APRIL | 2022

Transportation Master Plan

ADVANCING **ADAMS**
PLANNING FOR A SHARED FUTURE

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ADVANCING **ADAMS**
PLANNING FOR A SHARED FUTURE

Source: Design Workshop

EXECUTIVE SUMMARY

ES.1 PURPOSE

The *Advancing Adams* Transportation Master Plan serves as the guiding document for changes to the mobility network in Adams County through 2040. The Transportation Master Plan represents a nearly two year long effort to assess existing conditions of the transportation network, engage key local, regional, and state officials to understand the future mobility needs of Adams County, and to understand how community members seek to connect with key destinations around Adams County and the Front Range.

The Transportation Master Plan identifies a long-term vision for transportation looking into the future, including a roadmap of short-term investments to accomplish this goal. These investments include infrastructure, policies and programs that will ensure an efficient and connected transportation network, that accommodates the population and employment growth. This plan makes recommendations that will improve the experience for people walking, biking, taking transit, and driving in the near term and as Adams County grows.

ES.2 VALUE LENSES

Advancing Adams is framed by the three lenses of Equity, Sustainability, and Livability. Each of these lenses was integrated into every step of the planning process. Throughout the analysis of existing conditions, development of future scenarios, and creation of goals and policies for the community to implement, the lenses served as the backbone of the plan.

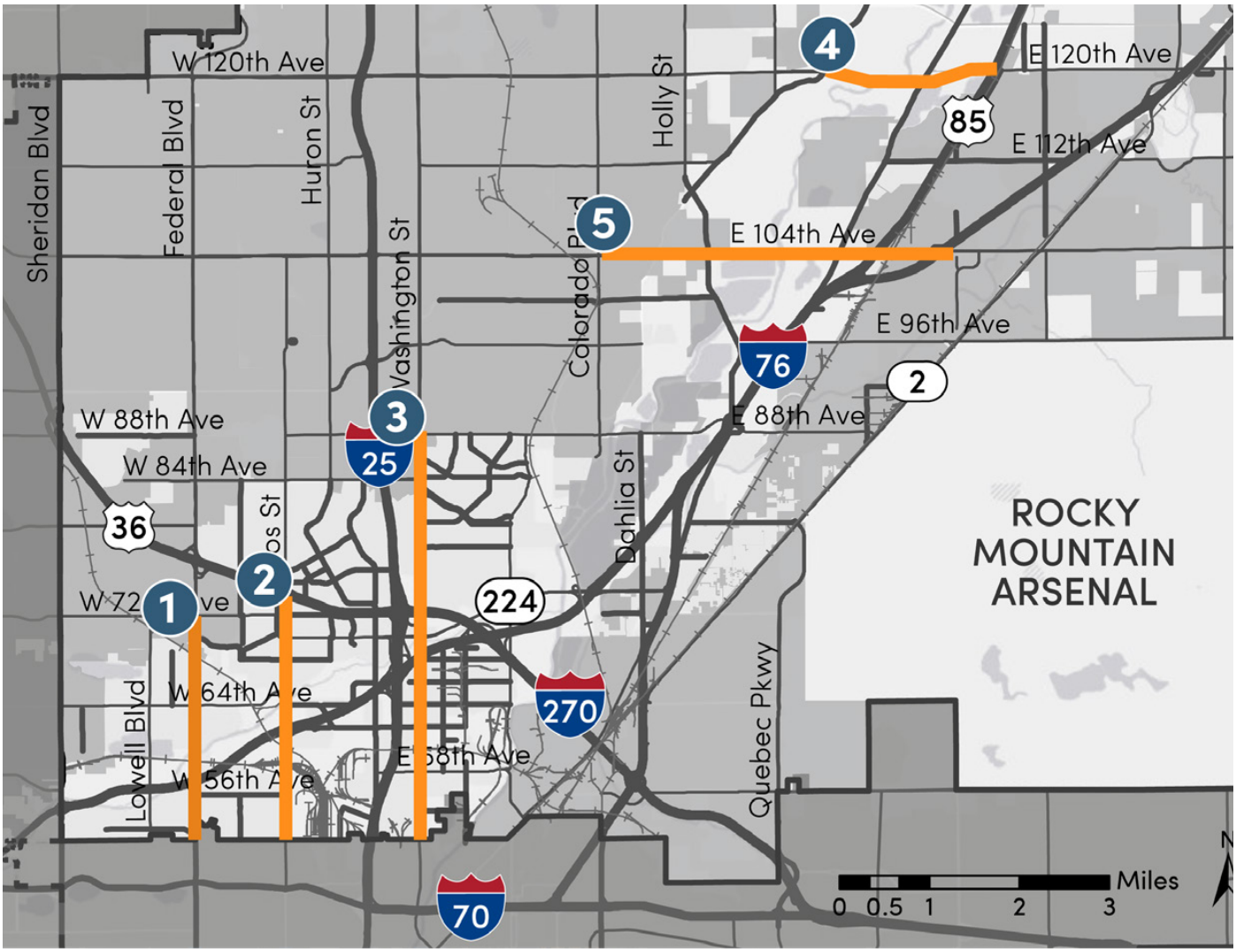
ES.2.1 DESCRIPTIONS OF EACH LENS

Equity: The vibrance and strength of a community emerges from diversity and equity. Equity can be measured through distribution of resources, affordability and access to services and experiences, as well as balancing land uses with environmental justice. Adams County will celebrate and leverage a diverse community through equitable land planning as the region continues to grow in population and various ethnicities and identities.

Sustainability: By committing to build smarter and retrofitting existing development to include new technologies and efficiency, all while embracing a holistic and metrics-based approach, sustainability will be part of Adams County's identity.

Livability: Adams County has numerous multimodal and walkable districts that support a human-scaled, comfortable and memorable experience. This plan will help to further enhance livability through the thoughtful integration of artful placemaking strategies and urban design best practices that celebrate

MAP ES.1: FIVE CORRIDORS



- Five Strategic Corridors
- 1 Federal Boulevard
- 2 Pecos Street
- 3 Washington Street
- 4 120th Avenue
- 5 104th Avenue

the culture of Adams County and further contribute to livability.

ES.3 BIG IDEAS

The Transportation Master Plan seeks to address the mobility needs of Adams County today as well as the transportation demand that will be generated in the future with the population growth and economic development patterns that are forecasted for the County. Additionally, the Transportation Master Plan explores the role Adams County plays in fostering greater regional connectivity and highlights opportunities for strengthening connections not just within the County but with neighboring jurisdictions as well. The following section summarizes the big ideas that were identified by transportation mode for achieving the

Advancing Adams goals and meeting the mobility needs of today and tomorrow.

ES.3.1 FIVE CORRIDORS

To highlight specific opportunities for focused improvements in key areas, *Advancing Adams* selected five strategic corridors that were analyzed in greater detail as a part of the planning process—Federal Boulevard, Washington Street, Pecos Street, 104th Avenue, and 120th Avenue (**Map ES.1**). The *Advancing Adams Existing Conditions and Opportunities Report* in **Appendix A** profiles the current state of the corridors and provides opportunities for modifying the corridors to promote multimodal travel. The Transportation Master Plan describes the transportation infrastructure (transit, bicycle, pedestrian, and vehicular) that exists on each corridor and shares opportunities for transportation improvements that would both enhance mobility and complement concepts put forward in the Comprehensive and Parks, Open Space and Trails Plans.

The *Advancing Adams* team considered a range of transportation opportunities for each corridor including road diets (the reallocation of vehicle travel lanes to other uses such as enhanced bicycle or pedestrian facilities), enhancing facilities for those walking or rolling, and leveraging new technologies for forming new connections or operating existing facilities with greater efficiency. **Chapter 2** describes opportunities for each corridor in depth, from enhanced transit services on Federal Boulevard to a road diet for Washington Avenue where the County can take advantage of relatively low traffic volumes on certain stretches to reallocate how right of way is currently distributed and reshape the corridor to offer residents and visitors more travel choice.

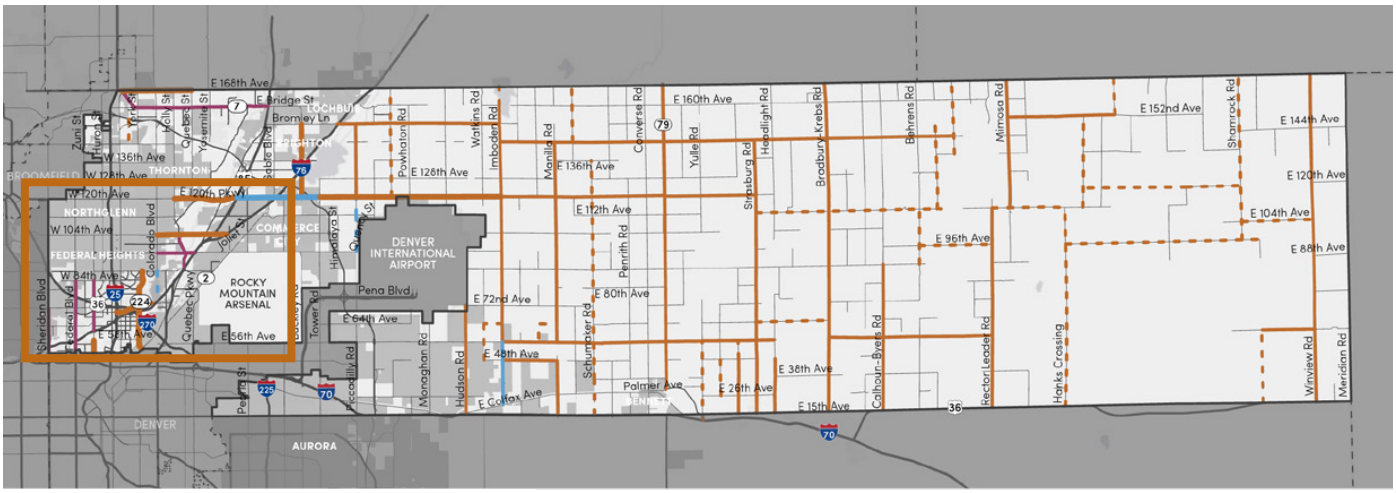
ES.3.2 FUTURE OPPORTUNITIES BY TRANSPORTATION MODE

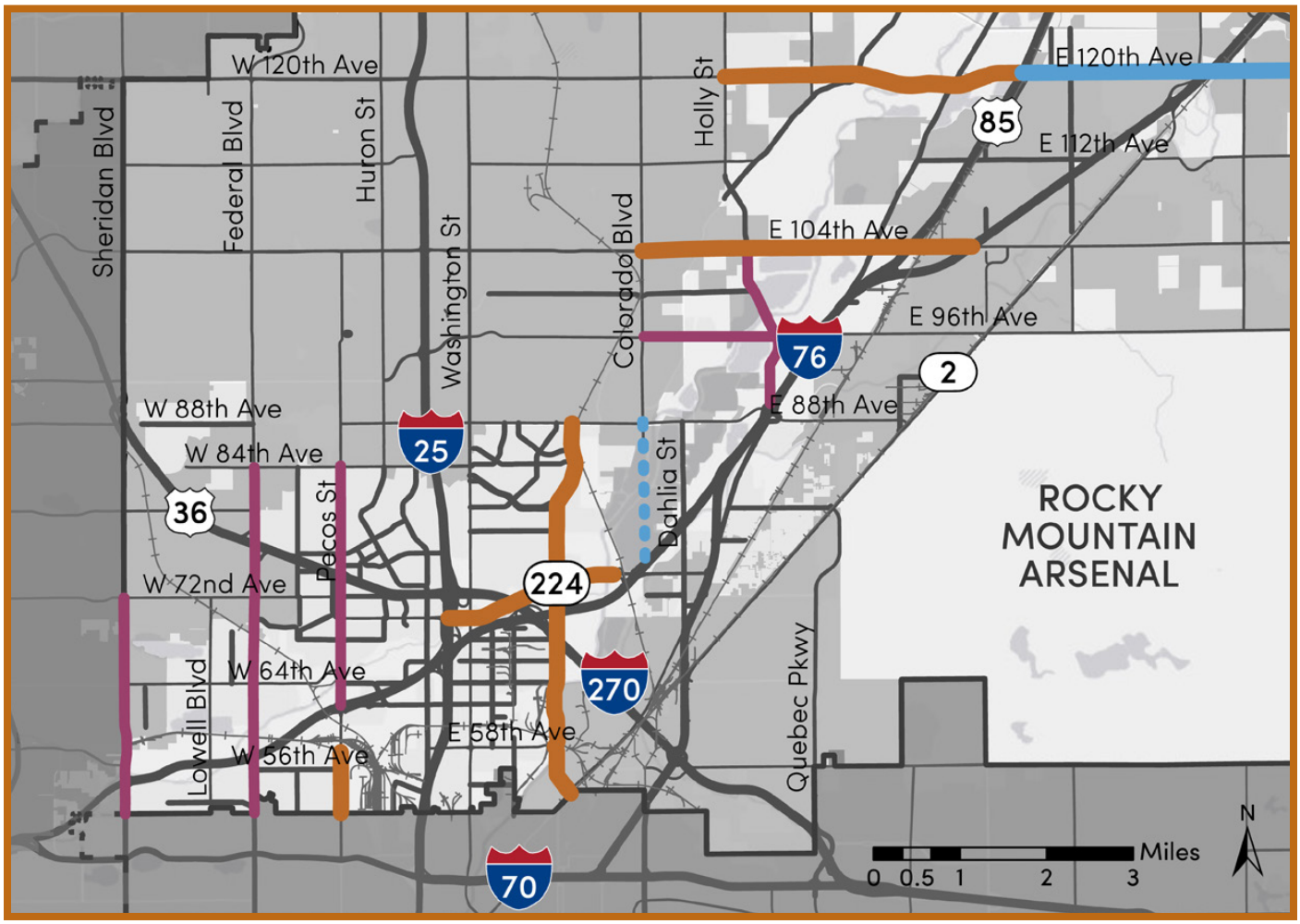
The Transportation Master Plan envisions a multimodal future for Adams County. The Plan organizes that future vision by focusing on each part individually through a roadway plan, identification of transit network opportunities, bicycle plan, and pedestrian enhancement program.

ES.3.2.1 ROADWAY PLAN

As Adams County grows, there will be a need to reevaluate existing roadway standards and to begin aligning roadway cross sections with new travel patterns. In the interim, Adams County can accommodate growth by upgrading arterials in the eastern portion of the County, as noted in this plan. In areas that are already urbanized or are poised for growth in the short-term, the County should pursue road diets that will open opportunities for residents and visitors to travel by their preferred mode.

MAP ES.2: PROPOSED ROADWAY PLAN





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The Roadway Plan in **Chapter 3** highlights needs and opportunities for ensuring Adams County manages its roadway network in a way that supports growth but also enhances opportunities for connectivity by all modes. The Roadway Plan details how Adams County will:

- Ensure the roadway network keeps pace with population and employment growth in Adams County,
- Explore opportunities for making strategic changes to roadway corridors through road diets that will result in more multimodal travel,
- Establish partnerships with the various entities that have jurisdiction over the state highways that serve Adams County, and
- Make decisions about how to prioritize the management and paving of gravel roads.

Chapter 3 also provides the existing Adams County functional roadway classification, a methodology for revisiting functional classifications in the future, and roadway cross sections by classification.

The full set of recommended roadway improvements is listed in **Chapter 3** and the future roadway network is show in **Map 3.1**.

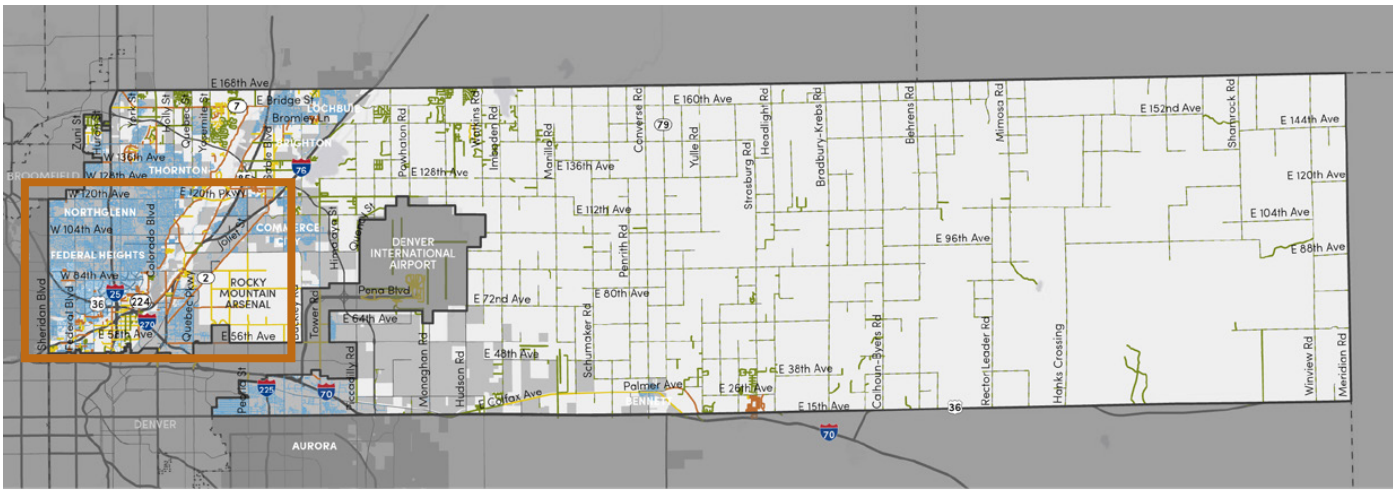
ES.3.2.2 PEDESTRIAN NETWORK

Chapter 4 discusses the key opportunities for improving connectivity for pedestrians on the network of sidewalks, shared use paths and trails, and roadway crossings in the County. Some of the key issues that emerged during the Transportation Master Plan process include sidewalk gaps on key corridors and lack of comfortable pedestrian infrastructure serving certain transit stops. *Advancing Adams* outlines a strategy for completing the County's pedestrian network by completing gaps in key areas, rehabilitating sidewalks that are damaged or substandard, rebuilding curb ramps, implementing enhanced crossings, and considering connectivity between the sidewalk and trail network for all users.

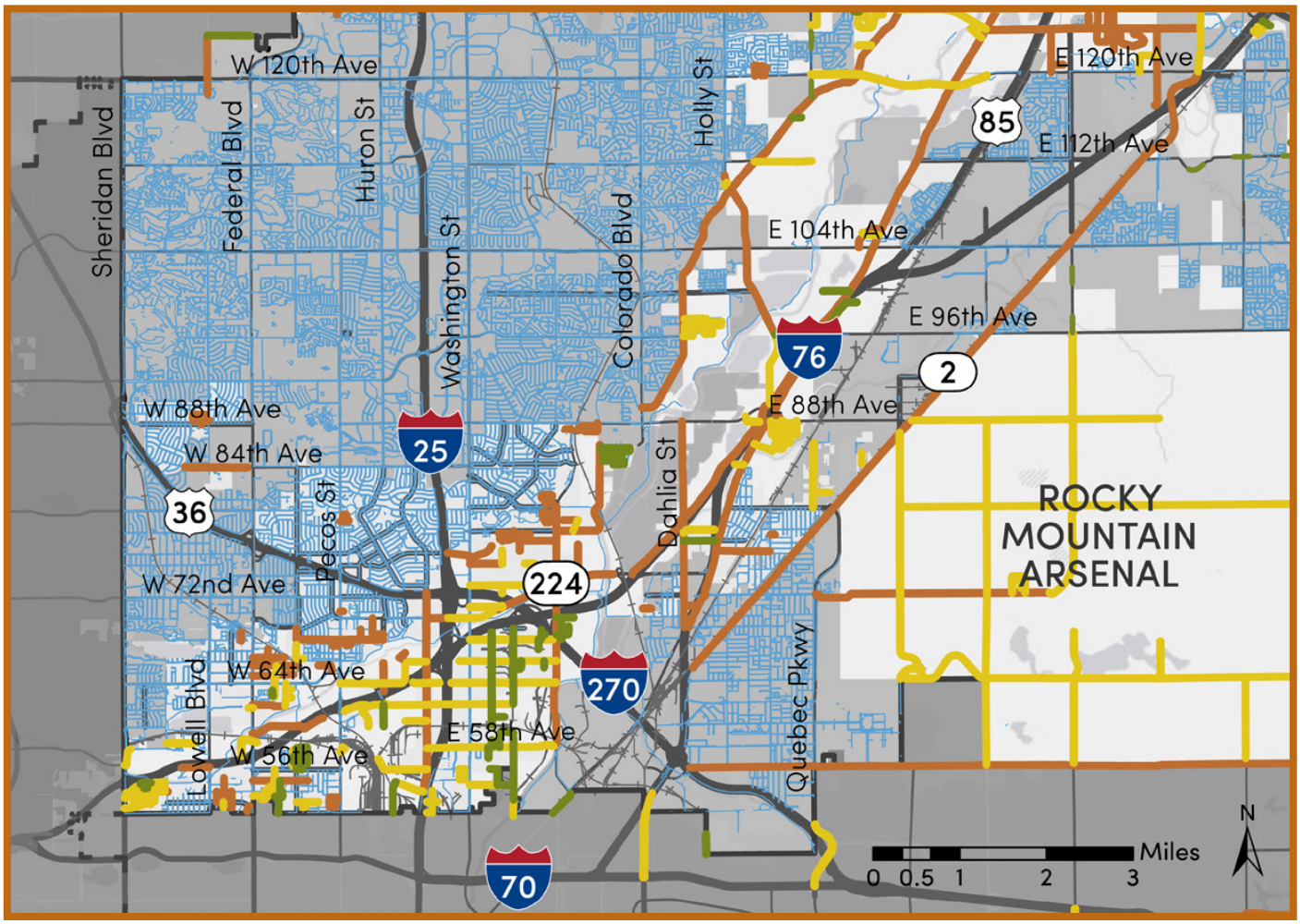
To accomplish this, the Transportation Master Plan provides a sidewalk upgrade prioritization that identifies high, medium, and low priority corridors based on a variety of factors including transit access, proximity of parks and open space, and frequency of crashes involving bicyclists and pedestrians. The map of pedestrian priority areas is shown in **Map 4.1**.

Chapter 4 also details opportunities to provide more safe and comfortable pedestrian crossings in Adams County. Specifically, this chapter highlights opportunities for the two types of crossings—controlled crossings and uncontrolled crossings. A controlled

MAP ES.3: PRIORITIZATION OF MISSING SIDEWALK GAPS



Adams County Boundary
Incorporated Places Adams County
Existing Sidewalks
Tier 1 (High Priority Missing Sidewalks)
Tier 2 (Medium Priority Missing Sidewalks)
Tier 3 (Low Priority Missing Sidewalks)
Sidewalks Not Required



crossing is a crosswalk across a roadway that is controlled by a stop sign or traffic signal. Controlled crossings are typically installed on roadways with higher vehicle volumes and vehicle speeds such as arterials or collectors.

An uncontrolled crossing is a crosswalk where vehicle traffic is not controlled by a stop sign or traffic signal. Uncontrolled crossings are typically located on local roadways where vehicle volumes and speeds are relatively low. Creating safe and appropriately spaced roadway crossings is an important component of a complete pedestrian network. **Chapter 4** discusses the proactive and reactive approaches to forming a comprehensive pedestrian crosswalk safety strategy for all users, including equestrian users.

