate recording. If authorized, staff would continue working with the City Attorney and the owner on final

language and filing. The larger development agreement, CID, RHID, and related project authorizations would still need to come back separately.

Fiscal Impact:

The current consultant cost tied to this issue is the BHC proposal for \$58,900 plus reimbursable expenses for surveying and construction documents. BHC also identified a separate budgetary estimate of \$5,750 for limited construction phase services if those are later authorized. Staff's intent remains that these design-related costs would ultimately be addressed through the development agreement, RHID plan, or another approved reimbursement mechanism. The proposed notice would not eliminate the City's exposure, but it would help put the City's reimbursement interest on record while the final documents are still being negotiated.

Trade-Offs:

1. Authorize the City Manager, with owner consent and subject to City Attorney approval as to form, to execute and record a Notice of City Reimbursement Interest and Conditional Release for Greens at Prairie Trails 2nd Addition.
2. Direct staff to continue refining the concept and bring back a revised document at a later meeting.
3. Do not proceed with a recorded notice and wait until the full development agreement, CID, RHID, and related reimbursement documents are finalized.

Staff Recommendation:

Staff recommends moving forward with the notice approach, subject to owner consent and City Attorney review. This gives the City a practical interim tool to better document its reimbursement interest while still allowing the project to keep moving. It does not replace the larger development documents, but it does help respond to the Commission's concern that the City should have something in place if costs are advanced before the full reimbursement package is complete.

Commission Action:

This item is for discussion purposes only. The item will be scheduled for consideration at a regular meeting pending direction to do so by the City Commission.

NOTICE OF CITY REIMBURSEMENT INTEREST AND CONDITIONAL RELEASE

THIS NOTICE OF CITY REIMBURSEMENT INTEREST AND CONDITIONAL RELEASE is made this ____ day of _____, 2026, by _____, Owner, for the benefit of the City of El Dorado, Kansas, a municipal corporation, hereinafter "City."

Property

This instrument applies to all platted lots within The Greens at Prairie Trails 2nd Addition, Butler County, Kansas, as shown on the recorded Final Plat of The Greens at Prairie Trails 2nd Addition, together with any related replat of the same property or portion thereof, unless and until released by the City.

Background

- A. Owner is pursuing development of The Greens at Prairie Trails 2nd Addition.
- B. Public infrastructure and related design work are required to serve the addition, including but not limited to streets, water, sanitary sewer, storm drainage, grading, and related improvements.
- C. The City has advanced, or may advance, engineering, surveying, design, and related reimbursable costs for the benefit of the property prior to final approval and execution of a development agreement and related project authorizations.
- D. The City desires to place the public and all successors in title on notice of its reimbursement interest in the property until such time as the City's costs are repaid or otherwise addressed through an approved development agreement or other authorized reimbursement mechanism.

City Reimbursement Interest

Owner acknowledges and agrees that the City has a reimbursement interest in and against all platted lots within The Greens at Prairie Trails 2nd Addition to secure repayment of engineering, surveying, design, and related reimbursable costs advanced by the City for the benefit of the development.

The reimbursement interest described herein shall apply to the City's advanced costs, currently in an amount not to exceed \$58,900, plus reimbursable expenses, unless later amended or supplemented by written authorization or by a subsequent development agreement approved by the City.

Costs Covered

This reimbursement interest shall secure the City's right to reimbursement for:

- a. engineering and design costs advanced by the City for the development,
- b. surveying and easement related costs advanced by the City for the development,
- c. reimbursable expenses billed in connection with such work, and
- d. any other specifically authorized project initiation costs later agreed to in writing.

Duration

This instrument shall remain in full force and effect against all covered lots until the earliest of the following:

- a. the City has been reimbursed in full for all amounts secured by this instrument,
- b. the City and Owner enter into a development agreement and related project authorization documents that provide for reimbursement and release terms acceptable to the City, or
- c. the City records a release of this instrument, in whole or in part.

Binding Effect

This instrument shall be binding upon Owner and Owner's heirs, successors, assigns, purchasers, lenders, and any other parties claiming an interest in the covered property until released of record by the City.

No Waiver of City Authority

Nothing in this instrument shall be construed as:

- a. obligating the City to approve any plat, plan, permit, development agreement, CID, RHID, or other project authorization,
- b. limiting the City's discretion in reviewing future approvals related to the development, or
- c. waiving any other rights or remedies available to the City under law, equity, ordinance, contract, or development agreement.

Future Agreement Controls

If the City and Owner later enter into a development agreement, RHID related reimbursement document, CID related agreement, or other approved reimbursement mechanism, the terms of that later agreement shall control the final reimbursement

obligations, security, timing, and release conditions, and the City may thereafter amend or release this instrument accordingly.

Recording

Owner acknowledges and agrees that this instrument may be recorded with the Butler County Register of Deeds for the purpose of providing notice of the City's reimbursement interest pending finalization of the development agreement and related project authorizations.

OWNER:

Name:

Title:

CONSENT TO RECORDING:

Owner further consents to the City Manager of the City of El Dorado, Kansas, executing, filing, and recording this instrument, or a substantially similar final form approved by the City Attorney, with the Butler County Register of Deeds for the purposes stated herein.

Name:

Title:

CITY OF EL DORADO, KANSAS

By: _____

City Manager

ATTEST:

City Clerk

APPROVED AS TO FORM:

City Attorney



An Economic Development Partnership

ECONOMIC FORUM

Let's Talk About Data Centers: Facts. Experience. Perspective.

**MONDAY
APRIL 27TH
5:30 PM**

This forum is designed to provide clear, fact-based information and real-world perspective as our community continues conversations around data centers. Our goal is to support an informed and balanced discussion. The event will include a panel of leaders and professionals with hands-on experience in this sector.

WHAT TO EXPECT:

- ☒ Real-world insight from communities and professionals with direct experience
- ☒ How data centers function and operate in real communities
- ☒ Infrastructure considerations including power, water, and land use
- ☒ Community impact including tax base, services, and long term sustainability
- ☒ Lessons learned from those who have been through the process

**EL DORADO CIVIC CENTER
201 E CENTRAL AVE
EL DORADO, KS 67042**