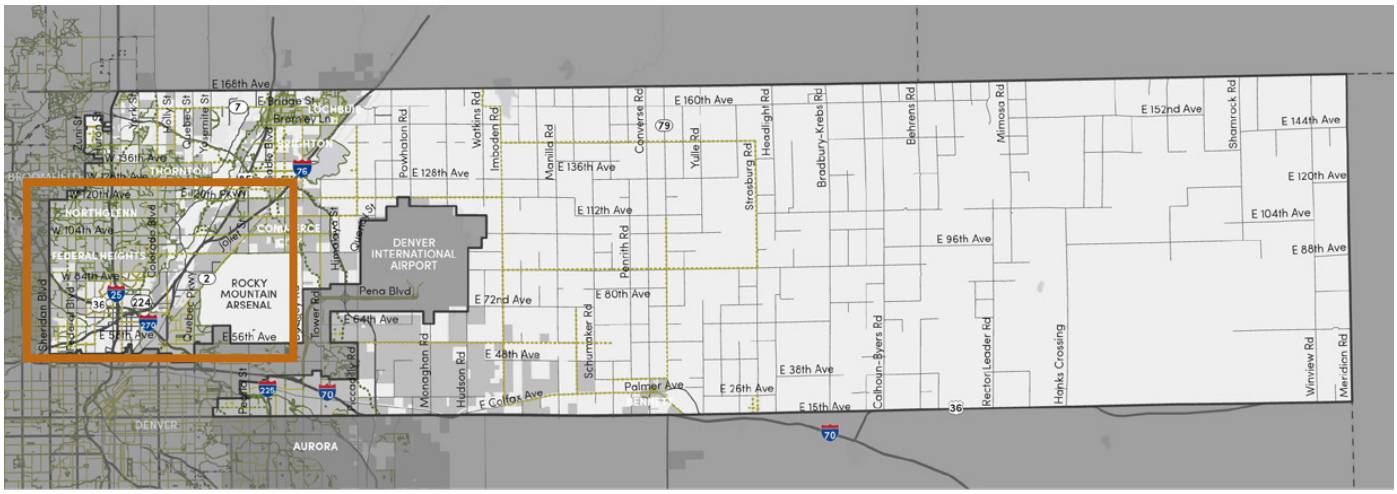
ES.3.2.3 BICYCLE NETWORK

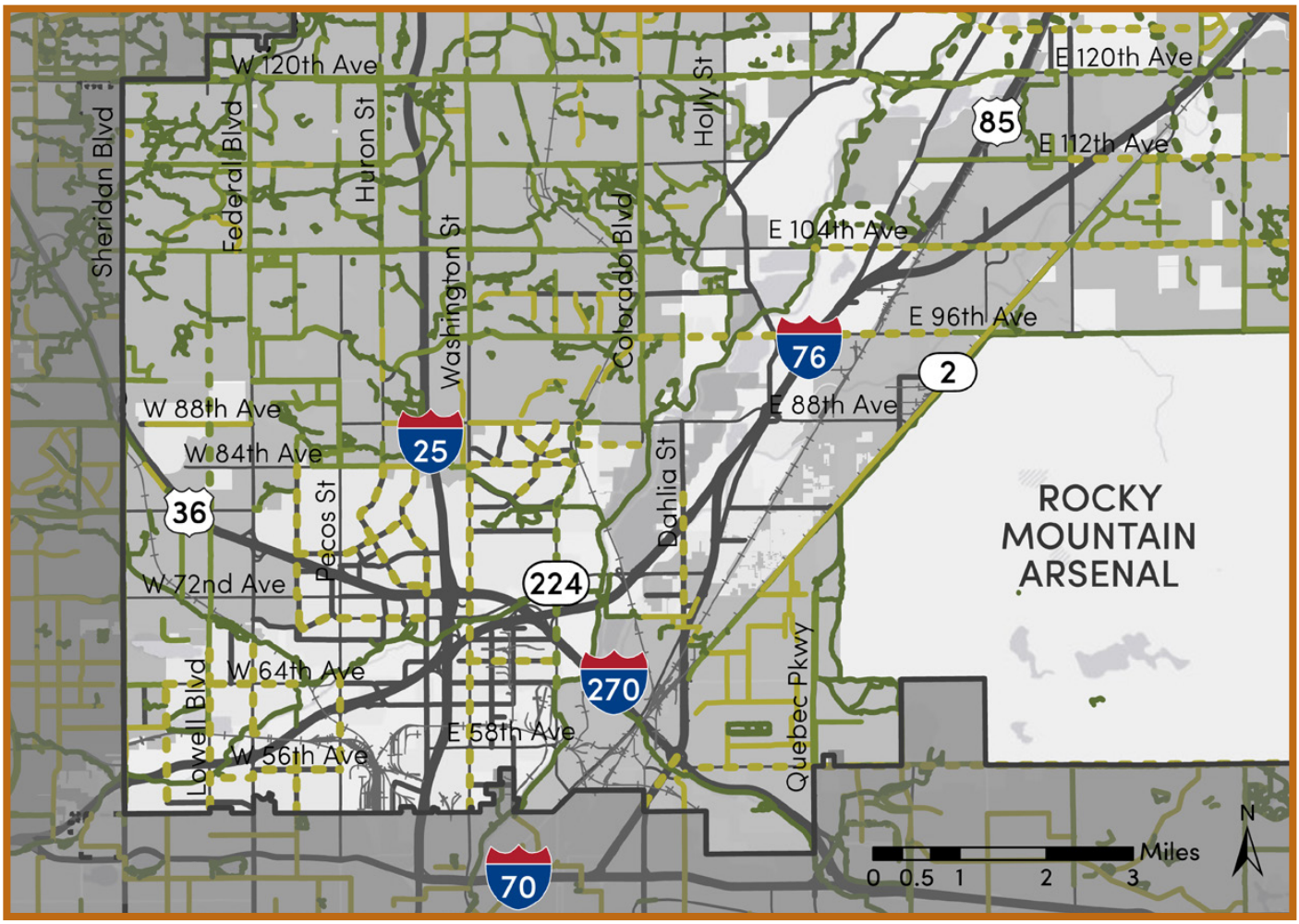
While there are already 31 miles of bike lanes as well as shared use paths for recreation and transportation, given the size of Adams County, there are still many opportunities to expand the network and address barriers to bicycling. **Chapter 5** of the Transportation Master Plan outlines a future bicycle network that addresses the challenges for bicyclists identified during community outreach. The bicycle facilities recommended in the Transportation Master Plan are based on national best practices including standards and guidelines set by the American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO).

The proposed bicycle facilities in *Advancing Adams* will increase connectivity of the network and support biking for transportation as well as recreation. In order to create a more connected, gridded network and support access to additional destinations, an emphasis was placed on identifying low stress connections to existing and proposed trails. **Chapter 5** also includes a focus on continuing existing and planned bicycle facilities from neighboring and incorporated jurisdictions into Adams County in order to create a seamless experience for the user. Development of the proposed bicycle network was also coordinated closely with the Preferred Land Use Plan, in order to create comfortable connections for people biking to existing and planned key destinations.

The future bicycle network is shown in **Map 5.1**. The development of this network builds off the Adams County 2012 Transportation Master Plan, DRCOG priority bicycle corridors, the existing and proposed bicycle facilities in neighboring jurisdictions, gaps in the existing bicycle network, access to key destinations, and public input. The network categorizes all proposed facilities as on- or off-street. There are a spectrum of different types of on-street bicycle facilities and spectrum of off-street facility types. This plan does not recommend a specific facility type, understanding that additional

MAP ES.4: EXISTING AND PROPOSED BICYCLE NETWORK





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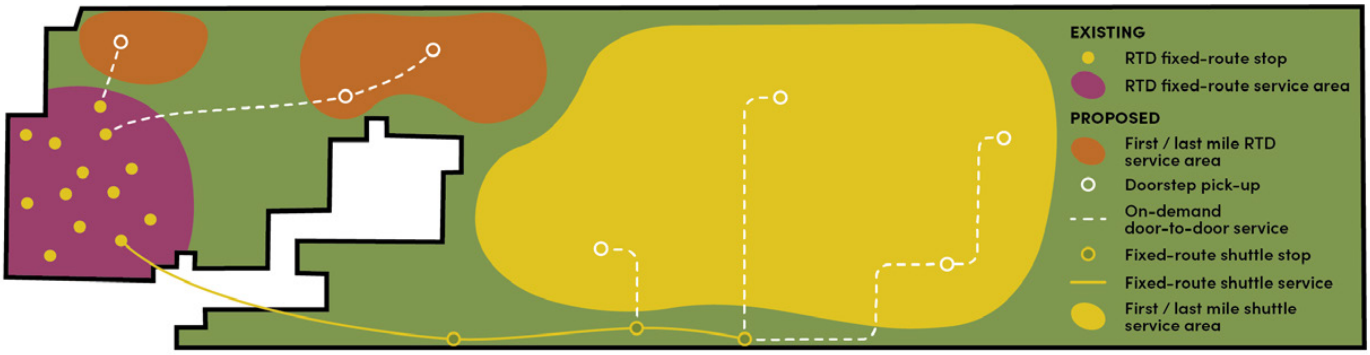


Figure ES.1: Proposed Transit Supplements to RTD

analysis of curb-to-curb width, right-of-way, and costs will need to be considered to identify a specific facility type. **Chapter 5** includes a glossary of bicycle facility types the County may consider as it implements the Transportation Master Plan recommendations.

ES.3.2.4 TRANSIT NETWORK

Chapter 6 of the Transportation Master Plan summarizes future investments Adams County can make to improve the comfort, reliability, and convenience of taking transit within the County. The set of recommendations in **Chapter 6** provides opportunities for Adams County to complement and supplement existing Regional Transportation District (RTD) service to improve the feasibility of taking transit for residents, employees, and visitors.

There are three primary challenges associated with transit service in Adams County today:

1. First and last mile gap – or barriers to accessing transit service
2. No transit service in the eastern portion of the County
3. Insufficient transit service in other portions of the County

To address these challenges, the County can pursue infrastructure improvements that enhance the pedestrian and bicyclist experience at transit stops, explore more opportunities for Transit Oriented Development and Mobility Hubs that provide walkable environments, and implement countywide Transportation Demand Management strategies that encourage replacing driving trips with taking transit.

Additionally, **Chapter 6** outlines an opportunity for the County to provide supplemental transit service by offering a shuttle system that connects portions of the County with limited or no existing transit service into the RTD network. The service concept for the potential supplemental shuttle system is shown in **Figure ES.1**.

ES.3.3 FUTURE MOBILITY

Advancing Adams was developed at a time when technology is rapidly changing how people connect to transportation services. **Chapter 7** of the Transportation Master Plan describes the emerging technologies that are reshaping transportation. These include Mobility as a Service (the shift away from privately owned automobiles and toward transportation that is offered as a family of services that can be accessed through a single platform), Transportation Demand Management solutions that increase the ease of locating and riding transit, promoting shared mobility options that allow users to rent cars, bicycles, and scooters, policy tools that proactively plan for autonomous vehicles, opportunities for expanding electric vehicle chargers, and mobility hubs that allow for easy connections between transit and other mobility services.

ES.4 IMPLEMENTING THE TRANSPORTATION MASTER PLAN

Chapter 8 details the method used for prioritizing project in the Transportation Master Plan to ensure the County implements infrastructure treatments in a manner that answers the needs and helps achieve the goals established for *Advancing Adams*. In addition to the prioritized list of projects, **Chapter 8** discusses implementation tools and the key partnerships the County should explore for any initiatives requiring interagency collaboration.

To track implementation of the Transportation Master Plan, **Chapter 8** also includes a set of performance measures and associated metrics the County can use throughout the life of the plan to understand whether the Adams County transportation network is achieving the *Advancing Adams* goals (Table 1).

The Transportation Master Plan concludes with a funding guide that describes the key sources of federal, state, regional, and local funding options the County can pursue in order to implement the plan recommendations. As Adams County grows and transportation demand shifts, the County should routinely revisit the plan to ensure it remains relevant and answers community mobility needs.

TABLE ES.1: TRANSPORTATION MASTER PLAN PERFORMANCE MEASURES

TOPIC	PERFORMANCE MEASURE	METRIC
Safety	Reduce the number of fatal and severe injury collisions	Number of crashes year over year
	Reduce the number of bicycle/pedestrian-related collisions	Number of crashes year over year
	Reduce the annual crash rate (number of crashes/volume or vehicle miles traveled) on key corridors or County-wide	Crashes per 1,000 vehicles year over year (use the same corridors each year)
Transportation options for all ages and abilities	Implement low stress, connected bicycle facilities	Miles of bicycle facilities implemented, per **Chapter 5** bicycle network
	Complete sidewalk gaps and ensure pedestrian facilities are ADA compliant	Miles of sidewalk gaps filled, per **Chapter 4** sidewalk prioritization
	Employee and resident participation in Transportation Demand Management programs/strategies	Reporting through program participants
	Increase awareness of the availability and benefits of alternative transportation options (walking, biking, transit)	Mode split (through American Community Survey, local survey data, or DRCOG Focus Model)
	Prioritize first and last mile connections to commuter rail stations	Miles of bicycle and pedestrian facilities implemented within a 1-mile buffer of stations
	Provide transportation options where the older population can age in place, when driving is no longer an option	New transit or human service provider options implemented
Access to trails for recreation and transportation	Implement bicycle and pedestrian facilities that connect to trails and trailheads	Miles of bicycle and pedestrian facilities implemented within a 1/2-mile buffer of trail access point
Miles of priority rural roadways paved (as classified by prioritization system)	Implement the prioritization system for paving rural roadways that reflects a balance of access and maintenance costs	Number of times rural road prioritization process applied

TOPIC	PERFORMANCE MEASURE	METRIC
Sustainability	Reduce vehicle miles traveled (VMT) per capita	VMT per capita of unincorporated population per DRCOG Focus Model outputs
	Reduce single occupancy vehicle mode split	Mode split (through American Community Survey, local survey data, or DRCOG Focus Model)
Align transportation and land use	Increase density and mix-uses along transit corridors	Per success of Comprehensive Plan implementation
	Implement planned Transit Oriented Developments	Per success of Comprehensive Plan implementation
	Continue to identify policy, regulations and locations that support the transit center concept and TODs	Per success of Comprehensive Plan implementation
Regional connectivity	Leverage partnerships with local jurisdictions and neighboring communities to implement projects that cross boundaries and create a consistent experience for users	Number of collaborative cross-boundary efforts
Freight	Plan for an intermodal freight hub	Tracking of establishment data-- employment data collected by NAICS code
Travel reliability	Travel time along major corridors in both the peak and non-peak hours remains consistent each year	Using BlueToad, Streetlight or Inrix data, compare minutes/mile along the same key corridors each year
Equity	Ensure investments are made in areas of the County with more vulnerable populations	Number of investments in CDC High Vulnerability census tracts (.75-1) (See Comprehensive Plan Existing Conditions and Opportunities Report (Phase 1) Map 6)
Innovation	Implement partnership, technology or policy that leverages innovation to improve mobility	Number of new partnerships, technologies or policies
	Conduct temporary pilot projects that test out new technologies and providers	Number of pilot projects
	Identify innovative opportunities through this Plan (e.g., signage, ITS, counts, signalization, Big Data)	Number of new innovative opportunities having seen progress

Source: Design Workshop

CHAPTER 1

INTRODUCTION

ADVANCING **ADAMS**
PLANNING FOR A SHARED FUTURE

1.1 THREE PLANS AT ONCE

Advancing Adams was the process used to prepare three plans simultaneously to guide Adams County in future decision making. In addition to the *Transportation Master Plan*, Adams County concurrently conducted a planning process for the *Comprehensive Plan*, and the *Parks, Open Space, and Trails (POST) Plan*. Combined, these three plans will help guide decision making related to land use, transportation, and parks, open space, and trails and help the county achieve a coordinated vision for the future. Each plan takes a holistic view of the entire county for a long-term vision that will direct planning for the next ten years and shapes the county beyond that. These three plans are created to support goals of a safer, resilient, more equitable, and more prosperous county by creating a legacy planning effort for future generations.

1.2 INTEGRATION BETWEEN THE THREE PLANS

The *Comprehensive Plan* is the foundational document for the larger family of Adams County plans. Taken holistically, the three plans examine opportunities for increasing sustainability and preservation, managing growth, and improving accessibility. The *Transportation Master Plan* and the *Parks, Open Space, and Trails Plan*, for instance, address accessibility by giving attention to off-street trails used primarily for recreation and connector paths that access parks and open space properties, and by focusing on land use connections throughout the county. *The Comprehensive Plan* and *Parks, Open Space, and Trails Plan* both address the role of land uses in rural preservation. *The Comprehensive Plan* identifies current conditions and areas of stability and change. Through this analysis, future land use maps were developed to help Adams County achieve its vision. In the process of developing these maps, it was crucial to coordinate efforts to ensure that rural lands are preserved and adjacent land uses are compatible.

1.3 VALUE LENSES

The three lenses of Equity, Sustainability, and Livability have been integrated into each step of the planning process. Throughout

analyzing the existing conditions, developing future scenarios, and creating goals and policies for the community to implement, the lenses were, and continue to be, key considerations.

1.3.1 DESCRIPTIONS OF EACH LENSE

Equity

The vibrance and strength of a community emerges from diversity and equity. Equity can be measured through the distribution of resources, access to those resources, and affordability and experiences. For the transportation network, equity means providing full community access so all users can enjoy opportunities to commute to work, travel to school, visit stores, and recreate. Removing financial and physical barriers, along with providing travel opportunities where they are currently lacking, are critical to make sure residents can access Adams County regardless of age, ethnicity, gender, income level, or ability.

Sustainability

Sustainability is a part of Adams County's identity. Sustainability is recognized through the conservation and celebration of the qualities and characteristics that make the county unique, including natural resources, habitat, and riparian environments. For the mobility network, this means identifying opportunities to make travel more sustainable by promoting electric vehicles, shifting more trips to non-driving modes, and fostering walkable communities.

Livability

In western Adams County, there has been a recent expansion of the rail transit system and there have been commensurate shifts in development patterns that are resulting in mixed use, compact, and walkable neighborhoods where residents can more easily access various destinations. This trend is an example of how Adams County is focused on becoming a more livable area for residents and visitors.

1.4 PLAN PURPOSE

This *Transportation Master Plan* serves as an update to the *Imagine Adams County Transportation Master Plan* adopted in December 2012. That plan provided an update to the multimodal transportation plan of 1996, intended to continue guiding the implementation of transportation expansions and upgrades through the year 2035. The goals of the 2012 Plan were to:

- Coordinate with local and adjacent municipalities on local and regional transportation efforts
- Develop a prioritization process to guide implementation of transportation projects

- Pursue methods to finance transportation improvements by working with private developers and local municipalities to obtain regional, statewide, and national funding
- Coordinate locally, regionally, and with Regional Transportation District (RTD) to improve public transportation in Adams County
- Coordinate human services transportation so it is more efficient and affordable and provides countywide coverage for people with mobility challenges
- Coordinate county, city, and regional commuter and recreational bicycle and pedestrian travel through dedicated on and off-street facilities
- Establish and implement county design standards including "complete streets"
- Preserve the unique character of selected scenic roadways
- Coordinate land use and transportation

The mobility network and travel demand patterns in Adams County have changed since the 2012 plan; considering transportation needs today and to the future to 2040, Advancing Adams addresses short- and long-term needs for:

- Integration with the current and future land use for the county, by understanding the type and magnitude of travel demand
- Incorporation of evolving preferences of the community, including a desire for increased transportation options that include bicycling, walking, and riding transit
- Leveraging of new assets within the county such a commuter rail and regional trails
- Adoption of policies and programs that leverage and plan for new technologies, so they can be implemented in a way that is in line with the county's goal
- Developing a project prioritization methodology that reflects the community's goals
- Successfully positioning the county for new and evolved funding sources

1.5 EXISTING CONDITIONS SUMMARY

The Phase 1 Existing Conditions report provides a full documentation of the existing transportation network in Adams County and highlights opportunities for strengthening connectivity throughout the county. During Phase 1 of the planning process, a set of challenge and opportunity areas were identified through an assessment of the Adams County roadway, transit, bicycle, and pedestrian networks. Considering

Adams County has just over half a million residents and nearly 140,000 commuters traveling into the county for work each day, the transportation network is a critical asset for accommodating the demands of a fast-growing population and economy.

The Phase 1 analysis resulted in the following key findings about the unique nature of mobility in Adams County:

Driving

The Adams County roadway network includes Adams County-owned roadways and CDOT-owned roadways, as well as paved and unpaved roadways. The roadway network provides a connected and efficient means of moving vehicles, including freight, to and through Adams County.

Walking

The pedestrian network in Adams County consists of sidewalks and crossings. Based on an inventory completed by the county, there are 407 miles of sidewalks in the unincorporated parts of county and about 13 miles of missing sidewalks.

Bicycling

The bicycle network in Adams County consists of on and off-street bicycle facilities. These facilities are primarily in the western portion of the county. There are 31 miles of bike lanes and shared use paths used for both recreation and transportation.

Transit

Transit in Adams County consists of local and regional buses, commuter rail, FlexRide (which is the RTD first and last mile service), paratransit and human service providers. Transit investment in Adams County has been high in recent years with the addition of the B and G rail lines as well as the recent opening of the N Line. These rail lines connect various parts of Adams County to downtown Denver, greatly improving access to jobs and other amenities. However, there is no fixed route service in the eastern portion of the county.

Safety

The majority of crashes in Adams County have historically occured in the southwest portion of the county. The number of crashes resulting in severe injuries stayed close to the six-year average of 60 severe injuries per year, while the number of crashes resulting in deaths has steadily been increasing since 2013, with the exception of a decline in 2018.

Parking

Adams County has nearly 13 square miles of off-street surface parking, 97% of which have impervious surfacing. Recent studies of on and off-street parking revealed that the county generally has an excess of parking and opportunities to better match parking demand with supply.

Freight

Adams County has a high level of freight activity due to its proximity to Denver, presence of distribution and logistics centers, access to multiple interstate highways, and presence of freight railroad lines. I-270 is the main freight corridor, with trucks constituting 19% of vehicle traffic on average.

1.6 FIVE STRATEGIC CORRIDORS

As part of *Advancing Adams*, five strategic corridors were selected for deeper analysis and identification of opportunities for strengthening connectivity, developing a stronger tie between transportation and land use, and tying major travel corridors in with Adams County's growing trails network. The five strategic corridors are:

1. Federal Boulevard
2. Washington Street
3. Pecos Street
4. 104th Avenue
5. 120th Avenue

Each corridor presents different challenges and opportunities; for example, where Federal Boulevard is currently auto-centric with limited pedestrian access, 120th Avenue maintains a rural parkway feel where travel by other modes can be challenging despite adjacent trail access. **Chapter 2** provides an in-depth analysis of each corridor and a detailed set of recommendations for transforming the five corridors into multimodal assets that advance the Advancing Adams goals.

1.7 PLANNING PROCESS

The *Transportation Master Plan* was developed as a tool to guide how mobility can play a role in shaping the Adams County community. In alignment with the overall explorations and planning work, engagement for *Advancing Adams* was divided into two consecutive phases: Phase 1, Grounding and Phase 2, Plan for the Future. Each phase provided a distinct touchpoint to engage the community. During both engagement phases, community members were presented with information and questions relating to all three plans to ensure an integration of these conversations, preferences, and priorities as a vision for the future and proposed policies for achieving it are put forward. At the outset of Phase 1, the planning team introduced the community to the *Advancing Adams* planning process through an education campaign and a multi-pronged communication and outreach strategy. At project launch, a press release was distributed and published, introducing the planning process to communities across the county. Engagement mediums included a project website that served as an information hub about the three plans and a resource for sharing updates, engagement opportunities,

draft recommendations, and points of contact with the planning team.

Throughout both phases, the planning team utilized a variety of tools and media to keep community members informed and offer opportunities for direct engagement with the planning work. Taking place in 2020 and 2021, engagement was directly impacted by the COVID-19 pandemic and virtual engagement techniques were used to engage with community members. Activities like online surveys, virtual public workshops facilitated through Zoom, and live polling through online tools like Mentimeter ensured the team was hearing from a broad cross-section of residents despite limitations on face-to-face engagement. Early engagement of key stakeholders was also delivered virtually. For example, the Transportation Master Plan team led a virtual forecasting exercise with county staff to discuss the implications of COVID-19 on travel demand in Adams County.

In-person meetings and events were held during the second phase of the planning process to show community members initial recommendations and verify that the initial direction for *Advancing Adams* matched the vision of the community. Phase 2 also included a virtual public workshop in October 2021 where community members were presented with scenarios and preliminary recommendations, along with a summary of initial community feedback and insight collected from surveys and in-person engagement events. At this final workshop, community members were

Figure 1.1: Example of a Mentimeter polling question on transportation

engaged in interactive polling to submit ideas, respond to questions and presented material, and confirm or suggest revisions to overall plan recommendations and priorities (**Figure 1.1**). A full profile of the community engagement activities that were conducted as part of the *Advancing Adams* process is included in the Comprehensive Plan.

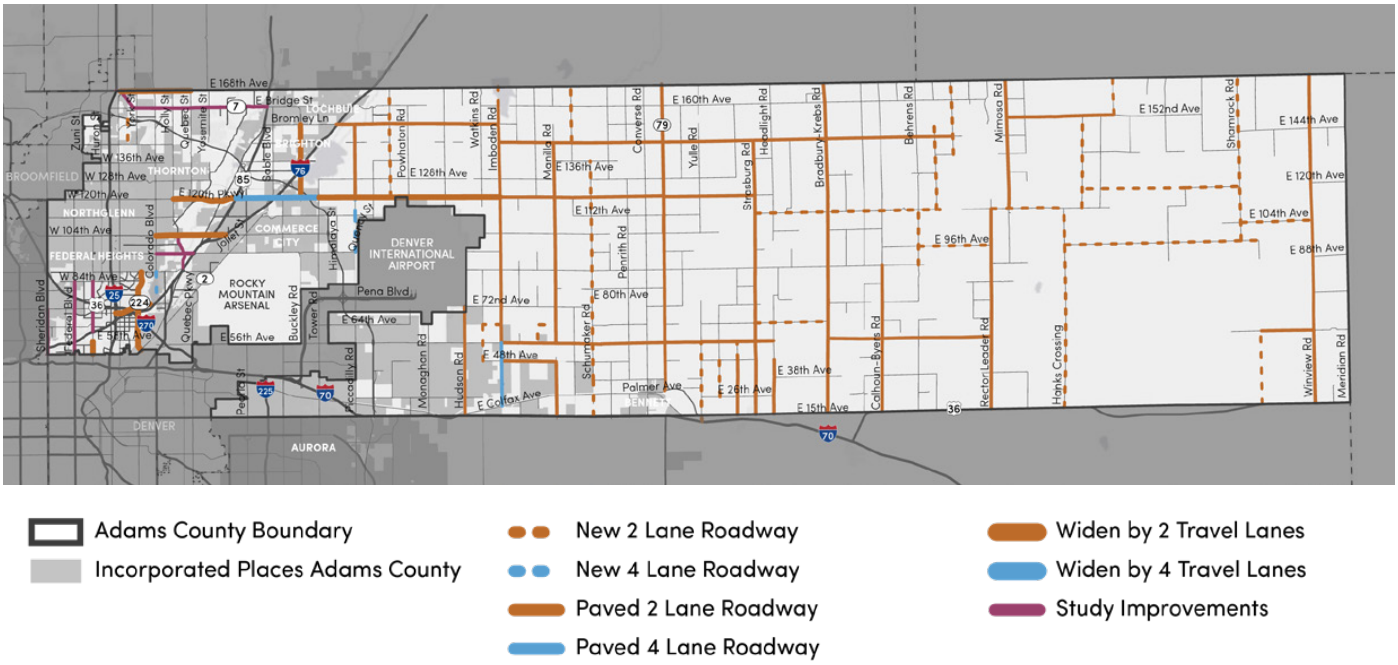
1.8 MOBILITY RECOMMENDATIONS

Chapters 3, 4, 5, and 6 feature recommendations for future roadway, pedestrian, bicycle, and transit networks that are intended to cohesively provide a strong level of community connectivity throughout the county. **Chapter 7** discusses how Adams County can leverage emerging technologies and trends in mobility to help make these visionary travel networks a reality.

1.8.1 ROADWAY NETWORK

The roadway plan in **Chapter 3** focuses on ensuring that the portions of the county that are most likely to have higher levels of development per the *Advancing Adams Comprehensive Plan* are served by the roadway network and that areas of dense development with high transit access offer multimodal corridors that comfortably accommodate people driving, walking, bicycling, and riding transit (**Figure 1.2**). In addition, **Chapter 3** highlights a framework Adams County can use moving forward to make decisions about how to prioritize the management and paving of gravel roads.

Figure 1.2: Adams County Proposed Roadway Network



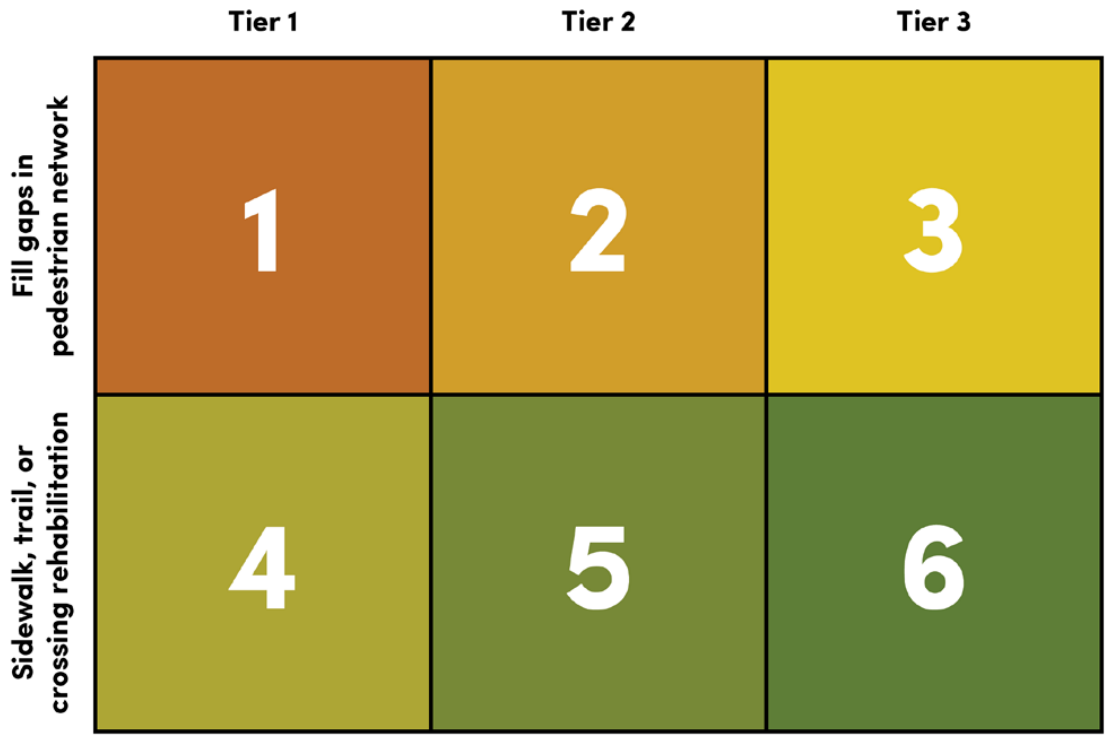


Figure 1.3: Adams County Pedestrian Prioritization Methodology (source: Fehr & Peers)

1.8.2 PEDESTRIAN NETWORK

Chapter 4 discusses opportunities to strengthen pedestrian connectivity in Adams County by completing sidewalk gaps in key areas, rehabilitating damaged sidewalks, implementing enhanced pedestrian crossings, and fostering connectivity between the sidewalks and trails network. Recommendations for improving pedestrian facilities are prioritized based on a set of factors including proximity to transit, trails, open space, and key community destinations like grocery stores, as well as the crash history on the adjacent corridor. The prioritization is divided into three tiers to help Adams County assess which pedestrian facilities should be completed or upgraded in the near-term vs. long-term (**Figure 1.3**).

1.8.3 BICYCLE NETWORK

While Adams County has a growing network of bicycle lanes that are being implemented by incorporated cities, **Chapter 5** lays out a vision for a fully connected network of on-street and off-street bicycle facilities that will serve bicycling trips throughout the County and will also connect directly with existing and planned facilities in communities that border Adams County.

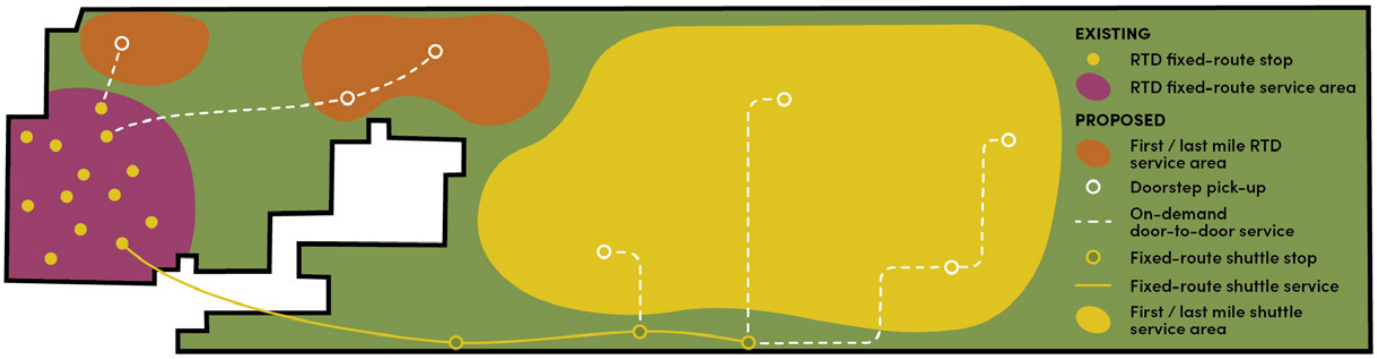


Figure 1.4: Adams County Transit Vision

1.8.4 TRANSIT NETWORK

Chapter 6 addresses the three primary challenges associated with utilizing transit service in Adams County today: a lack of first and final mile access to transit stops in many portions of the County, a lack of transit service in eastern Adams County, and low service levels in central and western Adams County. To address these challenges, the *Advancing Adams* transit recommendations call for countywide Transportation Demand Management strategies that will help encourage more community members to utilize transit services and a preliminary concept for on-demand transportation services that will feed shuttles and connect riders in with the wider existing transit system (**Figure 1.4**).

1.8.5 FUTURE MOBILITY

Chapter 7 highlights opportunities for Adams County to become a key driver in moving the region forward in transforming transportation networks into technology-driven public assets that efficiently move people and goods. Solutions like Mobility as a Service (**Figure 1.5**), shared mobility, electric vehicle infrastructure, autonomous and connected vehicles, and mobility hubs are all profiled as potential strategies for balancing the increasing travel demand in Adams County with limited right of way to ensure future travel demand is accommodated as efficiently as possible.

1.9 IMPLEMENTATION

Advancing Adams is a roadmap for reshaping transportation in Adams County over the coming 30 years. **Chapter 8** details a prioritization process that was undertaken to help identify project recommendations that should be pursue in the short- (2022-2030), medium- (2030-2040), and long-term (2040-2050), with each resulting prioritized set of projects shown in order of the project's

likelihood to help the county meet the mobility goals of *Advancing Adams*.

Chapter 8 also includes an implementation guide and performance monitoring framework to help Adams County track plan implementation. Progress will be monitored by regularly tracking performance measures like crash severity, availability of multimodal transportation options, and alignment of transportation and land use. And to ensure that the *Transportation Master Plan* can be fully implemented, a guide on federal, state, regional, and local funding opportunities is included to guide the county on the range of funding sources available.

1.8.7 LOOKING AHEAD

The *Transportation Master Plan* component of *Advancing Adams* considers mobility holistically and was developed with an awareness that land use and transportation are equal partners in fostering a high quality of life and a distinctive community character. The following chapters paint a vision of an Adams County that is seamlessly connected with all other Front Range communities while offering travelers of all ages and abilities a range of comfortable facilities that can be enjoyed on all modes of travel. A forward looking plan, *Advancing Adams* lays a groundwork for celebrating the best of Adams County today while preparing for the mobility network of tomorrow.

Figure 1.5: Graphic of Mobility as a Service (source: Fehr & Peers)

Source: Design Workshop

CHAPTER 2

FUTURE MOBILITY PLAN

2.1 - BIG IDEAS

This chapter summarizes the Transportation Master Plan's approach to developing each of the modal network recommendations—for walking, biking, taking transit, and driving—as well as programmatic and policy recommendations to support infrastructure improvements.

The mobility framework is developed based off multimodal network enhancements that are reflective of land use changes proposed in the Comprehensive Plan. The Transportation Master Plan applies a layered network approach to ensure each street is prioritized for the appropriate mode, ultimately creating a connected network for each mode, but acknowledging that every street cannot prioritize every mode.

Recommendations are developed with an emphasis on innovation and sustainability for the future of transportation, in order to move the County towards its goal of becoming the most innovative County in America. With an eye toward innovation, the Transportation Master Plan sets the County up to provide the transportation infrastructure and options to reduce reliance on the private automobile and improve quality of life.

Lastly, the Transportation Master Plan prepares the County for anticipated growth in travel demand, especially in the central and eastern portions of the County. In order to accommodate this growth, the Transportation Master Plan proposes roadway capacity projects, opportunities to expand transit beyond the Regional Transportation District (RTD) service area, expansion of the bicycle network, and an updated prioritization process for paving gravel roads.

2.2 - MOBILITY FRAMEWORK

The Adams County Transportation Master Plan was developed using a layered network framework, which focuses on how the County's transportation network can function, as a system, to meet the needs of all users. The layered network concept is recommended by the Institute of Transportation Engineers (ITE) and emphasizes safety for all modes of travel, while supporting key County principles and policies.

Accommodating a range of users on a single roadway is a common transportation planning goal. While achieving a fully multimodal street may be possible in some instances, a layered network approach is often a more feasible mechanism for accommodating all users. A layered transportation network is based on the idea that different roadway and travel facility types can work together to provide mobility. A multi-lane arterial can provide opportunities for efficient vehicle travel while a parallel local street can provide comfortable facilities for walking and biking.

Layered networks are an extension of the Complete Streets philosophy, but clearly recognize that it can be inappropriate to accommodate all modes on all streets with a high level of service for all. The layered network concept serves as a strong planning framework for Adams County.

By designing streets for certain uses, incompatible uses are often discouraged. For example, a network of streets designated for freight can eliminate truck traffic cutting through residential neighborhoods or on low stress bicycle corridors. This chapter illustrates how the Transportation Master Plan applies the layered network concept to offer a future of modal networks that will support all users.

Figure 2.1: Existing Neighborhood in Adams County

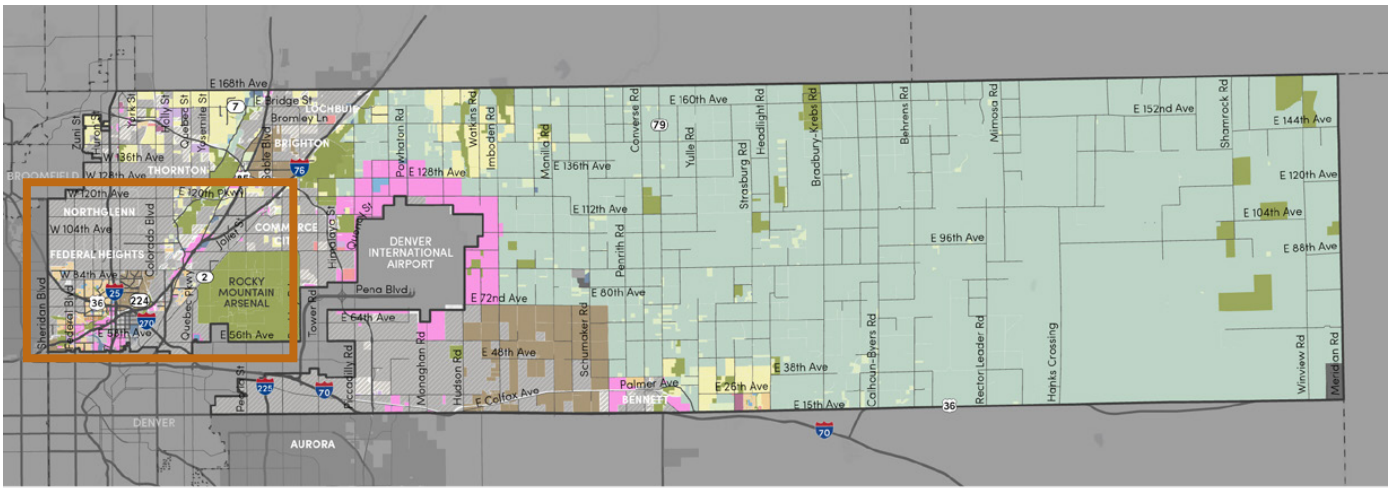
2.3 - PREFERRED MOBILITY SCENARIO

As described in **Chapter 1**, an alternatives analysis which integrated all three plans helped inform the recommendations for these plans. This process assessed the potential alternative future land use and transportation options and the implications of each. Based on community feedback and analyses, one preferred scenario was selected from this process.

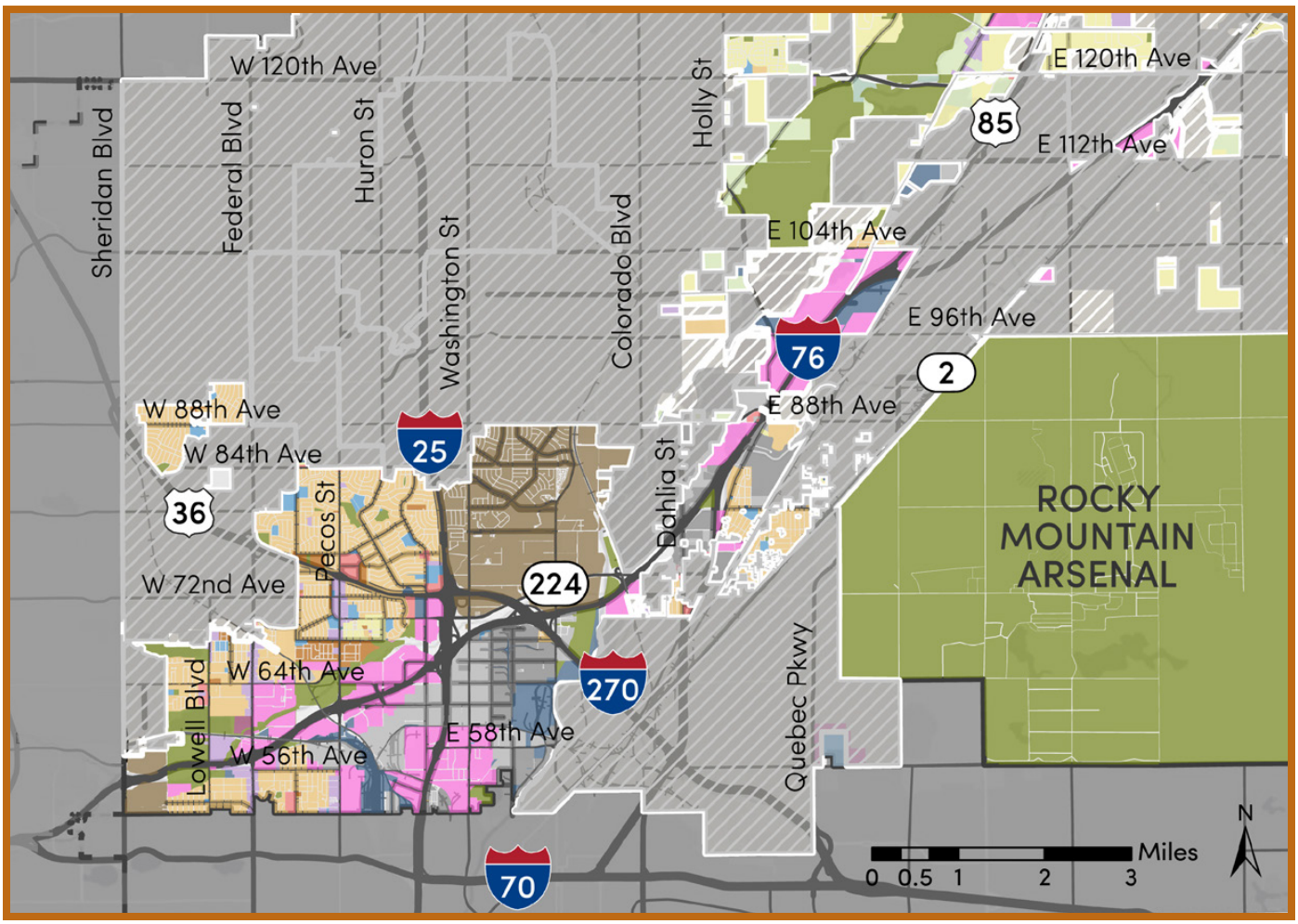
The preferred mobility scenario identified high priority corridors for people walking, biking, taking transit, and driving. Selection of these corridors was driven in large part by the future land use plan to ensure that residents, employees, and visitors of the County can comfortably and conveniently travel to key destinations. As development and growth patterns evolve according to the Comprehensive Plan's future land use plan, investments in the multimodal transportation networks will be integrated with land use. This preferred scenario is shown in **Map 2.1**.

The outcomes of the preferred mobility scenario are evident throughout the Transportation Master Plan but most directly in the modal maps and recommendations for the Bicycle Network, Roadway Network, and transit system enhancements.

MAP 2.1: PREFERRED FUTURE LAND USE MAP



- Adams County Boundary
- Incorporated Places Adams County
- City Boundaries
- Residential Low
- Residential Medium
- Residential High
- Agriculture Small-Scale
- Agriculture Large-Scale
- Commercial
- Industrial Low
- Industrial Medium
- Industrial High
- Institutional
- Public
- Mixed Use
- Mixed Use Commercial
- Activity Center
- Parks & Open Space
- See Subarea Plan



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2.4 - PROGRAMS AND POLICIES

This section highlights opportunities to meet the Transportation Master Plan's vision using programs and policies that incentivize alternative travel modes to the private vehicle, implement bicycle and pedestrian infrastructure, and support health and safety outcomes. Beyond simply maintaining and building physical infrastructure, programs and policies ensure that roadways, active transportation facilities, and transit services are efficient, effective, and intuitive. These programs and policies also align the County's transportation system with broader community values and move the County toward its vision for transportation.

2.4.1 - BICYCLING AND WALKING

Wayfinding

The Transportation Master Plan recommends that Adams County expand the existing bicycle wayfinding and signage and the recreational signage recommended in the Parks, Open Space, and Trails (POST) Plan. Wayfinding signage helps people biking for transportation as well recreation better navigate the existing bicycle network and feel more comfortable riding somewhere new. The County should develop and implement a Wayfinding Plan that will help people walking and biking intuitively navigate the County. This should include branding guidelines that identifies key destinations to include in the signage. Wayfinding signage should be prioritized anywhere an off-street trail terminates. Signage in these locations should indicate where to go to continue on another low stress bicycle facility or give directions to major destinations nearby. An effective wayfinding system, especially one that is branded and includes distances or times, can encourage more people to bike because they can feel more confident navigating the system and staying on designated bicycle facilities.

Neighborhood Connections

Public input and an analysis of the existing transportation network highlighted the lack of connectivity between neighborhoods due to the curvilinear street network, especially for people walking or

Figure 2.2: Bicycle or Pedestrian trail at the end of a cul-du-sac

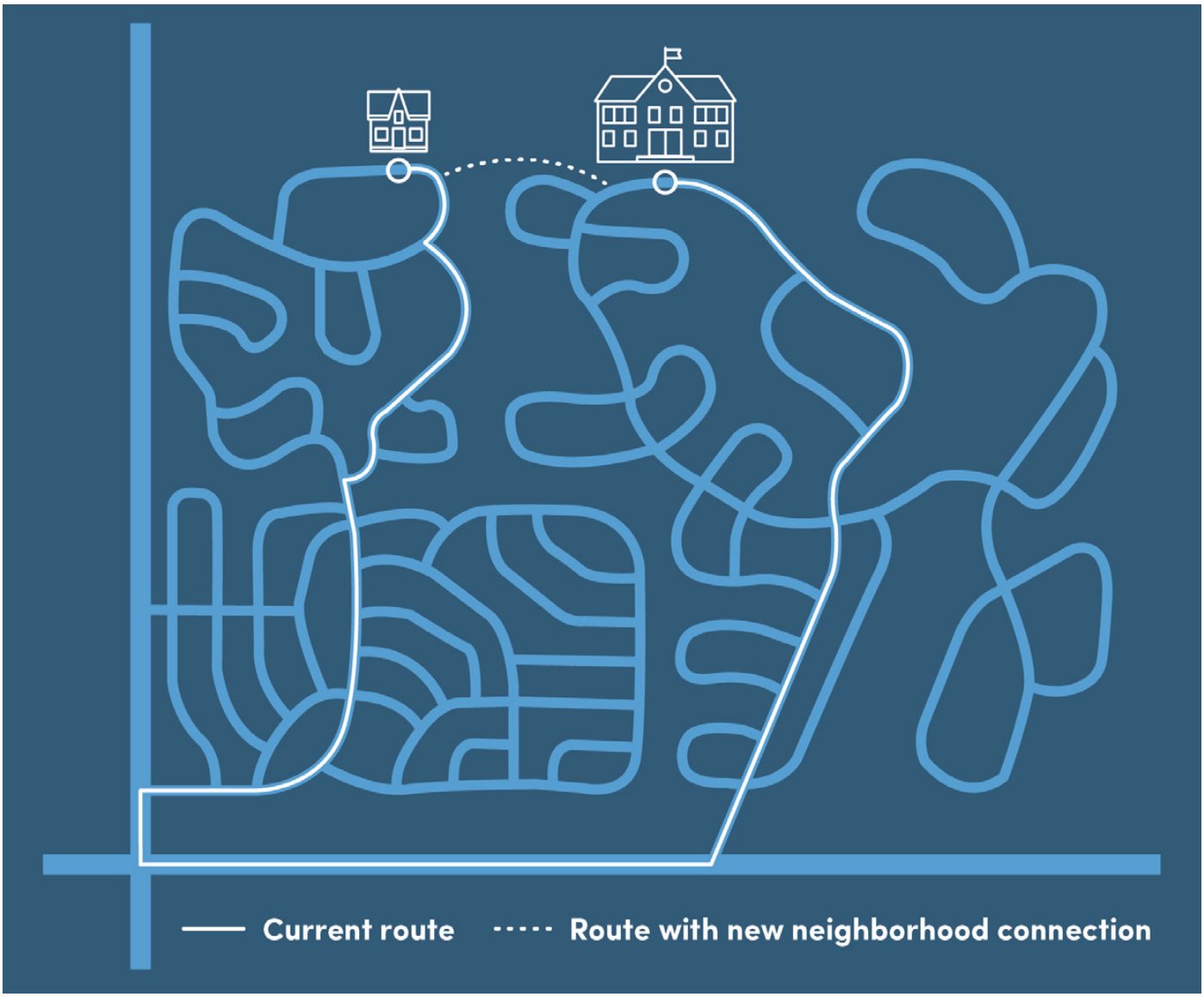


Figure 2.3: Neighborhood Connections Concept

bicycling. Opportunities for new trail connections between neighborhoods should be considered (**Figure 2.2**). Creating a trail at the end of a cul-du-sac or between two unconnected streets can greatly decrease the trip lengths for people walking and bicycling (**Figure 2.3**). This can make taking trips by walking or bicycling easier and more feasible. In established neighborhoods these connections can be created by finding existing easements or right-of-way or by acquiring new right-of-way if none currently exists. It is recommended that all new developments be required to provide pedestrian and bicycle connections where there is a lack of connectivity in the roadway network (e.g., cul-de-sac).

Complete Streets Policy

Per the USDOT, "Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Complete Street policies

are set at the state, regional, and local levels and are frequently supported by roadway design guidelines." Adams County does not currently have a Complete Streets policy. Consideration should be given to adopt a Complete Streets policy that strengthens specific recommendations for the type of low stress pedestrian and bicycle facilities for each street classification. By adopting a Complete Streets policy, the County would direct their transportation planners and engineers to routinely design and operate the entire right-of-way to prioritize safer, slower speeds for all people who use the road, over high speeds for motor vehicles. This policy should also address aesthetics, landscaping, and lighting to enhance appearance through better looking streets as well as provide safer streets for all modes. These revisions should be guided by the DRCOG Regional Complete Streets Toolkit.

Transportation Demand Management

Transportation Demand Management (TDM) is a set of strategies and policies for improving the efficiency of a transportation system by providing travelers with opportunities to choose modes other than a single occupancy vehicle and thus, improve air quality. Rather than focusing on meeting travel demand through expanded infrastructure, TDM identifies barriers to using existing, but often under utilized options, as well as generating a mechanism for addressing those barriers. Adams County is a member of Smart Commute Metro North that works to implement TDM strategies across the north Denver metro region. The County should continue to work with Smart Commute Metro North to market their resources throughout Adams County. Education and information campaigns on transportation options will expose County residents to alternatives to driving, making it easier for them to plan trips using transit or bike. By facilitating and supporting the distribution of educational materials through County communication, Adams County can instill interest in active modes and teach residents how to use transit, how to bike safely, and how to connect with other interested community members. Adams County can also explore integrating bicycle awareness into drivers' education classes and materials.

Bike Parking

Adams County should explore adding bike parking, particularly covered, secure bike storage – on County property and encourage the construction of additional bike parking in new developments and key destinations like RTD stations, major employment centers, and shopping areas. County staff should coordinate with RTD to add covered bike storage at the N Line commuter rail stations. The County should explore options for incentivizing existing developments to add secure bike parking, such as tax incentives or a grant program. Beyond

Figure 2.4: Walking School Bus

secure bike parking, the County should also accommodate alternative micromobility such as e-bikes and scooters by constructing micromobility parking in high-demand areas.

Safe Routes to School

The County should continue to coordinate with school districts and Smart Commute Metro North, promoting existing programs and seeking outside funding opportunities when possible. Safe Routes to School (SRTS) is a national program to enhance opportunities for students to walk and bike to school safely. Barriers to using active modes for getting to and from school can include a lack of comfortable and safe sidewalks and crosswalks, parent concern about children walking or biking alone, and travel distance. An SRTS program helps to document the concerns regarding travel safety, develop programs that can address some of these concerns, and chart a path for implementing infrastructure improvements and upgrades that address concerns. Adams County has applied SRTS grant funding for educational campaigns in the past. The County should identify opportunities to apply for and distribute SRTS funding towards qualifying infrastructure projects. Smart Commute Metro North currently promotes "walking school buses" which are organized walking groups for students who live close enough to school to walk together.

Maintenance

Roadway maintenance should ensure bikeways are clear of debris and larger objects. Enforcement of illegal parking in bike lanes could extend beyond ticketing drivers to towing vehicles. Once the County installs additional multimodal infrastructure, routine roadway maintenance activities should also consider bikeway conditions. For example, the Street Paving Program can extend to bike lanes since uneven pavement, cracks, potholes, and other pavement quality issues impact people biking as well as people driving.

Pedestrian Crossing Guidelines

The County should adopt pedestrian crossing standards to ensure all future intersections or midblock crossings that are built are in line with national best practices for safe and comfortable crossings for all users.

2.4.2 - TRANSIT NETWORK

FUTURE TRANSIT FEASIBILITY STUDY

Adams County Council of Governments (AdCOG) Subregional Forumh as previously discussed conducting a Transit Feasibility Study for Adams County. AdCOG should continue to strongly consider the value of initiating that study in order to provide clear direction and priorities on future investments in transit that can make transit a viable option for residents and employees across the County. This study could include a Transit Propensity Analysis and review of transit best practices in rural areas to guide recommendations and priorities for operational models that are appropriate for the population and land use in various portions of the County. **Chapter 6** of the Transportation Master Plan provides preliminary ideas that can be further assessed and defined as a part of this study.

Connect Transit to Other Modes

Adams County should invest in connecting public transit to other modes of travel through strategically located mobility hubs, near activity centers, where one or more transit routes and bicycle facilities intersect. These hubs will provide shared multimodal facilities and may include elements such as bicycle parking, bikeshare and car-share, multimodal information, park-and-rides, and curbspace for shuttles and drop-off vehicles.

Transit Oriented Development

High-frequency transit is only viable with supportive land use patterns such as mixed-use with higher-density residential, employment and services. The plan, in combination with the Comprehensive Plan, supports a stronger stance on maximizing infill/ redevelopment potential where service exists or is planned. Adams County should continue to plan and development land use and transportation with special consideration to locations around high frequency transit.

2.4.3 - ROADWAY NETWORK

Paving Prioritization Process

The Adams County Public Works Department manages the Gravel Road Resurfacing Program for residents in eastern Adams County. The intent of this program is to fund safe and efficient gravel roads which have been identified as unstable and hazardous. Public Works – Operations Division currently applies a prioritization process inspects roads on a regular basis to evaluate road conditions and maintenance need. **Chapter 3** of the Transportation Master Plan updates this prioritization process based on staff feedback, national best practices, and lessons learned in Adams County. The County should apply this updated

prioritization process to inform prioritization of paving gravel roads.

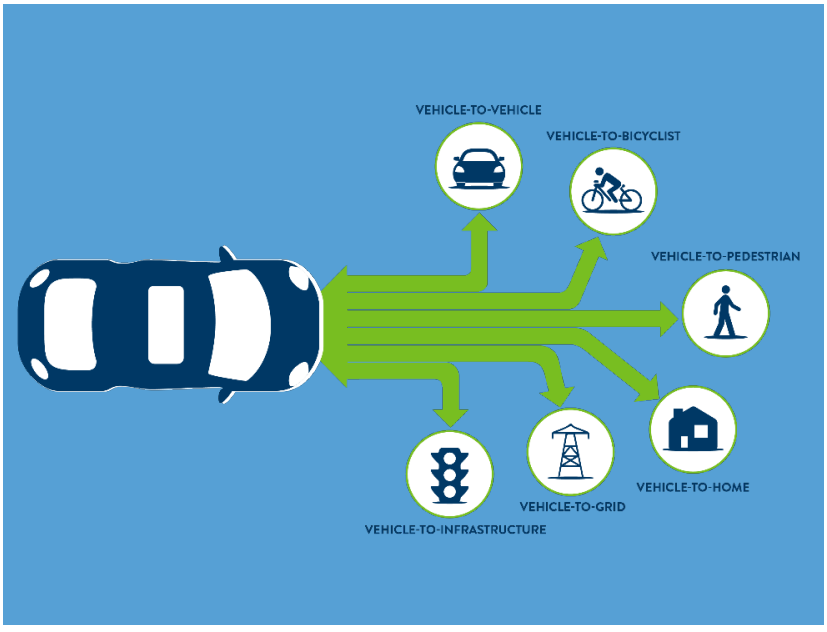
Regional Travel

The County should work cooperatively with regional partners including the Denver Regional Council of Governments, the Colorado Department of Transportation, other member jurisdictions, and neighboring counties to identify opportunities to provide multimodal regional connections along regionally significant transportation corridors and trail easements.

Freight Mobility

The County should develop and maintain a truck routing plan with designated truck routes to provide commercial access and minimize truck travel through residential neighborhoods. This should build on the upcoming update to the statewide Freight Plan.

Connected Vehicle Concept (source: Minnesota Department of Transportation)



2.4.4 - SAFETY AND INNOVATION

Electric Vehicles

The County should conduct a study identifying locations for EV charging stations at County facilities. The County can also encourage, prioritize, and support the purchase of electric vehicles through the design, management, outreach, education, policy updates, broad-based coordination, incentives and operations of streets and wayside infrastructure such as electric vehicle charging stations.

Vehicle Sharing

The County should encourage and support partnerships to provide vehicle-sharing opportunities. Programs should include a full spectrum of vehicle types (e.g., delivery trucks, pickup trucks, hybrid vehicles, scooters/ mopeds, etc.) with electrification of the shared fleet.

Autonomous and Connected Vehicles

Although autonomous and connected vehicles are only in their nascent stages, the County should begin to think about policy and program development that can ensure autonomous and connected vehicles move the County towards its goals. This can be done by ensuring that autonomous and connected vehicles and infrastructure reduce travel time, support and encourage public transit, reduce greenhouse gas emissions

(GHGs) and reduce low-occupancy trips during peak time. This can be done by prioritizing autonomous vehicles that are electrically powered, shared or operated as a fleet and by disincentivizing zero-occupancy vehicles.

Vision Zero

Vision Zero programs have been adopted by municipalities around the country at a growing rate. Communities are committing to eliminating traffic crashes that result in fatalities or serious injuries by providing safety training, implementing engineering solutions that are proven to slow vehicle speeds while reducing conflicts with other roadway users, and forming multidisciplinary initiatives for implementing safety programming. As a first step, Adams County should develop and adopt a Vision Zero Action Plan. The County currently participates in DRCOG's Vision Zero Work Group but should also consider joining Colorado's statewide program – Moving Towards Zero Deaths. The County could also consider having the Board of County Commissioners make a proclamation in support of the state initiative, demonstrating the County's commitment to the vision of zero traffic-related deaths.

FHWA Local Road Safety Plan

Adams County should develop and implement a FHWA Local Road Safety Plan. Leveraging opportunities to incorporate safety programming into all County transportation planning efforts is crucial. The Federal Highway Administration's (FHWA) Local Road Safety Plan (LRSP) program is one example of a road safety planning effort the County can undertake. The LRSP program focuses specifically on safety for local (non-highway) roadways, where fatality rates are often higher than on highways, even though traffic volumes are lower. Local roads tend to have more conflict points where crashes occur like intersections. In addition, local roads have less separation between modes, which can increase crash severity when speed limits are not observed. While safety initiatives can often focus on identifying opportunities for improving conditions on major roadways, an LRSP is an opportunity to focus on all streets within the jurisdiction's control.

2.5 – FIVE STRATEGIC CORRIDORS

To highlight specific opportunities for focused improvements in key areas, *Advancing Adams* selected five strategic corridors that were analyzed in greater detail as a part of the planning process—Federal Boulevard, Washington Street, Pecos Street, 104th Avenue, and 120th Avenue (**Map 2.2**). The *Advancing Adams* Existing Conditions and Opportunities Report in **Appendix A** profiled the current state of the corridors and provided opportunities for modifying the corridors to promote multimodal travel. The following section describes the transportation infrastructure (transit, bicycle, pedestrian, and vehicular) that exists on each corridor and shares opportunities for transportation improvements that would both enhance mobility and complement concepts put forward in the Comprehensive and Parks, Open Space and Trails Plans.

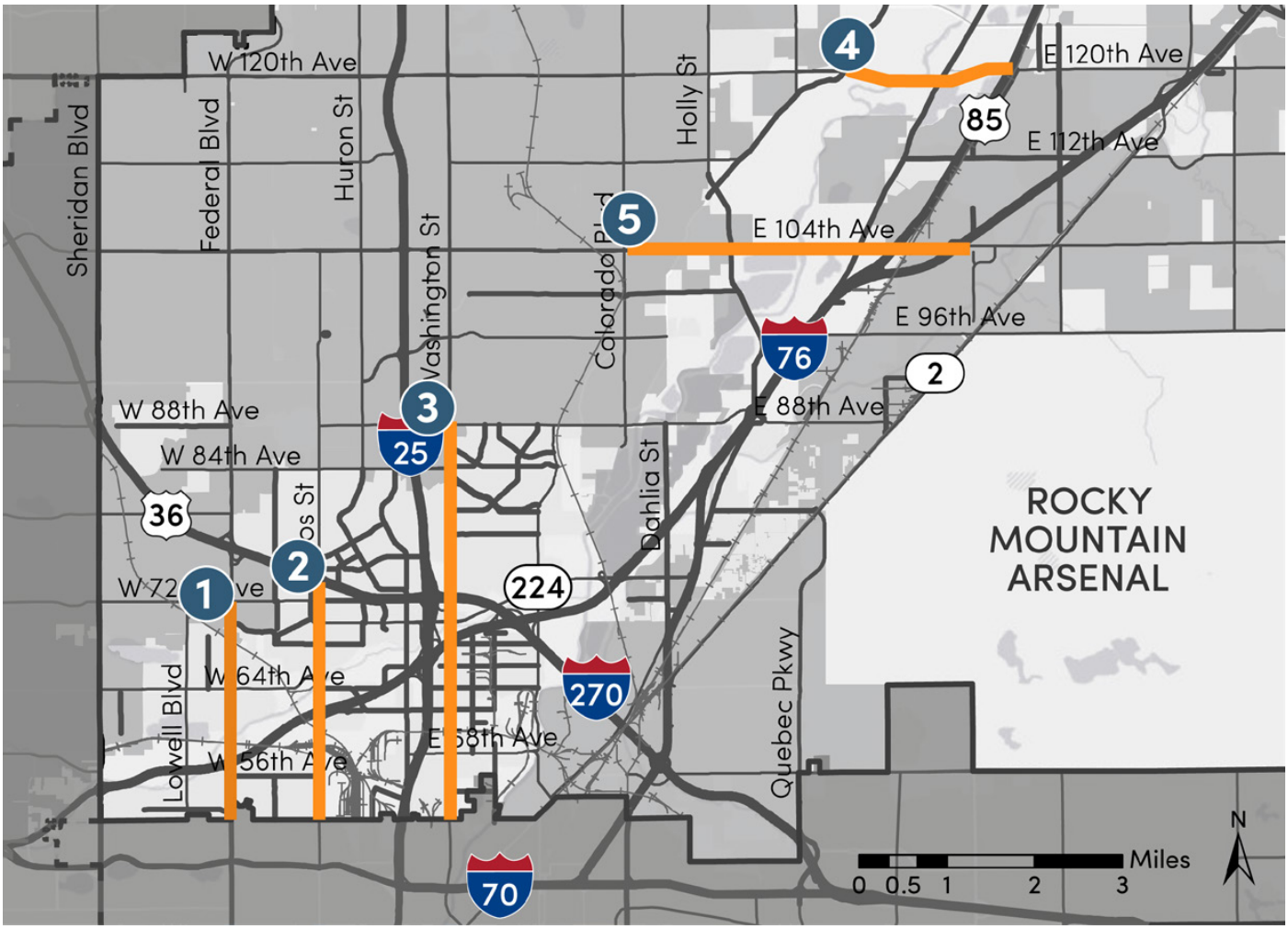
The *Advancing Adams* team considered a range of transportation opportunities for each corridor including road diets (the reallocation of vehicle travel lanes to other uses such as enhanced bicycle or pedestrian facilities), enhancing facilities for those walking or rolling, and leveraging new technologies for forming new connections or operating existing facilities with greater efficiency.

2.5.1 – OPPORTUNITIES ANALYSIS

Focus group sessions were convened for each strategic corridor. These sessions provided an opportunity for agencies such as the Colorado Department of Transportation (CDOT), the Regional Transportation District (RTD), City and County of Denver, and departments within Adams County to provide initial feedback on preliminary ideas. These conversations aided the project team in streamlining a list of initial ideas and focusing on opportunities that would address community needs as identified by stakeholders and be deemed feasible by agencies that will act as implementation partners.

In addition to conversations with stakeholders, a data-driven process was used to assess how each of the five corridors currently serves each transportation mode. In addition to the County-wide analysis described previously in this report, the corridor-specific analysis also included a preliminary assessment of peak hour roadway operations to determine whether ideas like reducing the number of travel lanes might be feasible. Operations were assessed by determining volume to capacity (V/C) ratios for portions of each corridor. V/C ratios were determined using the roadway segment capacities listed in the Denver Regional Council of Governments Focus Regional Travel Demand Model and the historic traffic volume data provided by Adams County. The traffic volume data

MAP 2.2: FIVE CORRIDORS CONTEXT MAP



- Five Strategic Corridors
- 1 Federal Boulevard
- 2 Pecos Street
- 3 Washington Street
- 4 120th Avenue
- 5 104th Avenue

provided by the County represented Average Annual Daily Traffic (AADT); peak hour volumes were derived using the assumption that the peak hour of travel represents 10% of daily traffic.

The V/C ratio conveys the quantity of vehicles utilizing a roadway at a given time as a share of the overall traffic-carrying capacity of that roadway. For the purposes of the five corridors analysis, it was assumed that a V/C ratio of less than 0.7 signifies the roadway segment has additional peak hour capacity and that some of the right-of-way currently dedicated to vehicle travel may be reallocated to other modes. A V/C ratio of between

0.7 and 0.9 signifies that the roadway is congested during the peak hour and drivers may experience some delays. It was assumed that some right-of-way reallocation might still be feasible under these conditions. A V/C ratio of over 0.9 signifies a location where existing peak hour congestion is an issue. A V/C ratio of 0.9 corresponds with a Level of Service E or F as illustrated in **Figure 2.5**.

It should be noted that this operational analysis was conducted using limited data and was intended to serve as a high-level screening for potential feasibility of treatments like road diets. A more rigorous analysis would be needed to conclusively assess feasibility of the opportunities offered in this plan.

Table 2.1 displays the challenges that were identified on each corridor along with the potential opportunities for improvements. Each corridor is profiled in greater detail in the following sections.

Figure 2.5: Level of Service and Volume to Capacity Ratio Concept (source: Fehr & Peers)

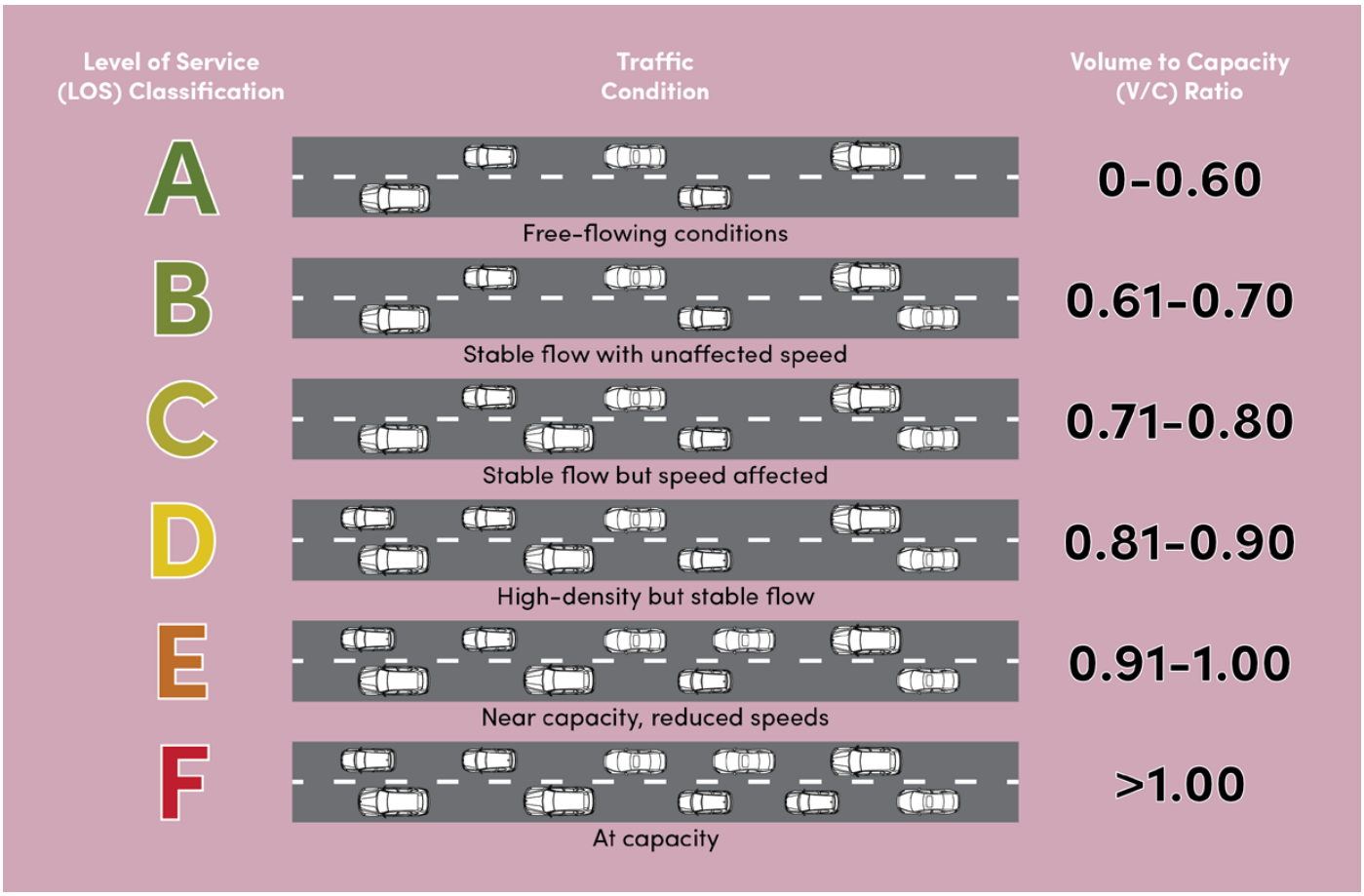


TABLE 2.1: EXISTING CHALLENGES AND OPPORTUNITIES ON THE FIVE STRATEGIC CORRIDORS

CORRIDOR	CHALLENGES	OPPORTUNITIES
Federal Boulevard	• Autocentric, with high speeds • High freight volume • CDOT-owned • Sidewalk gaps or inadequate sidewalks • Infrequent pedestrian crossings • Crosses multiple jurisdictions • Multiple character areas	• Connects to the Clear Creek Regional Trail • Commercial land uses with high bicycle/ pedestrian demand • Add pedestrian crossings • Expand pedestrian realm • Consider parallel corridor for bicycle facilities • High frequency transit (route 31); consider bus-only lanes and transit enhancements at intersections • Provides access to Clear Creek - Federal commuter rail station, and create transit-oriented development
Washington Street	• Autocentric, with high speeds • High freight volume • Sidewalk gaps or inadequate sidewalks • Infrequent pedestrian crossings • Crosses multiple jurisdictions • Multiple character areas	• Opportunity to become a creative district • Welby neighborhood generates demand for walking and biking • Opportunity for road diet to enhance the pedestrian realm, bicycle facilities, or transit amenities • Transit (route 12) • Add pedestrian crossings
Pecos Street	• High freight volume • Crosses multiple jurisdictions • Segments with limited bicycle and pedestrian facilities	• Connecting to the Clear Creek Regional Trail • High frequency transit (route 19); consider transit enhancements at intersections • Provides access to Pecos Junction commuter rail station; create transit-oriented development • Dense, mixed use development such as Midtown
104th Avenue	• CDOT-owned roadway • Limited bicycle and pedestrian amenities • Wide crossings, uncomfortable for pedestrians • -Infrequent transit service (route 104); low ridership due to land use and first/last mile gaps	• Critical connection to Denver International Airport • Possible trail connection to the Front Range Trail and South Platte Trail • Could become an east-west Parkway with planted medians and rural feel • Opportunity to extend the pavement edges and install detached multiuse trails and enhanced transit amenities
120th Avenue	• Gaps in multimodal access to Riverdale Park • Railroad crossing • Infrequent transit service (route 120)	• Leverage rural feel, and natural and cultural heritage • Existing adjacent multiuse trail • Become part of larger scenic trail loop • Add more multimodal connections • Critical east-west connection

MAP 2.3: FEDERAL BOULEVARD CORRIDOR

2.5.2 – FEDERAL BOULEVARD

The existing conditions analysis found that Federal Boulevard has the opportunity to become a transit-oriented development (TOD) hub for Adams County, particularly with underutilized and vacant parcels around the Clear Creek RTD station area. Incorporating mixed-use and different types of housing on the corridor while providing connections to transit could help transform Federal Boulevard to the auto-centric thoroughfare of today into a multimodal facility. It was also found that Federal Boulevard lacks a cohesive character; integrating streetscape elements like trees, plantings, pedestrian crossing treatment, public art, and other placemaking features can address this issue.

General recommendations for the corridor build off the work of the Federal Boulevard Multimodal Transportation Study completed in December 2021 and include:

- Establishing Federal Boulevard as an enhanced transit corridor
- Completing/upgrading the sidewalk network where feasible

to establish better pedestrian connectivity

- Making connections between Federal Boulevard and the Clear Creek Trail

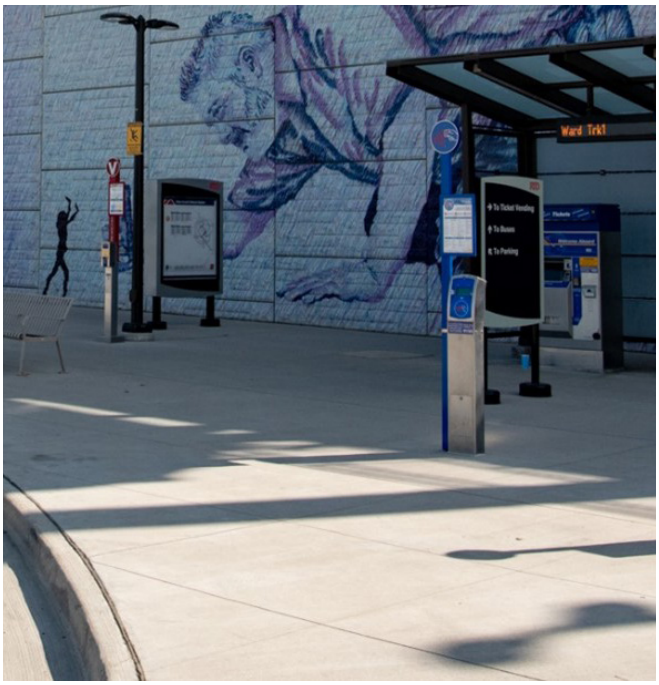
Adams County should coordinate with CDOT on any potential improvements. The combination of CDOT's jurisdictional oversight of the corridor along with the existing high volume of traffic within a constrained right-of-way impacts the County's ability to fully reshape the corridor.

2.5.2.1 - Enhanced Transit Corridor

In the near-term, the County can reimagine Federal Boulevard as an enhanced transit corridor with dedicated bus lanes that operate either in both directions or south in the morning and north in the early evening to match peak hour traffic flows (**Figure 2.6**). The bus lanes can be paired with enhanced bus stops that provide a comfortable shelter for riders, arrival times, and clear signage to support riders with trip planning (**Figure 2.7**). The County can also consider transit signal priority that improves reliability by ensuring buses can travel through an intersection on green signals and maintain scheduled arrival times at stops. The enhanced transit corridor would support the land use vision of transit-oriented development along Federal Boulevard. The recommendations for an enhanced transit corridor on Federal Boulevard align with opportunities that were explored through the Federal Boulevard Multimodal Transportation Study.

Figure 2.6: Example of a Dedicated Bus Lane in Downtown Denver (source: Fehr & Peers)

Figure 2.7: High Comfort Transit Stop (source: Design Workshop)



2.5.2.2 - Pedestrian Network Enhancements

Long-term needs on the corridor include completing the sidewalk network and upgrading existing pedestrian crossings while also adding additional crossing opportunities. While completion of the pedestrian network on Federal Boulevard is a longer-term improvement that will require coordination with multiple jurisdictions, there are recommended near term enhancements that would complete pedestrian connections to the Clear Creek – Federal commuter rail station. Specifically, adding a connection to the Clear Creek Trail from Federal Boulevard would provide pedestrian access between that key regional recreational corridor, the commuter rail station, and Federal Boulevard. In addition, the Federal Boulevard bridge over the Clear Creek should be upgraded to provide a wider facility for pedestrians.

Figure 2.8: High Intensity Activated Crosswalk (HAWK) (source: Denver Public Works)

In addition to near-term opportunities adjacent to the commuter rail station, pedestrian connections all along the corridor could be improved through implementation of enhanced crossings. This can be accomplished through installation of treatments like High Intensity Activated Crosswalk (HAWK) signals (**Figure 2.8**), which serve as a stop control for traffic while pedestrians cross. These can be paired with green-backed intersection markings for bicyclists like the example shown in **Figure 2.9**.

As a part of the Federal Boulevard Multimodal Transportation Study, CDOT and the County are upgrading crossings in order to ensure Americans with Disabilities Act (ADA)-compliance in the short-term. Intersections where crossing enhancements could be considered long-term include:

- 52nd Avenue
- 54th Avenue
- 56th Avenue
- 60th Avenue
- 64th Avenue
- Longfellow Place/65th Place
- 67th Avenue
- 70th Avenue
- 72nd Avenue

2.5.2.3 - Accommodating Bicyclists

Dedicated on-street bicycle facilities are likely not feasible on Federal Boulevard due to the high traffic demand and limited right-of-way. Lowell Boulevard is a parallel corridor where the City and County of Denver is considering investing resources for enhanced bicycle facilities. An enhancement of bicycle facilities on Lowell Boulevard in the southern portion of Adams County would provide a key north-south connection for people biking and connect Adams County seamlessly to Denver for people biking. There is an opportunity to establish more connectivity between Federal Boulevard and Lowell Boulevard through implementation of bicycle boulevards on east-west streets and wayfinding signage that communicates opportunities for connecting to key destinations. Alternatively, if the County is able to coordinate with CDOT and property owners to modify the right-of-way, then implementing a ten-foot wide detached sidewalk along the corridor would allow bicyclists and pedestrians to share a travel facility that is separated from vehicle traffic.

Figure 2.9: Example of an Enhanced Crossing Treatment with Dedicated Bicycle Striping and Signals (source: Fehr & Peers)

MAP 2.4: PECOS STREET CORRIDOR

2.5.3 - PECOS STREET

As noted in the Existing Conditions and Opportunities Report, Pecos Street is a Minor Arterial that connects Adams County and the City and County of Denver, terminating to the north at 104th Avenue. The existing conditions analysis found a number of transportation challenges along the corridor, including limited pedestrian and bicycle facilities, challenging connectivity to the Pecos Junction RTD commuter rail station, and high peak hour travel demand that results in congested conditions. Pecos Street has a clear and defined industrial character as well as some autocentric commercial land uses on the southern portion of the corridor. The industrial land uses on the corridor as well as the direct connections to US-36 and I-76 contribute to a significant presence of truck traffic, which further decreases the comfort for people walking and biking. Given the high level of traffic demand, adding facilities for multimodal travel may require expanding the existing cross section rather than reallocating vehicle travel lanes to other modes.

Per the *Advancing Adams* Comprehensive Plan, Pecos Street has the potential to become a connected

and attractive employment center for Adams County. With a strong industrial presence and existing connectivity, this area can become a great location for logistic services for the larger region. At the same time, the corridor serves a number of neighborhoods and multi-family housing that would benefit from enhanced transportation options.

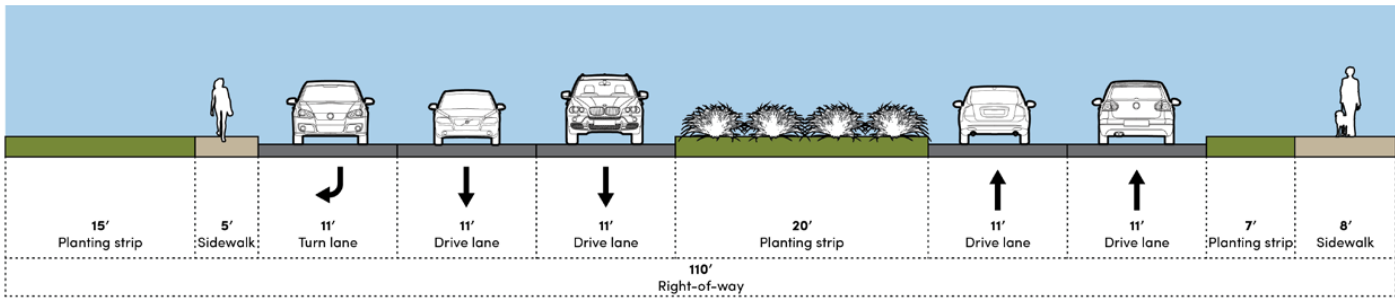
To improve transportation connectivity on Pecos Street, it is recommended that:

- Multimodal travel facilities are added while existing travel lanes are maintained
- Transit enhancements for improving connectivity to the Pecos Junction Station are considered
- Connections to the Clear Creek Trail are pursued

2.5.3.1 - Adding Multimodal Facilities

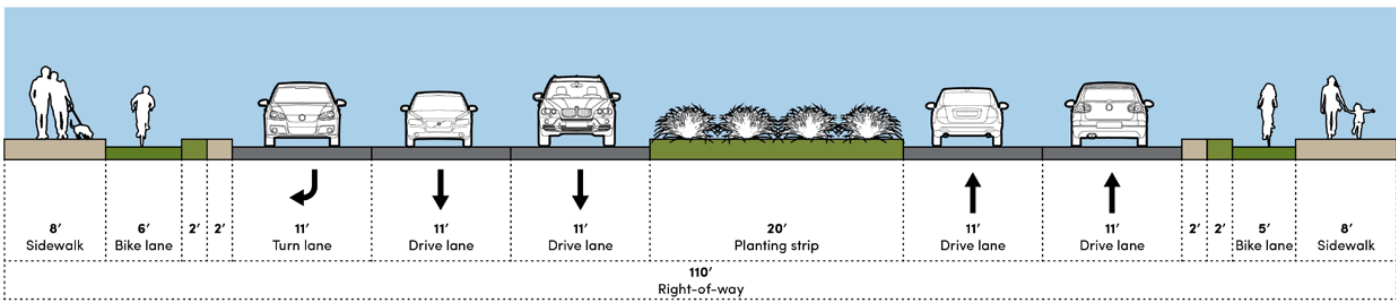
The existing cross section of Pecos Street (**Figure 2.10**) through the portion of the study area that is north of the Pecos Junction commuter rail station has an attached sidewalk on the west side of the street with an adjoining planting strip that is approximately 15-feet wide. If the planting strip is within the public right-of-way, then the County can pursue an expanded cross section that maintains the existing configuration of travel lanes while adding comfortable facilities for bicyclists and pedestrians.

Figure 2.10: Existing Cross Section of Pecos Street north of 64th Avenue



Source: Fehr & Peers

Figure 2.11: Potential Cross Section on Pecos Street North of 64th Avenue



Source: Fehr & Peers

In order to better accommodate people walking and bicycling on the corridor, the County can assess whether the under-utilized space adjacent to the sidewalk on the west side of Pecos Street can be modified to accommodate a six-foot wide bicycle lane and an eight-foot wide sidewalk (**Figure 2.11**). This would allow for enhanced bicycle and bidirectional pedestrian access while maintaining the existing number of vehicle travel lanes. On the east side of Pecos Street, the existing planting strip that serves as a buffer between the sidewalk and roadway could be reconfigured to provide a bicycle facility. Implementation of the proposed cross section north of Cargill Drive would bring a consistent cross section through the length of the corridor and provide connections to the Pecos Junction Station and the Clear Creek Trail. This proposed cross section modification would foster better connectivity between the Midtown development and destinations to the south. In addition, the modification would be one step towards transforming Pecos Street into a multimodal corridor from the Denver border at 52nd Avenue to the north. A critical remaining gap is the Pecos Street bridge between Cargill Drive and 62nd Parkway. *Advancing Adams* will investigate opportunities for upgrading the experience for people walking and biking on the bridge, though an additional detailed feasibility assessment should also be pursued due to the engineering and cost constraints involved in upgrading major bridges.

2.5.3.2 - Enhancing Transit

RTD's route 19 travels along Pecos Street and serves two of the highest ridership stops in the County at 72nd and 76th Avenues. This route also connects to the Pecos Junction commuter rail station, serving the B and G Lines. Most bus stops along Pecos Street currently lack stop amenities like shelters and benches. Enhancing the bus stops could help improve the transit user experience along the corridor.

2.5.3.3 - Connecting to the Clear Creek Trail

Approximately one mile north of the station is a New Urbanist development, Midtown, with a wide, buffered multiuse trail along Pecos Street (**Figure 2.12**). Immediately south of the development, Pecos Street provides access to the Clear Creek Trail, an important regional connection for people biking and walking. The County is pursuing implementation of the wayfinding signage recommendations provided in the 2017 Clear Creek Corridor Master Plan in order to foster an enhanced sense of connectivity to the trail. In general, pedestrian connectivity is challenging on the corridor due to the high number of barriers including the rail lines and I-76 and should be explored further.

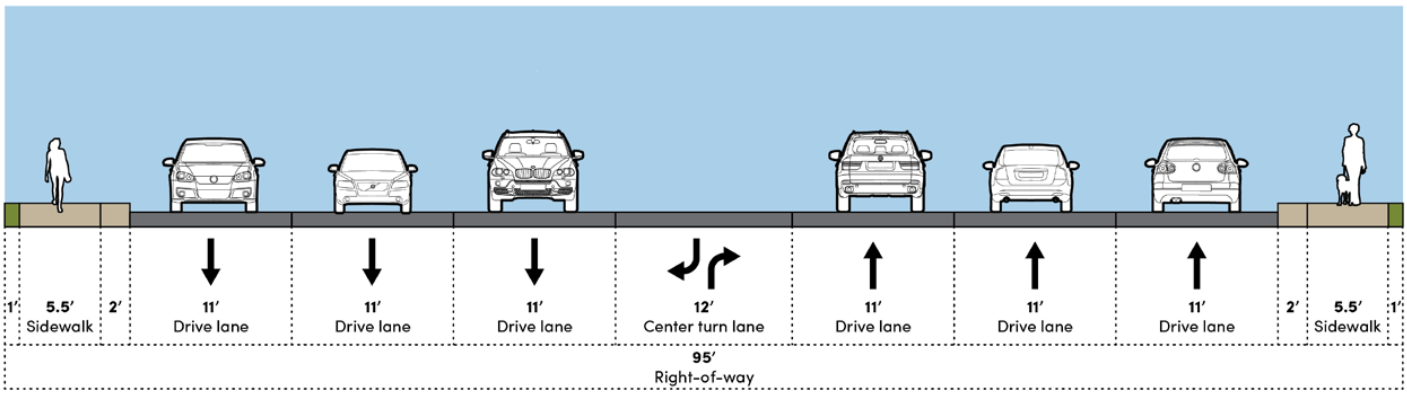
Figure 2.12: Multiuse Trail Adjacent to the Midtown Neighborhood (source: Design Workshop)

MAP 2.5: WASHINGTON STREET CORRIDOR

2.5.4 - WASHINGTON STREET

Washington Street is a north-south Principal Arterial with three distinct characters across its extent—1. The northern segment has primarily autocentric commercial land uses; 2. The section adjacent to the Welby neighborhood has a unique

Figure 2.13: Existing Cross Section of Washington Street Between 73rd Avenue and 78th Avenue



Source: Fehr & Peers

Figure 2.14: Washington Street Looking North from I-270 (source: Design Workshop)

character with a mix of uses; and 3. South of I-270 is primarily industrial. The existing cross section of Washington Street varies between four lanes and six lanes, with a two-way left turn lane and attached sidewalks. **Figure 2.13** shows the existing six lane cross section between 73rd and 78th Avenues.

Overall, the corridor has a unique mix of agricultural heritage and industrial uses. Bicycle and pedestrian facilities are inconsistent, and do not provide comfortable opportunities for those walking and biking, given the high vehicle speeds and volumes on the corridor. Sidewalks are generally present, but not Americans with Disabilities Act (ADA)-compliant and are narrow in width; there are utility poles interrupting the sidewalk, driveways that are not properly graded, and debris is often present. The corridor is not comfortable for pedestrians due to high vehicle volumes and speeds, associated noise, lack of trees and vegetation, and excessive curb cuts (**Figure 2.14**).

Preliminary analysis of roadway operations on Washington Street suggests the corridor does not

TABLE 2.2: EXISTING PEAK HOUR VOLUME TO CAPACITY RATIOS ON WASHINGTON STREET

CROSS STREET	73RD AVENUE	78TH AVENUE
Lanes	6	6
Existing Daily Volume (Daily vehicles)	23,508	20,539
Peak Hour Capacity (Peak hour vehicles)	5,100	5,100
Existing Peak Hour Volume (vehicles)	2,351	2,054
Existing Peak Hour V/C Ratio	0.46	0.40

experience significant congestion during the peak hour (**Table 2.2**). Transit riders currently have limited bus service on the corridor with RTD route 12 providing 30-minute frequencies and with limited high comfort bus stops. Participants from an *Advancing Adams* focus group on Washington Street indicated that without substantial land use changes, ridership on the corridor would likely remain low, though the group also supported enhancing transit for existing riders through providing benches and shade at bus stops.

The main opportunities for Washington Street emerging from *Advancing Adams* are:

- Implementing a road diet from 73rd Avenue to 78th Avenue
- Exploring operational and infrastructure enhancements to transit service

2.5.4.1 - Road Diet

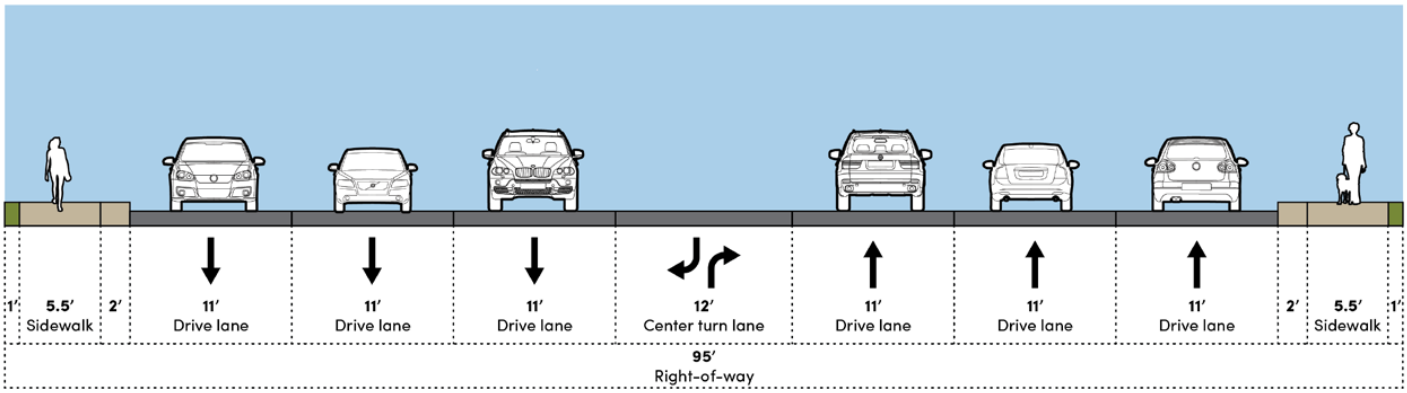
Given the operational analysis finding in Phase 1 that Washington Street may have capacity for vehicle traffic that exceeds forecasted future demand, it is recommended the County pursue a road diet between 73rd Avenue and 78th Avenue that would reduce Washington Street from six to four travel lanes through this portion of the corridor. Sufficient right-of-way exists for either:

- A narrow buffer on one side of the street that leaves room on the other side of the street for enhanced bus stops or trees in the buffer when a bus stop is not present (**Figure 2.16**).
- A wider buffer with space for street trees on both sides of the street (**Figure 2.17**).

The concepts shown are preliminary; further study would be required to select a design that will both work on Washington Street and meet the goals of this plan. Additional considerations to be analyzed further include whether the County has additional right-of-way on the west side of Washington Street to accommodate a wider sidewalk and planting zone, and, if not, whether there are any opportunities to acquire the needed right-of-way. As feasibility is studied further, a refined cross section should be developed.

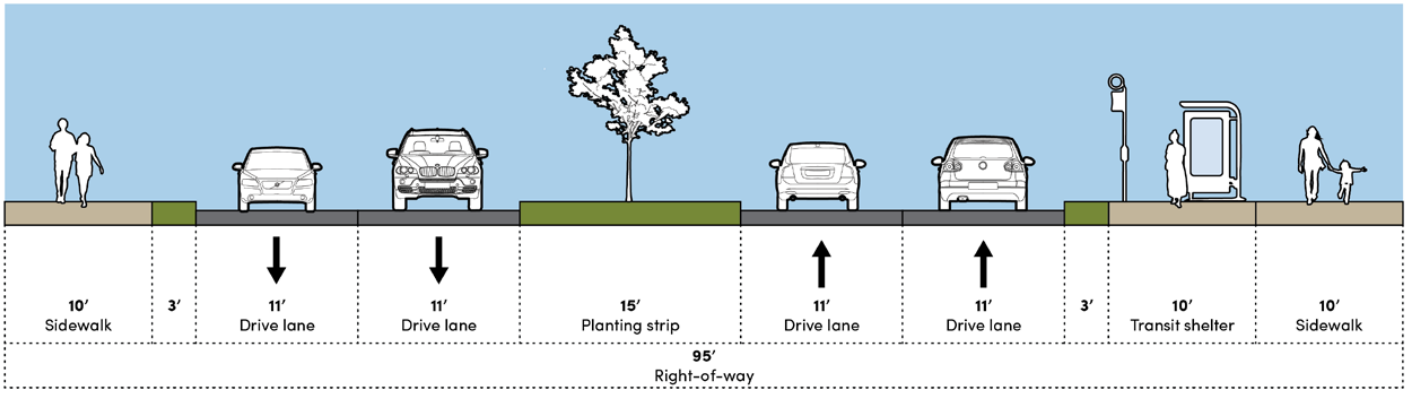
As noted during Phase 1, Washington Street's unique mix of light industrial, residential, and agricultural land uses gives the potential to strengthen its identity and become the Creative Center of Adams County. The Welby area, located east of Washington Street, and the industrial area south of I-76, offer a unique type of development potential that could lead to a Colorado Creative District if the infrastructure, capital improvements, and developer partners can be secured. The road diet on Washington Street would contribute to the placemaking that is needed for a destination district to be successful.

Figure 2.15: Existing Cross Section of Washington Street
(between 73rd Avenue and 78th Avenue)



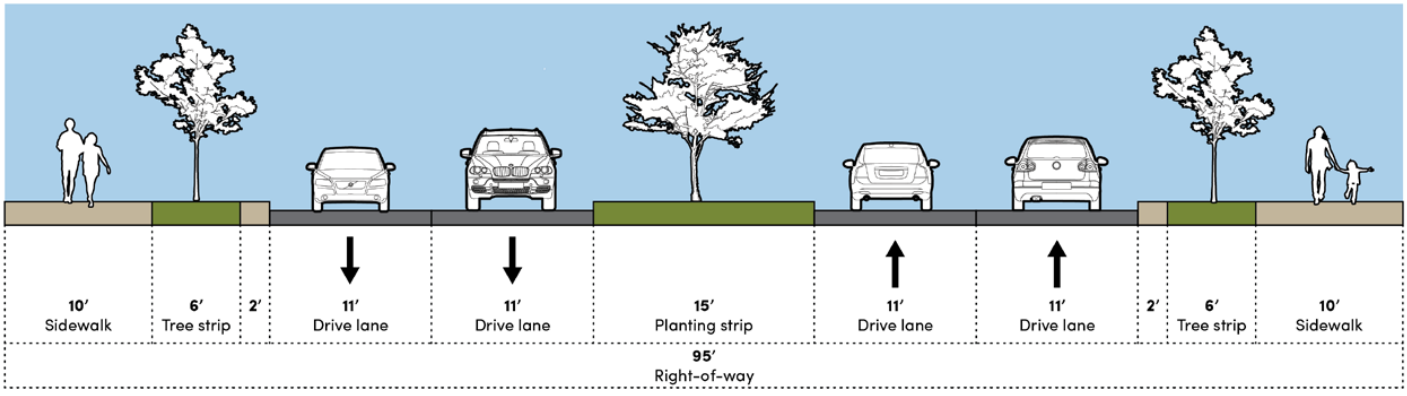
Source: Fehr & Peers

Figure 2.16: Proposed Option 1 Cross Section of Washington Street
(between 73rd Avenue and 78th Avenue)



Source: Fehr & Peers

Figure 2.17: Proposed Option 2 Cross Section of Washington Street
(between 73rd Avenue and 78th Avenue)



Source: Fehr & Peers

TABLE 2.3: PEAK HOUR VOLUME TO CAPACITY RATIOS ON WASHINGTON STREET

CROSS STREET	73RD AVENUE		78TH AVENUE	
Cross Section	Existing	Post-travel lane reduction	Existing	Post-travel lane reduction
V/C Ratio	0.46	0.69	0.40	0.60

Figure 2.18: Opportunity Locations for Enhanced Pedestrian and Bicycle Crossings on Washington Street (source: Fehr & Peers)

The road diet would result in Washington Street becoming a more uniform corridor for vehicles while also introducing opportunities for multimodal travel. According to preliminary analysis, this could be accomplished without generating a prohibitive amount of peak hour traffic congestion (**Table 2.3**). A reduction in the number of travel lanes would enable reallocation of right-of-way towards ten-foot wide sidewalks that adhere to the County standards for pedestrian facilities on Major Arterials. A buffer separating the sidewalk from the roadway could be included in the design to both observe County standards and provide a more comfortable pedestrian environment. This proposed cross section leaves opportunities for a dedicated bicycle facility and enhanced bus stops.

The cross section could include a center median with periodic breaks for left turn pockets or implementation of pedestrian refuge islands and enhanced crossings. Potential locations for crossing enhancements are shown in **Figure 2.18**. Since there are infrequent pedestrian crossing opportunities

on Washington Street between 73rd Avenue and 88th Avenue, better connections would be made possible through crossing treatments like High-Intensity Activated crossWalK (HAWK) signals and green-backed intersection markings for people biking across a high volume roadway like Washington Street.

2.5.4.2 - Bus Service Enhancements

The existing bus stops on Washington Street do not provide riders with a comfortable place to wait for the bus. The attached sidewalks leading to the bus stops means that transit riders must wait for the bus adjacent to high speed, high volume traffic (**Figure 2.19**). It is recommended that during road diet implementation, all bus stops on the corridor be upgraded to include shade, benches, a landscape buffer, and other amenities. Since the existing land uses and urban design can make transit a challenging mode choice, the County will investigate opportunities to create nodes of greater density and pedestrian-oriented design that can support more sustainable travel options. An example may include a mobility hub at 73rd Street, which can be tied to commercial land uses that make multimodal travel on the corridor more attractive. Mobility hubs are described in greater detail in **Chapter 7**.

Figure 2.19: Sidewalk and RTD Bus Stop on Washington Street (source: Design Workshop)

MAP 2.6: 120TH AVENUE CORRIDOR

Figure 2.20: Aerial View of 120th Avenue (source: Design Workshop)

2.5.5 – 120TH AVENUE

120th Avenue is two-lane Principal Arterial that serves as a major east-west corridor across Adams County. The roadway transitions between four, five, and six travel lanes as it travels across the County. The corridor provides access primarily to residential areas as well to regional interstates. The corridor has a rural feel due to the surrounding open space, with potential to serve as a scenic byway (**Figure 2.20**). The section of 120th Avenue that serves unincorporated Adams County has a multiuse trail that provides comfortable opportunities for those walking and biking. These paths provide some access to the recreational and programmed opportunities at Riverdale Regional Park. However, the County has identified 120th Avenue as one of the strategic corridors due to gaps

Figure 2.21: Existing At-Grade Multiuse Trail Crossing on 120th Avenue (source: Google Earth)

Figure 2.22: Sample At-Grade Rail Crossing Treatments (source: Trimet)

in multimodal access to the park, which serves as a critical recreational amenity for County residents and visitors.

To improve travel conditions for all users on 120th Avenue, it is recommended that Adams County spearhead an effort to establish a regional partnership that can identify a uniform vision for the corridor.

2.5.5.1 - Regional Coordination to Establish a Vision for 120th Avenue

The major opportunity for this corridor is to create partnerships with adjacent municipalities to determine a common vision for the roadway and facilitate coordinated implementation including multimodal access. 120th Avenue could become part of a larger scenic trail loop that connects a variety of destinations of natural and cultural heritage and creates a memorable experience for residents and visitors. This regional trail loop could connect the Denver International Airport, Rocky Mountain Arsenal, National Western Center, South Platte Trail, Clear Creek Trail and the Colorado Front Range Trail.

The regional partnership for 120th Avenue would help maintain 120th Avenue as a critical east-west corridor for vehicle travel while also promoting more consistent multimodal connections. In addition, challenges like the at-grade rail crossings could be addressed through adoption of crossing gates, signage, and tactile ground surface indicators as shown in **Figure 2.22**. These treatments would help make at-grade multiuse trail crossings more comfortable.

MAP 2.7: 104TH AVENUE CORRIDOR

2.5.6 - 104TH AVENUE

104th Avenue is a state-owned roadway that carries between 15,000 and 21,000 vehicles per day. This Principal Arterial has two to three travel lanes between Riverdale Road and I-76, and five travel lanes between Colorado Boulevard and Riverdale Road (**Figure 2.23**). The corridor is a critical connection to Denver International Airport, serving both travelers and airport employees. There are limited bicycle and pedestrian amenities along this corridor, as it takes a more rural feel. A new trail connection is being implemented near Brighton Road and 104th Avenue that will connect to the Front Range Trail and South Platte Trail. *Advancing Adams* presents an opportunity to build upon that upcoming connection.

Transit service on the corridor is provided by RTD's 104 route, which has relatively low ridership. Transit access on the corridor is limited due to both the existing low-density land uses but also a lack of sidewalks and comfortable places to wait for the bus (**Figures 2.24 & 2.25**).

CDOT and the City of Thornton are planning a roadway widening of 104th Avenue between Colorado Boulevard

and the Platte River. For Adams County, the chief initiative moving forward will be seeking alignment with those plans where possible.

2.5.6.1 - Regional Collaboration on 104th Avenue

Given the current road configuration and existing character that is present between US-36 and Federal Boulevard, 104th Avenue could become an east-west Parkway with planted medians and other elements that would support a smaller scale feel and more rural appeal. A land use vision for this corridor will require inter-jurisdictional partnerships and coordination, given most of the development is driven by municipal entities. The opportunity also exists to establish new connections to the east side of US-85 and connect those neighborhoods with the existing trail system and parks. It is recommended that Adams County be an active partner to the City of Thornton and CDOT in defining final designs for the widening of 104th Avenue.

While the upcoming trail connection between Brighton Road and the Colorado Front Range Trail will be valuable, there is an opportunity to expand bicycle and pedestrian facilities further east and west as shown in **Figure 2.26**. A potential cross section for 104th Avenue between Riverdale Road and Belle Creek Boulevard is shown in **Figure 2.27**. This concept could be accomplished by replacing the existing two-way left turn lane with a planted median,

Figure 2.23: Varying Number of Travel Lanes on 104th Avenue (source: Design Workshop)

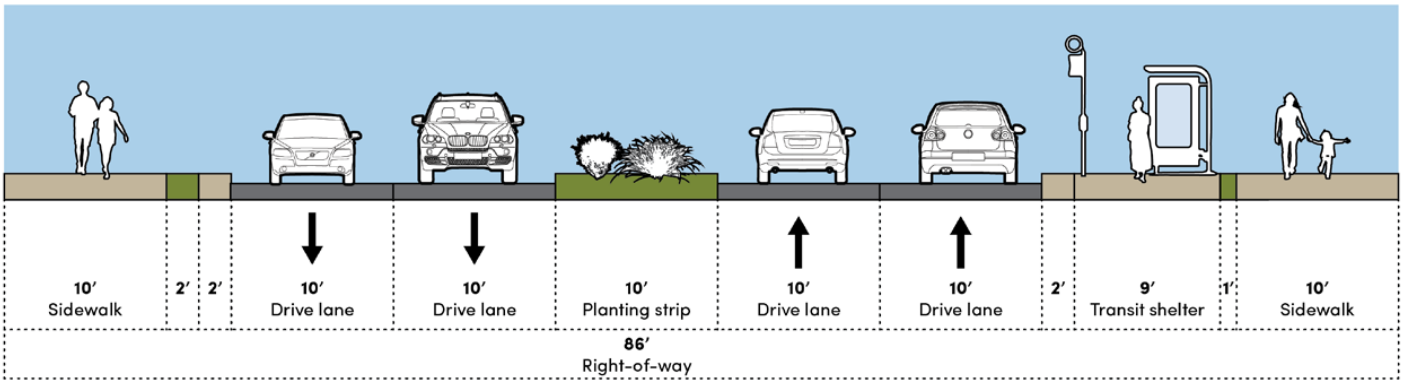
Figure 2.24: Existing Sidewalk on 104th Avenue

Figure 2.25: Existing Bus Stop at 104th Avenue and Brighton Road (source: Google Earth)

which would help foster a parkway character and slow speeds through the corridor. There is an opportunity to extend the pavement edge north and to install a detached multiuse trail and enhanced bus stops. Where bus stops are not present, a wide buffer is suggested between the travel lane and multiuse trail to provide a more comfortable experience for people walking and biking along 104th Avenue. This potential treatment would maintain 104th Avenue as a corridor that emphasizes vehicular travel while also providing space for people walking or bicycling and increase comfort for those accessing and waiting for the bus.

Figure 2.26: Colorado Front Range Trail Opportunity to Improve Connectivity (source: Fehr & Peers)

Figure 2.27: Potential Cross Section for 104th Avenue



Source: Fehr & Peers

Source: Design Workshop

CHAPTER 3

ROADWAY NETWORK

3.1 - KEY ISSUES

Adams County has a well-connected roadway network that provides ties to the wider region while also providing both mobility and access within the County. As a major part of the Denver Front Range region, Adams County is home to a growing number of residents and employment hubs due to its relative affordability compared to the wider region and the amount of development potential. This chapter highlights the opportunities for both enhancing the existing roadway network and adding capacity where needed to serve future growth.

The existing conditions analysis that was conducted as part of *Advancing Adams* in **Appendix A** identified several key issues and opportunities for the existing roadway network:

1. Crash volumes on Adams County roadways have been consistently high in recent years, particularly in the southwest corner of the County where growth in traffic volumes has occurred.

2. There are a number of state-owned and managed highways that serve as key, high-capacity connections for travel with Adams County and for connections to the wider region. These highways include deficiencies that Adams County works to address (e.g., potholes and insufficient facilities for pedestrians and bicyclists), but the multi-jurisdictional nature of these roads presents challenges.

3. Adams County has a diverse mix of roadway infrastructure given the range of existing land uses, from urbanized areas with major arterials to rural areas with unpaved roads. More efficiently managing this range of facilities was identified as a key desired outcome of the transportation plan.

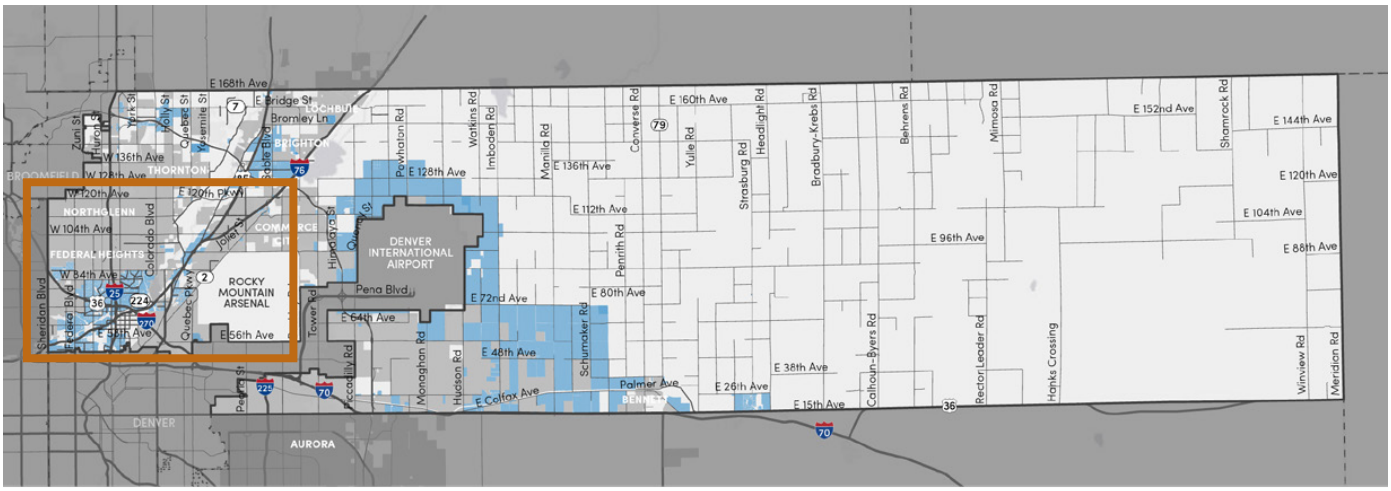
3.2 - COMMUNITY INPUT AND FUTURE NEEDS

The Adams County community regularly cited transportation infrastructure as an area of concern during the *Advancing Adams* public outreach efforts. When asked to rank the biggest threats to quality of life in Adams County related to growth, respondents to the *Advancing Adams* Growth Scenario Survey indicated that traffic is the top significant threat and also cited "stress on public services/ infrastructure such as transportation" as a threat. When asked how much additional travel time respondents would be willing to incur to help achieve the County's environmental, safety, and equity goals, the majority indicated they would not be willing to travel any additional time. This suggests that County residents value having a roadway system that provides adequate vehicular capacity and connectivity opportunities and that many community members plan to continue relying on vehicle travel for personal mobility.

Figure 3.1: Aerial of Intersecting Roadways in Adams County (source: Design Workshop)

In addition, the *Advancing Adams* Comprehensive Plan identifies areas where future land uses will be modified from today. These changes may create a need to add roadway capacity that serves new development. Two updates to the County land use that will have implications for transportation demand are the increase in intensity of uses in certain portions of the County (e.g., changes in zoning from low to high density residential, or the addition of commercial land uses) as well as the addition of Town Centers, which will be areas that promote a diversity of activity and support both residential and commercial land uses. Areas where new development will likely lead to increased travel demand are predominantly located in south central Adams County, just east of Denver International Airport (**Map 3.1**). This Transportation Master Plan considers the specific locations where additional roadway capacity will be needed in order to meet this demand.

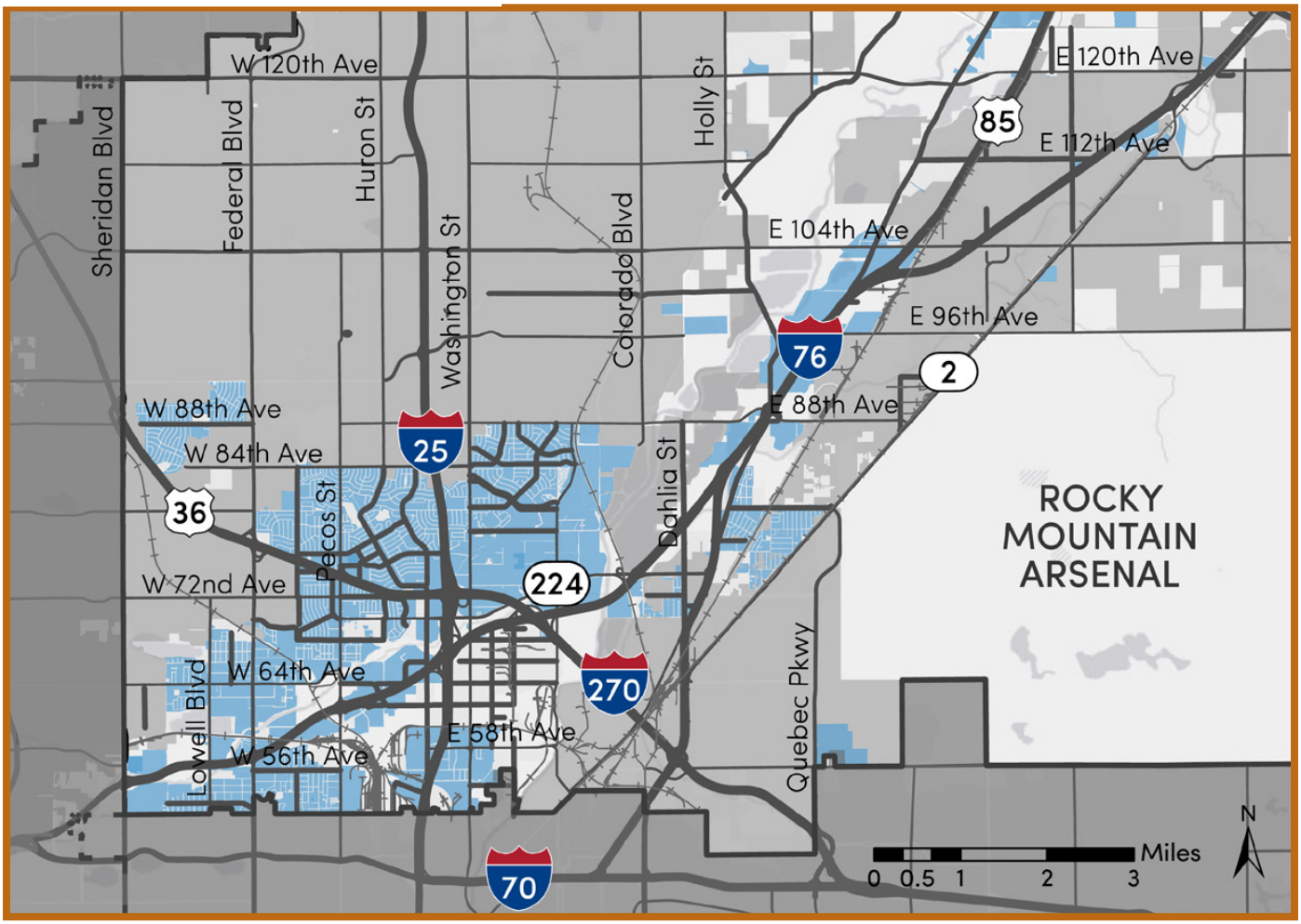
MAP 3.1: FUTURE LAND USES THAT WILL GENERATE ADDITIONAL TRANSPORTATION DEMAND



Adams County Boundary
Incorporated Places Adams County
High Intensity Land Use

0 5 10 20 Miles

N



3.3 - BIG IDEAS

As Adams County grows, there will be a need to reevaluate existing roadway standards and to begin aligning roadway cross sections with new travel patterns. In the interim, Adams County can accommodate growth by upgrading arterials in the eastern portion of the County, as noted in this plan. In areas that are already urbanized or are poised for growth in the short-term, the County should pursue road diets that will open opportunities for residents and visitors to travel by their preferred mode.

3.3.1 - ENSURE THE ROADWAY NETWORK KEEPS PACE WITH DEVELOPMENT

As discussed in the Comprehensive Plan, Adams County has the potential to add population and employment through development in the eastern portion of the County, particularly southeast of Denver International Airport. To serve this growth, *Advancing Adams* proposes new two-lane arterials traveling north-south in areas east of the airport. These corridors will serve as connections between new development and the I-70 corridor. In addition, it is recommended that gravel roads in areas of anticipated growth be upgraded to paved two-lane arterials. These recommendations are shown in **Map 3.3** at the conclusion of this chapter.

3.3.2 - EXPLORE OPPORTUNITIES FOR IMPLEMENTING ROAD DIETS

As noted in the operational analysis on the five strategic corridors in **Chapter 2**, there are corridors in Adams County where existing vehicle volumes do not result in congested conditions due to the ample right-of-way dedicated to vehicle throughput. Additionally, preliminary future travel demand forecasts on some corridors have shown that even with some growth in traffic volumes, there will be sufficient capacity to accommodate demand without leading to peak hour congestion. On these corridors, road diets should be considered in order to foster more opportunities for multimodal travel. Road diets are the reallocation of vehicle travel lanes to other uses such as enhanced bicycle or pedestrian facilities. Corridors serving the future Town Centers should be considered as top priority for road diet implementation to provide walk and bicycle friendly environments where connectivity and multimodal travel opportunities are elevated over vehicle throughput.

3.3.3 - ESTABLISHING IMPROVED PARTNERSHIPS FOR MANAGING STATE HIGHWAYS

In the case of multijurisdictional corridors like Federal Boulevard or 104th Avenue, Adams County can coordinate with local governments and CDOT to establish unified

maintenance protocols and to regularly reach consensus on how to meet the mobility needs of users on each corridor. This can be accomplished through a variety of mechanisms, ranging from informal working groups to formal intergovernmental agreements (IGAs).

3.3.4 – GRAVEL ROAD PAVING

As the County grows, it is anticipated that the need to pave gravel roadways in order to accommodate development or growth in traffic volumes will increase. To streamline the County's decision-making process regarding managing and paving gravel roads, this chapter provides a set of inputs that should be considered when assessing paving needs.

3.4 – ROADWAY FUNCTIONAL CLASSIFICATIONS

Adams County uses a set of roadway functional classifications that are intended to promote a range of transportation needs on a spectrum from mobility to access. Mobility is a priority in locations where there are higher traffic volumes, greater distances of travel, and limited need to access destinations along the corridor. Access is a greater concern in locations with a density of destinations travelers are attempting to reach; in these locations, speed is a lower priority. **Table 3.1** lists the Adams County roadway classifications and describes the main function of each roadway type. The full functional classification map is shown in **Map 3.2**.

3.4.1 – CROSS SECTIONS

Standard cross sections for each roadway functional classification are currently documented in the Adams County Engineering Road Standards. These cross sections have not been modified as a part of the Transportation Master Plan, but additional cross sections were added for locations near transit stations. These cross sections in addition to the cross sections from the existing Road Standards, are show in the following sections.

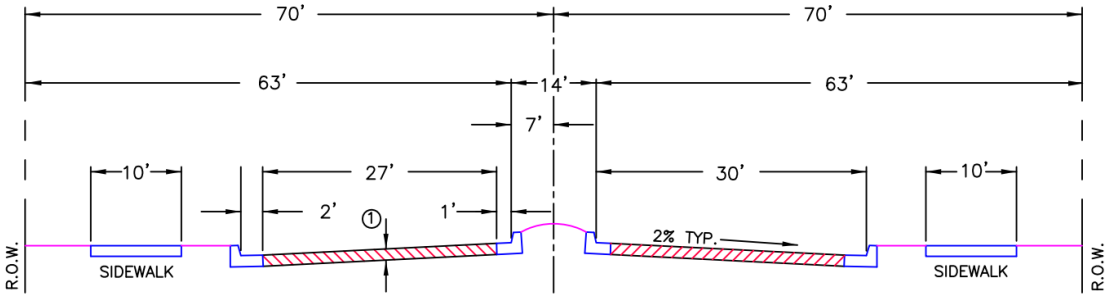
TABLE 3.1: ADAMS COUNTY ROADWAY FUNCTIONAL CLASSIFICATIONS

FUNCTIONAL CLASSIFICATION	DESCRIPTION
Freeway	Freeways and tollways are intended only for providing mobility. Traffic is unimpeded, the corridor provides full regional connectivity, and access is provided only through interchanges with no direct parcel access
Regional Arterial	The only function of regional arterials is to provide mobility between Adams County and neighboring counties. Access points are only at signalized intersections or at interchanges, with no direct parcel access, and are spaced 0.5-1 mile apart. The right-of-way width is 140 feet.
Principal/Major Arterial	Principal arterials are primarily intended to provide mobility, though can also provide direct access when no other option exists. Otherwise, access is limited to signalized intersections that are spaced 0.5-1 mile apart. The right-of-way width is 140 feet.
Rural Regional/Major Arterial	Rural Regional or Major Arterials provide access in the more low-density areas of the County. Access spacing will generally be allowed at ¼ to ½-mile spacing, with shared access between parcels encouraged on a case-by-case basis. For purposes of rights-of-way dedications, the typical cross sections for rural Major or Regional Arterials and Rural Arterials are 140-feet.
Minor Arterial	Minor arterials primarily provide mobility with access a secondary function. Accesses are spaced at 0.25-0.5 intervals and are primarily signalized, though stop signs are used in some circumstances. The right-of-way width is 120 feet.
Rural Arterial	Rural arterials function similarly to minor arterials. Traffic controls are primarily stop signs, which are configured for side streets so as to minimally impede the flow of vehicles. The right-of-way width is 120 feet.
Collector	Collector roadways emphasize access with mobility as a secondary function. Vehicle speeds are intended to be slower, access points are spaced at 1/8th mile intervals, and the right-of-way width is 80 feet.
Local	Local streets are intended to serve access needs only with unrestricted access to all parcels along the corridor. The right-of-way width is up to 60 feet and traffic.

3.4.1.1 - Major Arterial

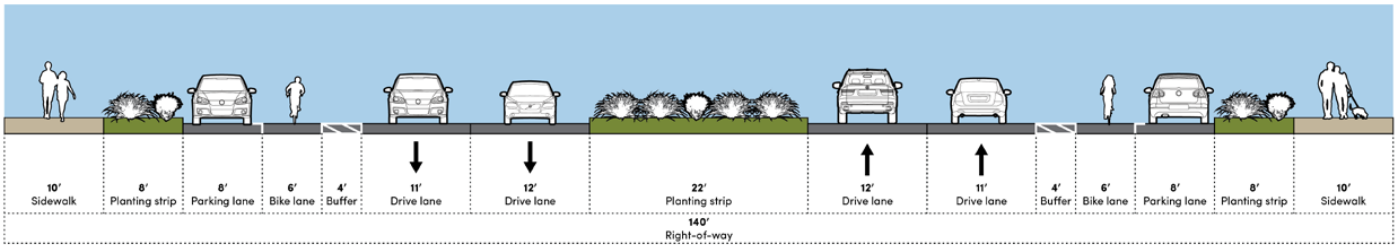
The Major Arterial cross section shown in **Figure 3.2** also applies to Regional Arterials. In urban areas, the cross section includes a wide detached sidewalk for bicycle and pedestrian travel, whereas on a rural arterial there would be an unpaved shoulder (**Figure 3.4**). On arterials within a half-mile of an RTD commuter rail station the Enhanced Multimodal Corridor cross section for arterials should be considered (**Figure 3.3**). The Enhanced Multimodal Corridor cross section is appropriate in locations where land use along the corridor is transit supportive. Examples include mixed use development, medium to high density residential, and commercial land uses. In addition, the extent of the Enhanced Multimodal Corridor cross section should be determined based on logical gateways into the half-mile buffer surround a commuter rail station. Examples include major intersections within the buffer or at the edge of a corridor with transit supportive land uses.

Figure 3.2: Major Arterial Cross Section



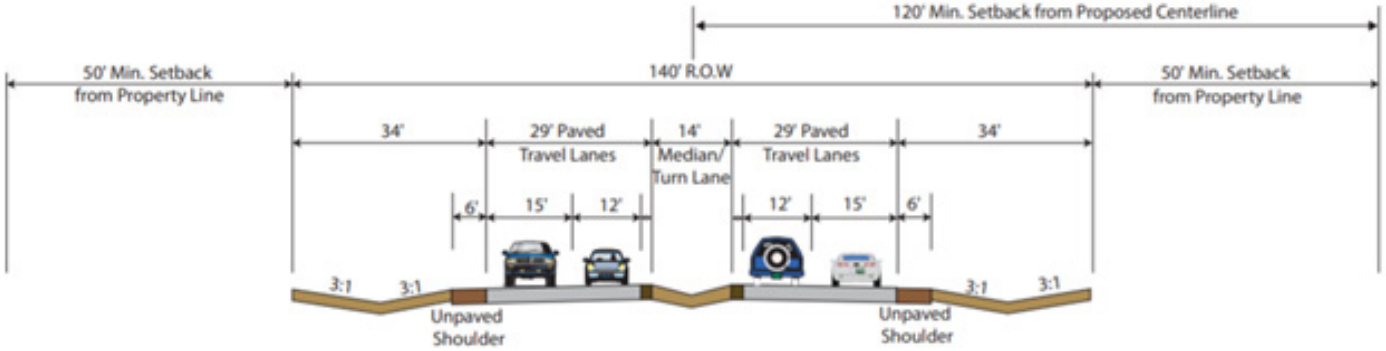
Source: Adams County Engineering Roadway Standards

Figure 3.3: Enhanced Multimodal Corridor Arterial Cross Section



Source: Fehr & Peers

Figure 3.4: Rural Arterial Cross Section

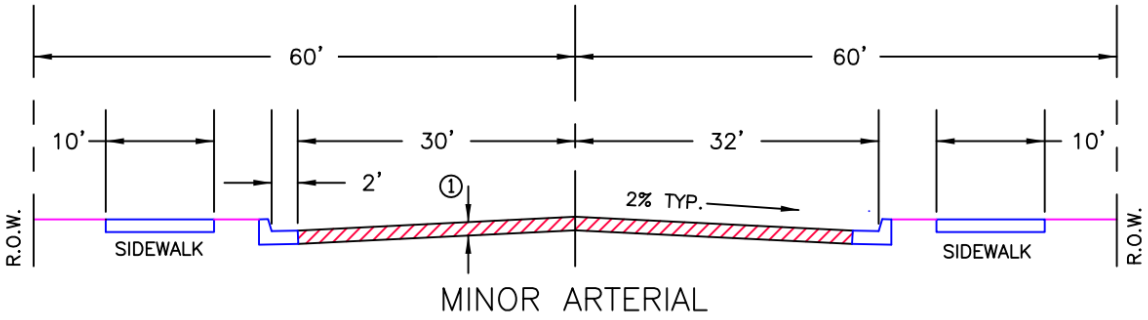


Source: 2012 Adams County Transportation Plan

3.4.1.2 - Minor Arterial

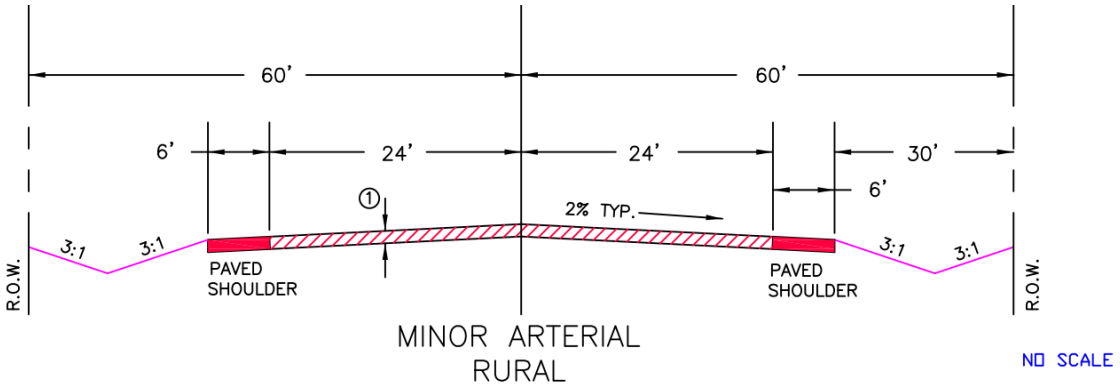
The Minor Arterial cross section features detached sidewalks that are sufficiently wide to accommodate bicyclists and pedestrians (**Figure 3.5**). In rural locations, the cross section is modified to feature paved shoulders in lieu of sidewalks (**Figure 3.6**). In instances where an urban minor arterial falls within a half-mile of an RTD commuter rail station, the arterial Enhanced Multimodal Corridor cross section should be considered if the corridor meets the criteria described for the major arterial TOD cross section (**Figure 3.3**). If the Enhanced Multimodal Corridor cross section is being considered on a minor arterial, the landscaped median cannot be included in the design due to insufficient right of way.

Figure 3.5: Minor Arterial Cross Section



Source: Adams County Engineering Roadway Standards

Figure 3.6: Rural Minor Arterial Cross Section



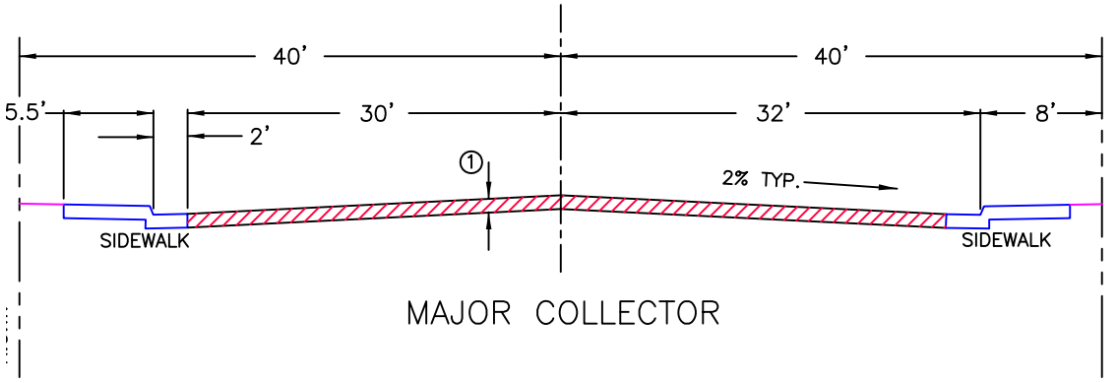
Source: Adams County Engineering Roadway Standards

3.4.1.3 - Major Collector

The Major Collector cross section allows sufficient room for a 12-foot travel lane in each direction with 11 feet on both sides that can be dedicated to a bicycle lane, parking lane, or turn lane (**Figure 3.7**). Where feasible, a median can be included. The major collector cross section features attached 5.5-foot wide sidewalks.

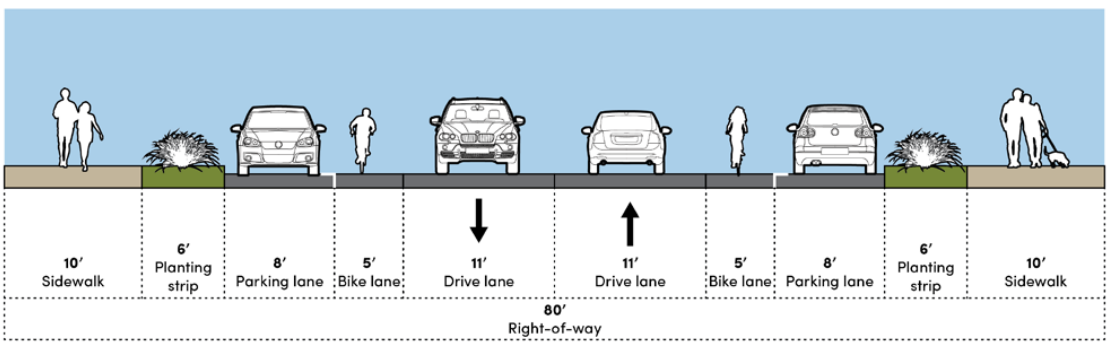
On collectors within a half-mile of an RTD commuter rail station the Enhanced Multimodal Corridor cross section for collectors should be considered (**Figure 3.8**). The Enhanced Multimodal Corridor cross section is appropriate in locations where land use along the corridor is transit supportive. Examples include mixed use development, medium to high density residential, and commercial land uses. In addition, the extent of the Enhanced Multimodal Corridor cross section should be determined based on logical gateways into TOD zones. Examples include major intersections with the half-mile station area buffer or at the edge of a corridor with transit supportive land uses.

Figure 3.7: Major Collector Cross Section



Source: Adams County Engineering Roadway Standards

Figure 3.8: Enhanced Multimodal Corridor Collector Cross Section

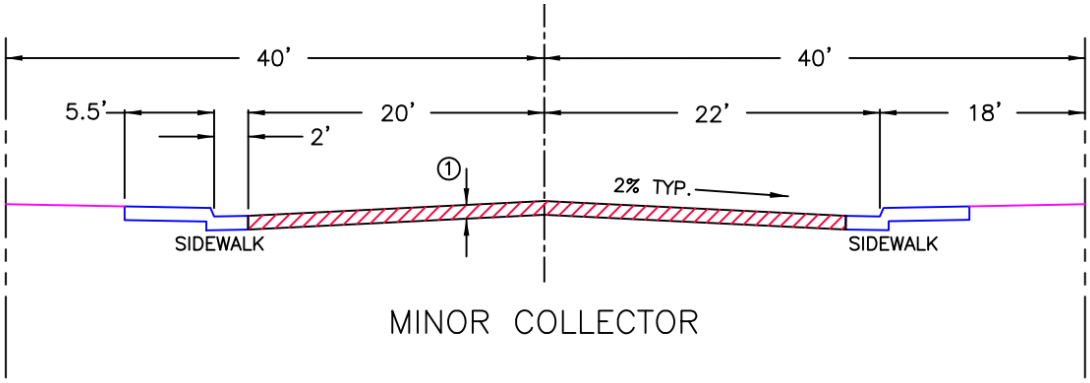


Source: Fehr & Peers

3.4.1.4 - Minor Collector

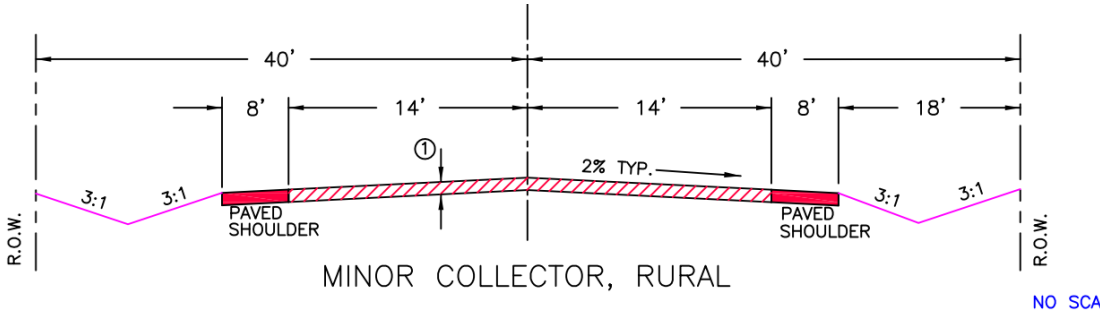
The Minor Collector has the same right-of-way width as a major collector but with no median or center turn lane (**Figure 3.9**). Minor Collectors feature a larger setback from property lines to allow for future right-of-way expansions that may been needed upon development. In rural areas, the cross section changes slightly to feature an eight-foot paved shoulder in lieu of a sidewalk (**Figure 3.10**).

Figure 3.9: Minor Collector Cross Section



Source: Adams County Engineering Roadway Standards

Figure 3.10: Rural Minor Arterial Cross Section

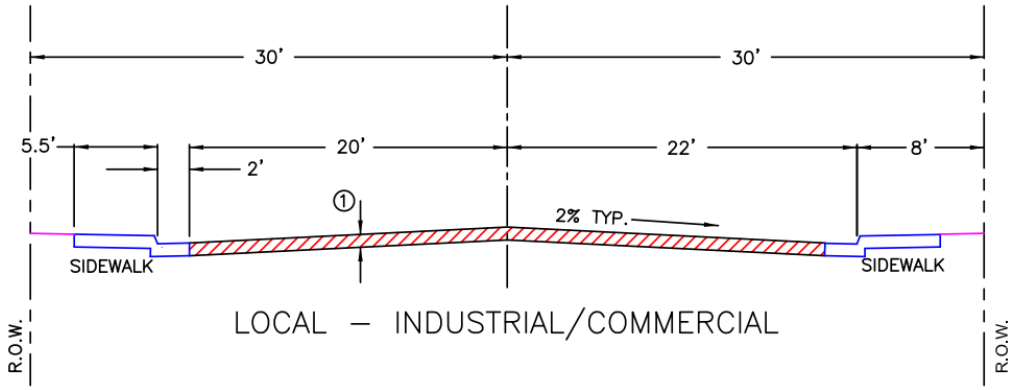


Source: Adams County Engineering Roadway Standards

3.4.1.5 - Local Streets

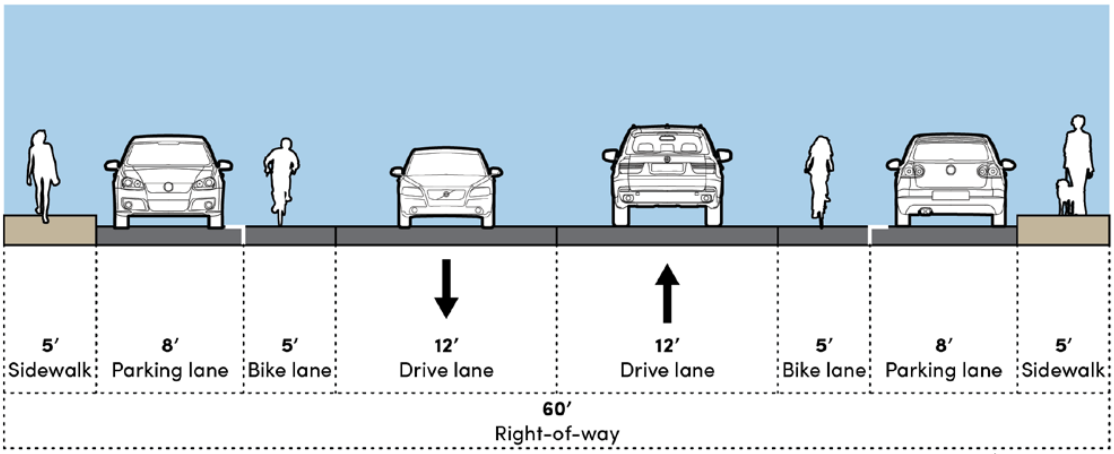
Local Street cross sections range from 60 feet wide for industrial/commercial and rural residential streets (**Figure 3.11 and Figure 3.15**) to 55-feet for local residential streets (**Figure 3.13**). With the exception of rural areas, all local streets feature a 5.5-foot wide attached sidewalk. On local streets within a half-mile of an RTD commuter rail station the Enhanced Multimodal Corridor cross section for collectors should be considered (**Figure 3.12 and Figure 3.14**). The Enhanced Multimodal Corridor cross section is appropriate in locations where land use along the corridor is transit supportive. Examples include mixed use development, medium to high density residential, and commercial land uses. In addition, the extent of the Enhanced Multimodal Corridor cross section should be determined based on logical gateways into rail station areas. Examples include major intersections with the half-mile station area buffer or at the edge of a corridor with transit supportive land uses. Local commercial streets in the transit station buffer should have a striped bicycle lane while local residential streets should have shared lanes.

Figure 3.11: Local Street Cross Section (Industrial/Commercial)



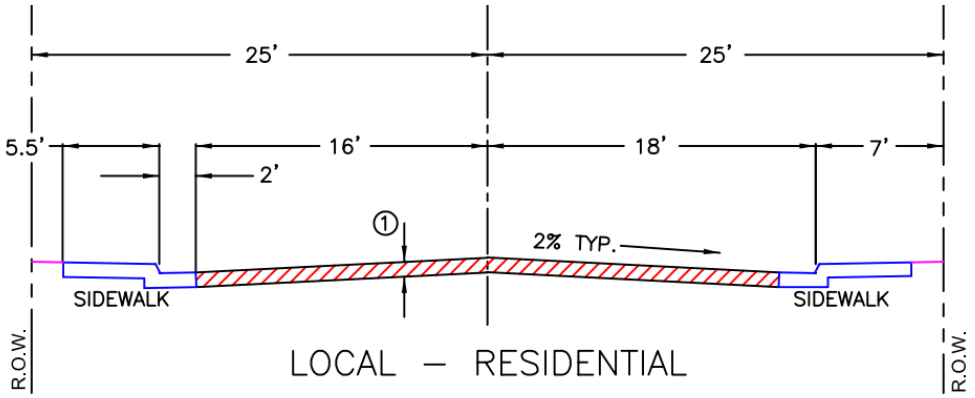
Source: Adams County Engineering Roadway Standards

Figure 3.12: Enhanced Multimodal Corridor Local Street Cross Section (Commercial)



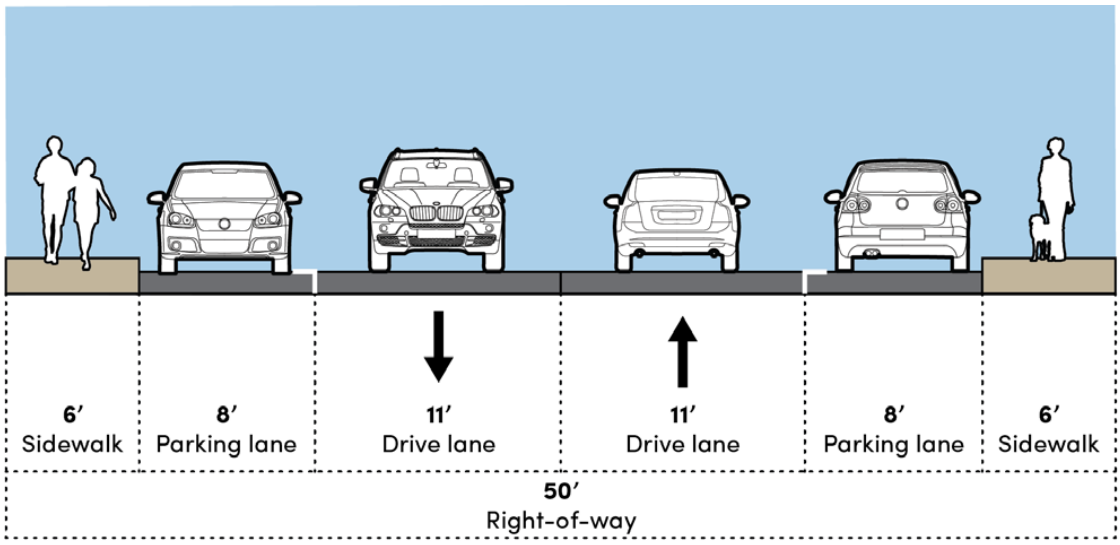
Source: Fehr & Peers

Figure 3.13: Local Street Cross Section (Residential)



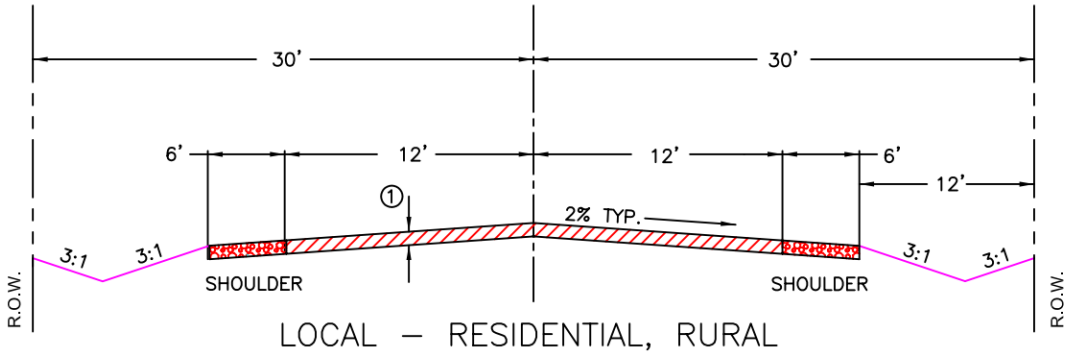
Source: Adams County Engineering Roadway Standards

Figure 3.14: Enhanced Multimodal Corridor Local Street Cross Section (Residential)



Source: Fehr & Peers

Figure 3.15: Local Street Cross Section (Residential - Rural)



Source: Adams County Engineering Roadway Standards

3.4.2 – REVISING FUNCTIONAL CLASSIFICATIONS

While the Adams County functional classification system for roadways does not change with *Advancing Adams*, it is anticipated that there may be a future need to revisit the functional classifications as the County grows. Roadways will likely be reclassified on a case-by-case basis when significant development occurs. In these instances, the County can evaluate the need for a roadway reclassification based on the following criteria:

Traffic Volumes:
Current and forecasted average daily traffic. A significant increase in traffic volumes can merit a reclassification to a design that can accommodate heavier volumes.

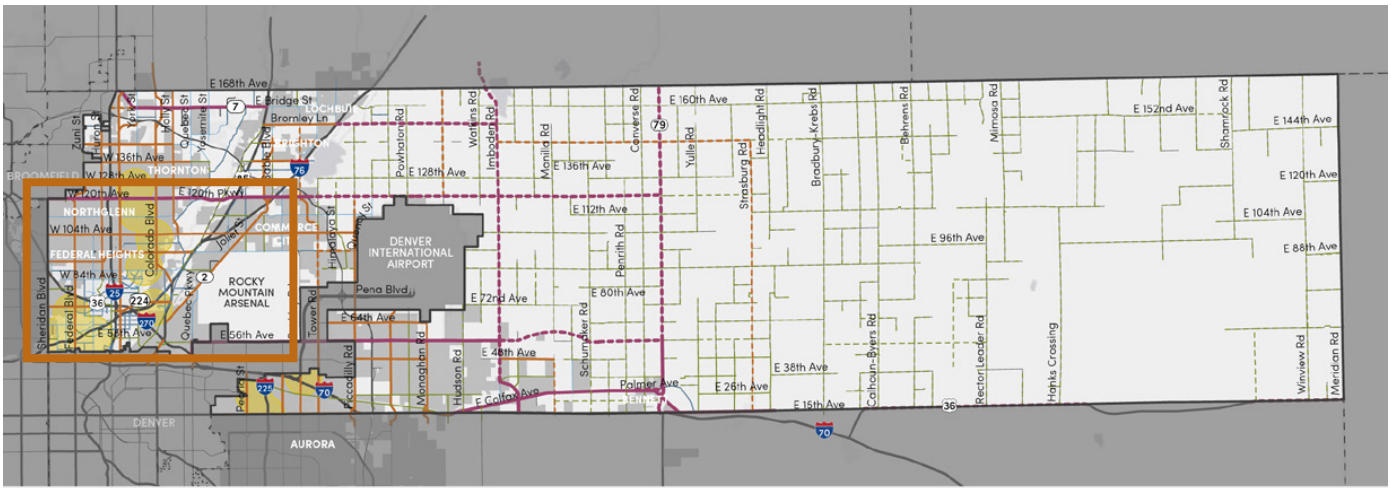
Spacing:
The spacing between the candidate roadway and adjacent roadways with the proposed functional classification. The Adams County Development Standards and Regulations state that major arterials should be spaced one mile apart, minor arterial spacing should be ½ to one mile apart. The Development Standards and Regulations do not list specific spacing requirements for collectors, though typically collectors are spaced depending on land use context. In the more densely developed areas of Adams County, collector spacing should be at a minimum of ¼ mile.

Access Management:
Evaluation of whether a reclassification may trigger the need to have enhanced access management. If for example, a roadway is to be reclassified from a collector to an arterial, the number of driveways and left turns should be inventoried to determine whether the volume of turning movements can be accommodated on a roadway with higher design speeds.

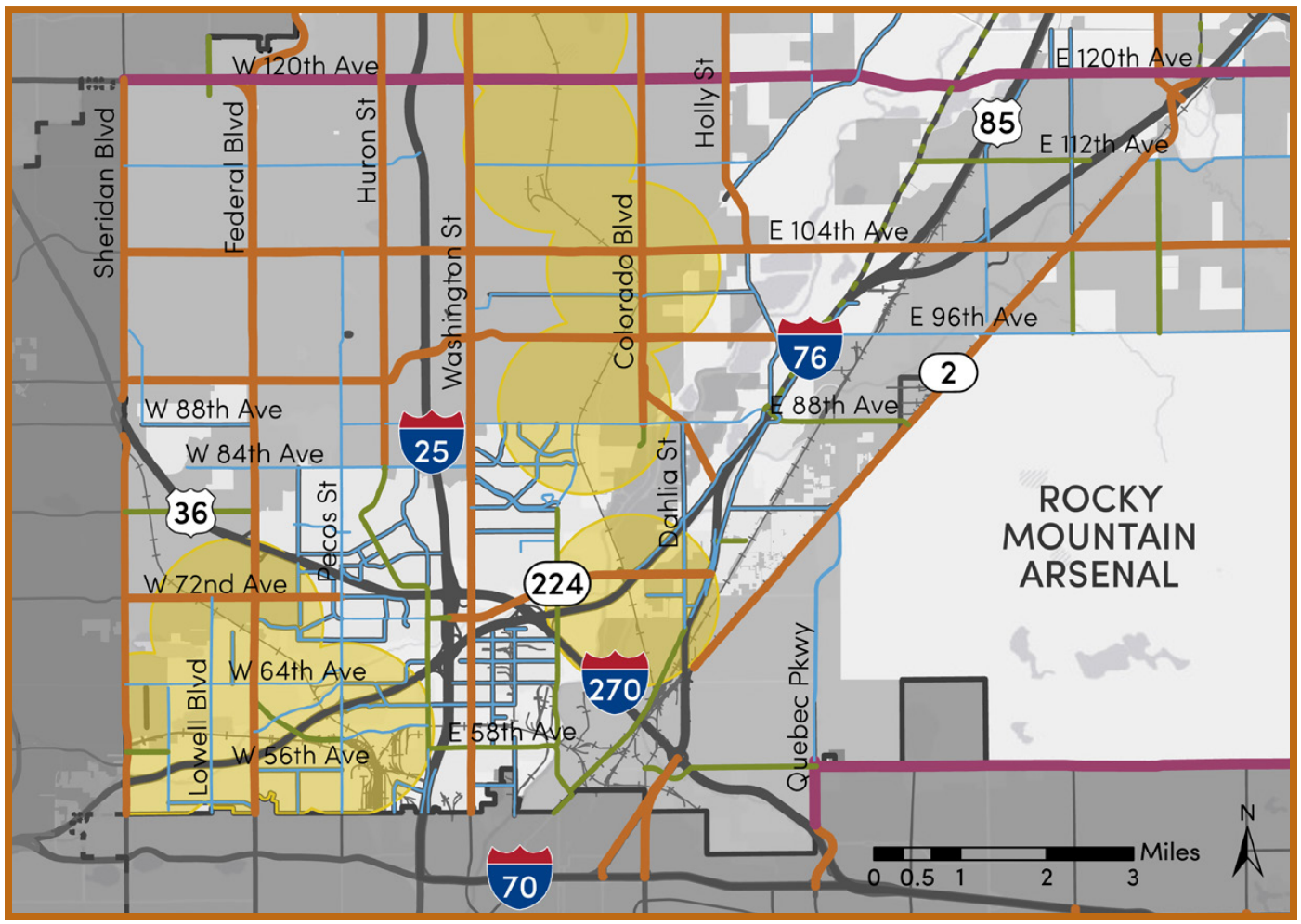
Traffic Controls:
Inventory of existing and planned traffic signals and stop sign controls.G enerally, traffic control treatments become less frequent from local to collector to arterial to freeway classifications.

Local Support:
The County should determine the affected neighborhood is supportive of the reclassification.

MAP 3.2: ROADWAY CLASSIFICATIONS



- Adams County Boundary
- Incorporated Places Adams County
- TOD Cross Section Considered 1 Mile Around Commuter Rail Stations
- Regional Arterial
- Rural Regional Arterial
- Principal Arterial
- Rural Major Arterial
- Minor Arterial
- Rural Arterial
- Collector



3.5 – GRAVEL ROAD PAVING PRIORITIZATION

When considering whether to pave a roadway that currently has a gravel surface, the Adams County Public Works Department can assess the set of corridors that are potential candidates for paving based on the quantitative and qualitative factors listed in this section. In some instances, there are specific thresholds that can be set for determining whether a roadway should be paved (e.g., traffic volume). In other instances, the factor must be considered on a case-by-case basis. The Adams County Public Works Department can make a determination on whether a gravel roadway should be paved by answering the questions following for each roadway that is under consideration for paving. Roadways that meet the greatest number of criteria listed should be prioritized for paving.

Figure 3.16: Washboarding (source: Landlock Paving)

Existing Demand

- How many vehicles and what types of vehicles are using the corridor?
- Do volumes exceed 500 Average Daily Traffic (ADT)?
- Are there more than 50 heavy vehicles utilizing the roadway each day? Gravel roadways with a low subgrade support condition can require 14.5 inches on gravel to support truck volumes of 25-50 vehicles per day. Volumes in excess of 50 heavy vehicles will cause accelerated degradation (FHWA).

Roadway Classification

- Is the roadway classified as an arterial or collector?
- If not, is the roadway due to be reclassified to an arterial or collector per the Transportation Master Plan or through development?

Connectivity

- Does the roadway border neighboring jurisdictions (either communities outside Adams County or incorporated municipalities within the County)?
- If so, does it connect to roadways on the other side of the County boundary that are currently paved? In these instances, paving should be considered to establish a consistent roadway surface.

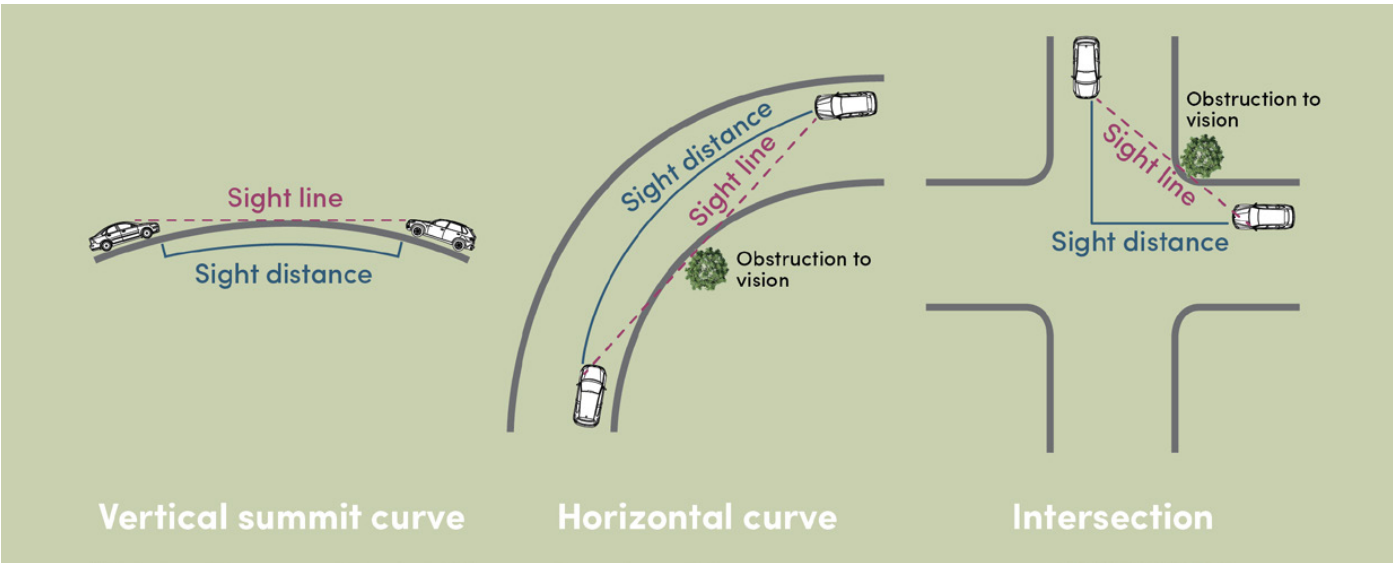


Figure 3.17: Sight Distance

- Is the roadway an emergency access route?

Maintenance

- How often does the existing gravel surface require maintenance? How often are erosion, drainage, washboarding, etc. issues being addressed?
- Would the cost of maintaining the same roadway as a paved facility be lower in the long term?

Design Speed

Gravel roads are intended to operate at low or moderate speeds due to the fluctuating surface conditions and relatively low traffic, hence these corridors typically have a design speed of 45 mph or less. The gravel roads are also designed with minimal design criteria due to the low-speed environment.

Paving a road can increase vehicle speeds.

- In the event that a road becomes paved, are the safety inadequacies and roadway geometrics like sight distance and horizontal and vertical alignments that are dependent on the design speed met with the existing design speed or should they be increased?

Sight Distance

Sight distance is the length of roadway ahead that is visible to the driver. The available sight distance on a roadway should be sufficiently long to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path, as shown in **Figure 3.17**.

- With the paving surface and new design speeds (i.e., in the paved condition), would the sight distance requirements be met?

- If not, what type of obstructions must be removed to meet the requirements?

Alignment and curves

When upgrading a gravel roadway to paved, the horizontal and vertical alignment should be compatible to the anticipated traffic speeds. It becomes necessary to address the safety problems created by the higher speeds and side friction factors that result from paving.

- How sharp are the curves in the roadway?
- Is the alignment, both vertical and horizontal, adequate for the established design speed?

If the realignment costs prohibit the upgrading of all substandard sections, then paving should be reconsidered or warning devices should be placed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD).

Figure 3.18: Curved Gravel Road (source: EMTSP)

Surface friction

Surface friction is the force that resists the relative motion between a vehicle tire and a road surface. It plays a vital role in keeping a vehicle on the road and giving drivers the ability to control/maneuver their vehicles in a safe manner. Higher surface friction equates to more control over the vehicle. The coefficient of friction on gravel surfaces varies at a range from 0.40 to 0.70, which is much lower than on paved surfaces. The coefficient of friction is used to calculate the stopping sight distance for a given design speed.

- Is the stopping sight distance adequate with the paved surface friction characteristics?

Lane width

Wider, unpaved roads encourage higher speeds, thereby increasing the potential for accidents. Unpaved roads that are narrow tend to be driven at low speeds and thus have a lower risk of crashes. NCHRP Report 362 found crash rates on unpaved roads to be lower on roadways with a total width of less than 18 feet compared to roadways of 20 feet to 22 feet or greater.

- For the current roadway with the gravel surface, is the width greater than 18 feet?

Superelevation

Superelevation is the banking of a roadway along a horizontal curve so motorists can safely and comfortably maneuver the curve at reasonable speeds, as conveyed in **Figure 3.19**. A steeper superelevation rate is required as speeds increase, or horizontal curves become tighter. One of the biggest challenges in gravel road maintenance at curves is that the traffic will tend to displace the gravel towards the upper end of the road and the inside of the curve will become lower. As a result, curves can very easily go out of proper shape and requires constant attention during each maintenance cycle.

- For the current roadway with the gravel surface, is there a lack of superelevation that requires constant attention to maintain the uniform shape throughout the curves?

If so, paving the roadway may result in lower maintenance costs in the long-term.

Bridge deficiencies

As the gravel roads have smaller lane widths, the bridges and culverts at the approach roadways also tend to be narrower. If the gravel roadway is to be paved, would the bridges along the roadway require widening? This can be a very costly investment and will impact the total cost of paving and maintenance.

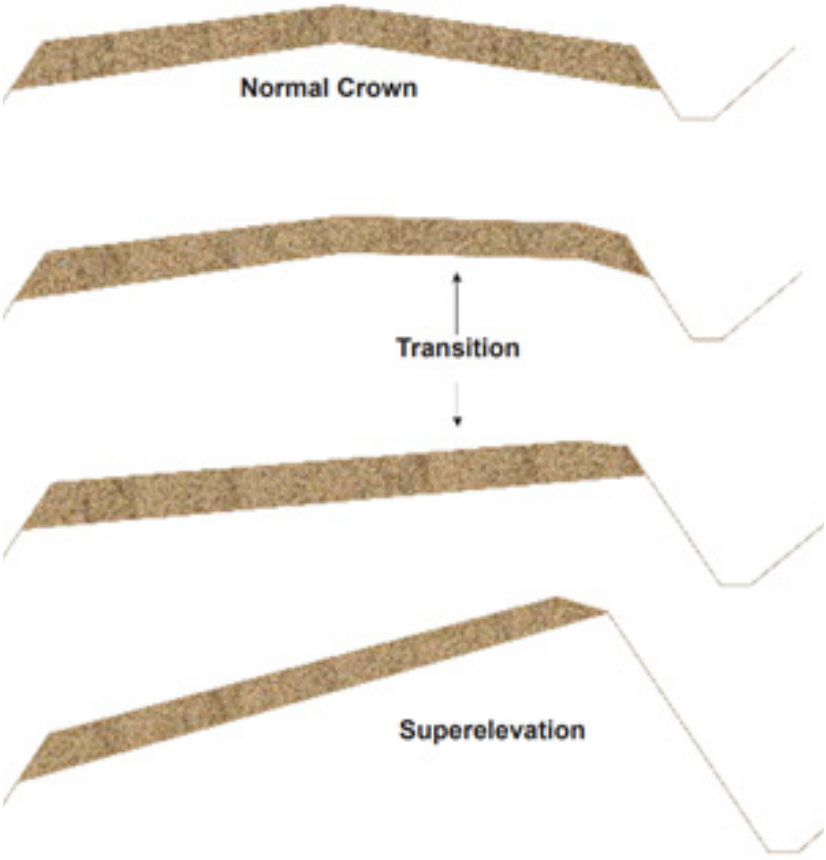


Figure 3.19: Superelevation for Maintaining Safe Turning Movement as a Roadway Curves (source: FHWA)

Soil condition and drainage improvements

Paving a road with poor base or with inadequate drainage can lead to continual maintenance problems. If the foundation fails or the water is not drained properly from the road, the pavement is bound to fail. It is helpful to have a basic knowledge of the soil characteristics in the area and the type of gravel used for the road surface versus the base for pavement. The gravel road surface needs to

have more fines plus plasticity to bind it together, make it drain quicker and create a hard riding surface. Such material is an inferior base for pavement. If pavement is laid over such material, water can become trapped in the base. The high fines and the plasticity of the material make the wet base soft resulting in premature pavement failure.

- Would the gravel road require strengthening and drainage work prior to paving?
- If so, what are cost estimates of the new materials?

3.5.1.1 – QUALITATIVE CONSIDERATIONS

There may be instances where additional considerations beyond the data-driven factors should be considered. The following factors can be assessed on a case-by-case basis when the County is making determinations on paving needs and priorities.

Overall Condition

- Will resurfacing a gravel roadway that has deteriorated due to severe weather events or other contributing factors beyond the control of the Adams County maintenance department represent a high enough level of cost that paving the roadway will be relatively less costly?

A second financial consideration is to compare maintenance costs of a paved road to maintenance costs of a gravel road.

Future Demand

- Is the roadway serving an area where development is set to occur shortly?
- If so, will the development add a high enough volume of vehicle traffic to merit paving?
- Is the roadway located in a section of the County that may redevelop to a higher intensity of residential use or to an industrial use per the future land use plan?

As additional roads become paved, Adams County Public Works will take on maintenance of more lane miles of paved roadways. The overall capacity to maintain the newly paved roads to a state of good repair should be considered first and foremost when making road paving decisions.

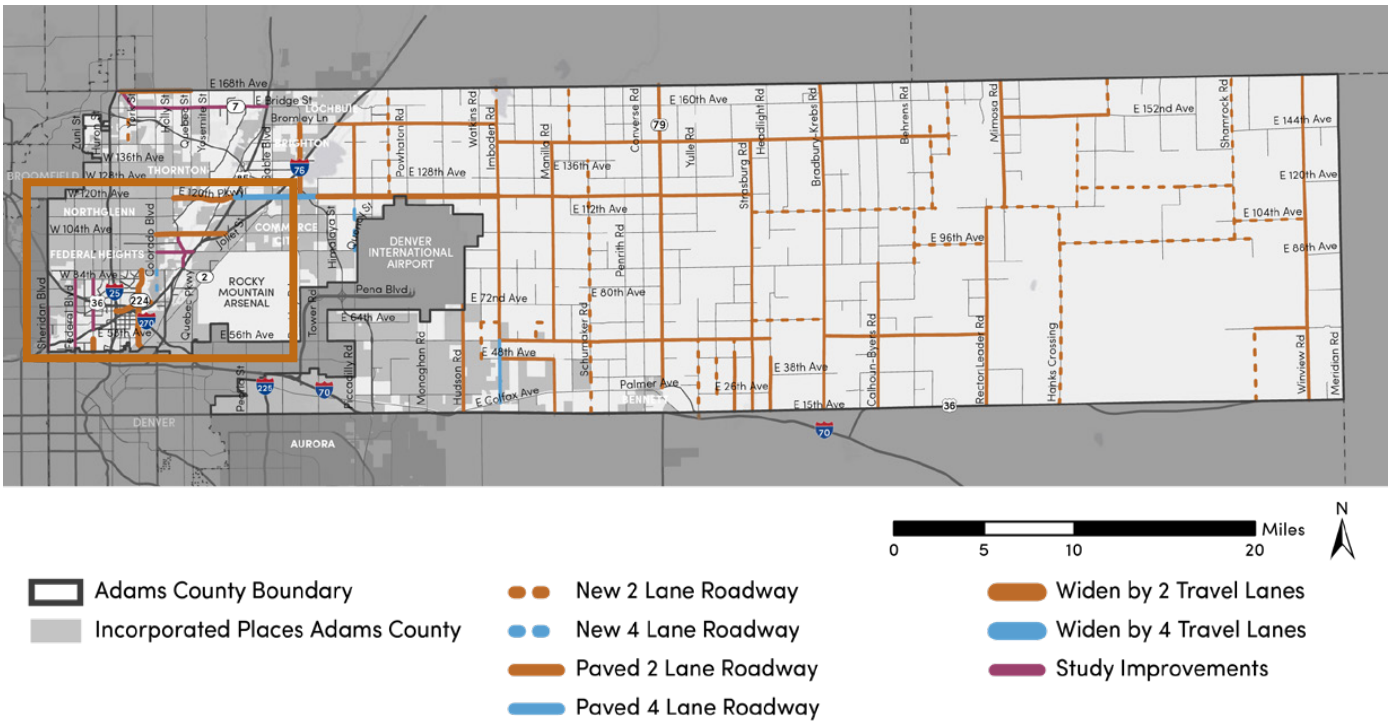
3.6 – FUTURE ROADWAY NETWORK

The future roadway projects for Adams County were determined based on a combination of inputs including: the roadway plan outlined in the 2012 Transportation Master Plan; accommodating future land uses in the preferred land use plan; forecasted traffic growth and volume to capacity ratios; community input; and coordination with investments by neighboring jurisdictions. Projects from the 2012 Transportation

Master Plan that have not yet been implemented were evaluated for continued need. Additional projects were added based on results from community outreach and based on future need as determined by an assessment of planned land uses. **Table 3.2** shows the project details for each proposed project, along with the lead agency. **Map 3.3** displays the project locations. **Chapter 8** offers a prioritized list of the roadway projects the County can use when making decisions on which items to move forward into planning and design phases and earmark in the Capital Improvements Program (CIP).

Adams County is also supportive of potential improvements to state-managed freeways within the County. Specifically, Adams County would like a widening of E-470 evaluated, addition of managed lanes on I-25, and a study of potential improvements to I-270, which is one of the most heavily traveled corridors in the County and is a critical freight corridor. Should the Colorado Department of Transportation explore opportunities to improve key interstate and US highway corridors in Adams County, the County can serve as a stakeholder for establishing needs and opportunities on the corridors.

MAP 3.3: PROPOSED ROADWAY PROJECTS



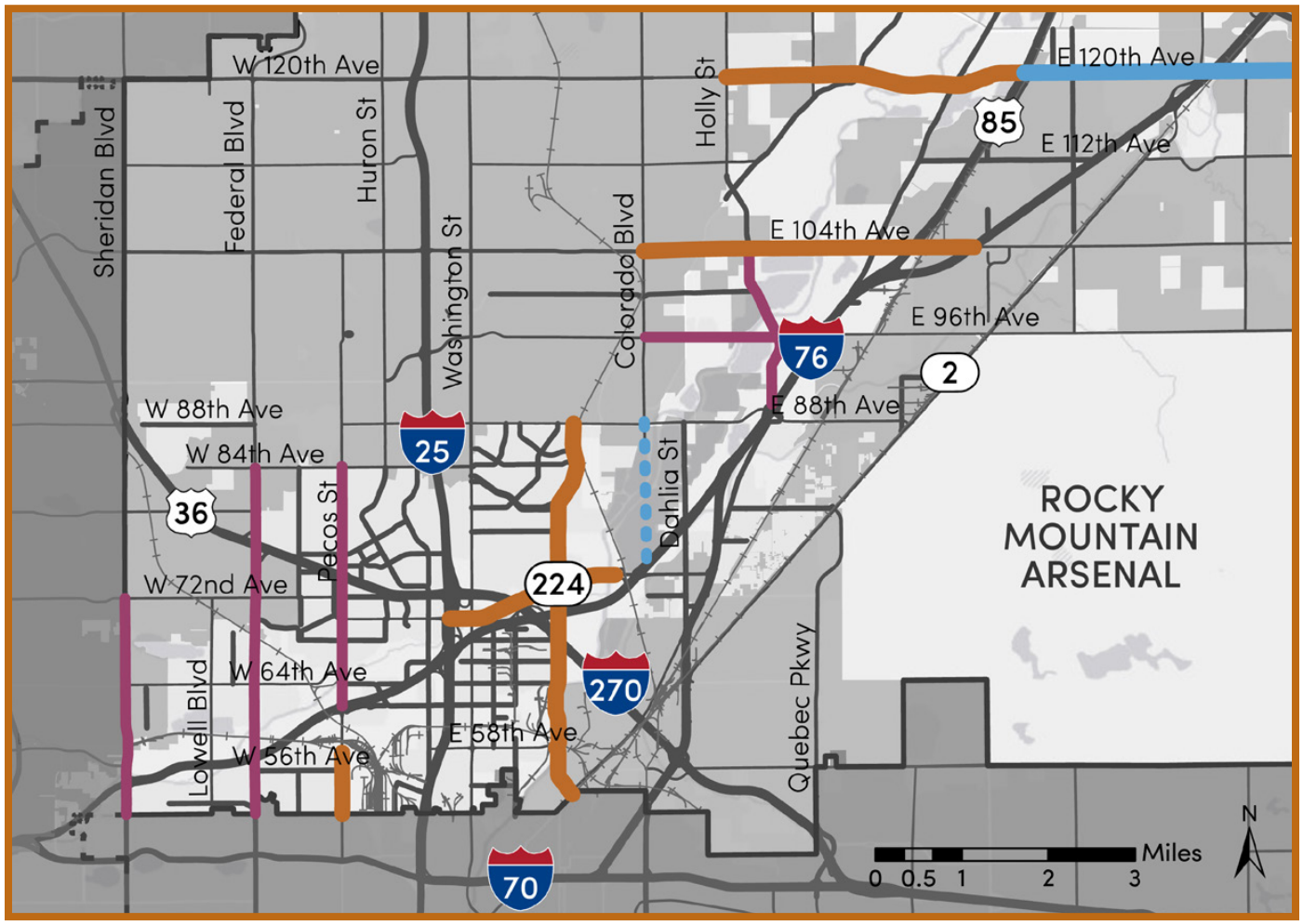


TABLE 3.1: PROPOSED ROADWAY PROJECTS

NAME	EXTENTS	EXISTING	PROPOSED	PROJECT TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
Behrens Rd	88th Ave to 112th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	3.0	$19,649,000	Adams County
Bradbury-Krebs Rd	US 36 to 168th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	18.1	$117,924,000	Adams County
Buckley Rd	120th Ave to 136th Ave	2 Lanes	4 Lanes	Widen by 2 travel lanes	4.0	$12,383,000	Adams County
Calhoun-Byers Rd	US 36 to 88th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	8.1	$52,553,000	Adams County
CO-224	Broadway St to US 85	2 to 4 Lanes	4 Lanes	Widen by 2 travel lanes	2.0	$6,184,000	CDOT
CO-7	I-25 to US 85	2 to 4 Lanes	Study Improvements	Study improvements	8.8	$2,200,000	CDOT
CO-79	I-70 to 168th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	17.9	$116,775,000	CDOT
Colorado Blvd	88th Ave to I-76	None	4 Lanes	New 4 lane roadway	1.6	$16,078,000	Thornton
CO-24	Watkins Rd to E 48th Ave	None	2 Lanes	New 2 lane roadway	2.0	$12,987,000	Adams County
Deter-Winters Rd	112th Ave to 152nd Ave	Unpaved Road	2 Lanes	New 2 lane roadway	5.1	$33,035,000	Adams County
E 104th Ave	Shamrock to Winview	Unpaved Road	2 Lanes	New 2 lane roadway	3.9	$25,370,000	Adams County
E 104th Ave	Colorado Blvd to I-76	2 Lanes	4 Lanes	Widen by 2 travel lanes	3.8	$11,796,000	CDOT
E 112th Ave	Rector to Deter	Unpaved Road	2 Lanes	New 2 lane roadway	4.0	$26,241,000	Adams County
E 112th Ave	Strasburg to Horrogate	Unpaved Road	2 Lanes	New 2 lane roadway	10.3	$67,450,000	Adams County
E 120th Ave	SH 79 to Strasburg	Partially Paved Road	2 Lanes	New 2 lane roadway	5.0	$32,753,000	Adams County

NAME	EXTENTS	EXISTING	PROPOSED	PROJECT TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
E 120th Ave	Imboden to SH 79	Partially Paved Road	2 Lanes	New 2 lane roadway	8.9	$58,230,000	Adams County
E 120th Ave	Holly St to US 85	4 Lanes	6 Lanes	Widen by 2 travel lanes	7.6	$23,548,000	Adams County
E 120th Ave	Deter to Shamrock	Unpaved Road	2 Lanes	New 2 lane roadway	8.7	$56,501,000	Adams County
E 120th Ave	US-85 to Tower	Partially Paved Road	6 Lanes	Widen by 4 travel lanes	4.6	$21,408,000	Adams County
E 120th Ave	Tower to Imboden	Partially Paved Road	4 Lanes	Widen by 2 travel lanes	10.0	$30,837,000	Adams County
E 144th Ave	Imboden to Peoria Crossing	Partially Paved Road	2 Lanes	New 2 lane roadway	25.0	$162,938,000	Adams County
E 152nd Ave	I-76 to Imboden	Partially Paved Road	2 Lanes	New 2 lane roadway	8.9	$58,363,000	Adams County
E 152nd Ave	Mimosa to Philmay	Partially Paved Road	2 Lanes	New 2 lane roadway	5.9	$38,677,000	Adams County
E 168th Ave	I-25 to Quebec St	2 Lanes	4 Lanes	Widen by 2 travel lanes	3.8	$11,892,000	Adams County
E 48th Ave	Imboden Rd to Manilla Rd	Partially Paved Road	2 Lanes	New 2 lane roadway	3.0	$19,574,000	Colorado Air and Space Port
E 56th Ave	Imboden to SH 79	Partially Paved Road	2 Lanes	New 2 lane roadway	15.0	$97,946,000	Adams County
E 56th Ave	East Rd to Winview	Partially Paved Road	2 Lanes	New 2 lane roadway	2.9	$19,118,000	Adams County
E 56th Ave	Bradbury to Rector	Partially Paved Road	2 Lanes	New 2 lane roadway	9.0	$58,789,000	Adams County
E 64th Ave	Strasburg to Bradbury	Unpaved Road	2 Lanes	New 2 lane roadway	4.0	$26,337,000	Adams County
E 64th Ave	E 56th Ave to E 64th Ave	None	2 Lanes	New 2 lane roadway	1.4	$8,871,000	Adams County

NAME	EXTENTS	EXISTING	PROPOSED	PROJECT TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
E 96th Ave	Colorado Blvd to I-76	None	Study Improvements	Study improvements	2.4	$424,000	Adams County
E 96th Ave	Behren to Rector	Unpaved Road	2 Lanes	New 2 lane roadway	4.0	$26,152,000	Adams County
E 96th Ave	Hanks to East Rd	Unpaved Road	2 Lanes	New 2 lane roadway	10.7	$69,650,000	Adams County
East Rd	US 36 to 56th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	4.0	$26,343,000	Adams County
Federal Blvd	52nd to 72nd Ave	4 to 6 Lanes	Study Improvements	Study improvements	4.0	$699,000	CDOT
Hanks Crossing	US 36 to 112th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	10.9	$71,425,000	Adams County
Harvest Rd	120th Ave to 168th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	6.0	$38,913,000	Adams County
Headlight Rd	US 36 to 48th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	3.0	$19,446,000	Adams County
Horrogate Rd	112th Ave to 148th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	4.6	$30,230,000	Adams County
Hudson Rd	US 36 to 72nd Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	5.9	$38,478,000	CDOT
Imboden Rd	56th Avenue to 160th	Partially Paved Road	2 Lanes	New 2 lane roadway	13.0	$84,911,000	Adams County
Imboden Rd	I-70/Quail Run Rd to 56th Ave	Partially Paved Road	4 Lanes	New 4 lane roadway	3.5	$34,947,000	Adams County
Imboden Rd	160th to 168th	None	2 Lanes	New 2 lane roadway	1.1	$6,886,000	Adams County
Manilla Rd	I-70 to 48th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	3.0	$19,484,000	Colorado Air and Space Port
Manilla Rd	56th Ave to 144th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	11.0	$71,813,000	Adams County

NAME	EXTENTS	EXISTING	PROPOSED	PROJECT TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
Mimosa Rd	112th Ave to 168th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	7.1	$46,018,000	Adams County
Monaco St	104th Ave to 88th Ave	2 Lanes	Study Improvements	Study improvements	1.9	$191,000	Adams County
Pecos St	I-76 to 84th Ave	4 Lanes	Study Improvements	Study improvements	2.8	$485,000	Adams County
Pecos St	52nd to 58th	2 Lanes	4 Lanes	Widen by 2 travel lanes	0.7	$2,179,000	Adams County
Peoria Crossing Rd	136th Ave to 168th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	4.0	$26,315,000	Adams County
Petterson Rd	144th Ave to 168th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	3.0	$19,745,000	Adams County
Philmay Rd	152nd Ave to 168th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	2.0	$13,164,000	Adams County
Piccadilly Rd	120th Ave to 152nd Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	4.0	$26,126,000	Adams County
Piccadilly Rd	96th Ave to 120th Ave	None	4 Lanes	New 4 lane roadway	3.0	$29,947,000	Adams County
Piggott Rd	US 36 to 48th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	3.0	$19,619,000	Adams County
Piggott Rd	48th Ave to 56th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	1.0	$6,487,000	Adams County
Rector Leader Rd	US 36 to 112th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	11.0	$71,681,000	Adams County
Schumaker Rd	I-70 to 136th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	14.0	$91,286,000	Adams County
Shamrock Rd	96th Ave to 168th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	9.0	$59,032,000	Adams County
Sheridan Blvd	52nd to 72nd Ave	4 Lanes	Study Improvements	Study improvements	2.5	$438,000	CDOT
Strasburg Rd	48th Ave to 144th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	12.0	$78,412,000	Adams County

NAME	EXTENTS	EXISTING	PROPOSED	PROJECT TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
Strasburg Rd	US 36 to 48th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	5.9	$38,500,000	Adams County
New Roadway	E-470 to E 152nd Pkwy	None	2 Lanes	New 2 lane roadway	1.4	$9,066,000	Adams County
Watkins Rd	Watkins Rd to Imboden Rd	None	2 Lanes	New 2 lane roadway	1.0	$6,678,000	Adams County
Winview Rd	US 36 to 56th Ave	Partially Paved Road	2 Lanes	New 2 lane roadway	18.0	$117,767,000	Adams County
Wolf Creek Rd	26th Ave to 48th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	2.0	$12,920,000	Adams County
York St	58th Ave to 88th Ave	2 to 4 Lanes	4 Lanes	Widen by 2 travel lanes	4.4	$13,633,000	Adams County
Yulle Rd	I-70 to 56th Ave	Unpaved Road	2 Lanes	New 2 lane roadway	4.4	$28,610,000	Adams County

Source: Design Workshop

CHAPTER 4

PEDESTRIAN NETWORK

4.1 - KEY ISSUES

People who walk and use assistive mobility devices in Adams County face several key challenges when navigating the pedestrian environment. First, along arterials such as Federal Boulevard, Washington Street, West 84th Avenue, pedestrians encounter relatively narrow sidewalks directly abutting high volumes, high speed vehicle traffic, frequent curb cuts, and wide crossings at intersections. Many of these arterials are key travel corridors and hotspots of commercial activity, but the high-stress pedestrian environment dissuades people who might otherwise walk or puts those are foot-reliant in uncomfortable situations.

Additionally, sidewalk connectivity poses issues for users walking as transportation. Many sidewalks in the County have missing gaps, requiring users to walk along the shoulder or grass alongside a roadway. These sidewalk connections and safe crossings are especially important near key destinations such as bus stops and commuter rail stations so that transit riders can comfortably access transit. For example, around the Pecos Junction Station, there are sidewalks present along North Pecos Street and the West 62nd Parkway, but no crosswalks for someone beginning their journey on the west side of Pecos Street to reach West 62nd Parkway, and no crosswalk for someone on the sidewalk on the north side of West 62nd Parkway to cross to the south to enter the transit station. Along Washington Street and East 104th Avenue, transit riders must navigate deficient sidewalks, sidewalk gaps, and attached sidewalks that force them to wait for the bus directly alongside heavy traffic.

Finally, because Adams County abuts seven counties and has 17 member jurisdictions, both incorporated and unincorporated, implementing a more connected sidewalk network will require cross jurisdictional collaboration. For roadways such as Federal Boulevard, Pecos Street, and Washington Street that cross multiple jurisdictions, and for roadways under CDOT's jurisdiction, Adams County will need to build relationships and leverage partnerships in order to implement large projects and create a consistent experience for users.

4.2 - BIG IDEAS

The main goals for the pedestrian element of the Transportation Master Plan are to:

Complete sidewalk gaps in high priority pedestrian areas:
Adams County should prioritize the completion of missing sidewalks in locations where there are no facilities but where facilities are required by street standards (per **Chapter 3**).

Rehabilitate existing sidewalks:
This includes replacement of damaged sidewalks and widening of substandard sidewalks.

Rebuild curb ramps to comply with ADA:
Implement new curb ramps and upgrade existing curb ramps to ensure that they are ADA-compliant. This investment should be completed according to the prioritization tiers identified later in this chapter.

Implement new enhanced pedestrian street crossings:
Once key crossing locations are identified based on community concern and the prioritization process defined in this chapter, determine appropriate crossing treatments based on the vehicle volume, vehicle speed, and pedestrian volume.

Consider use of facilities by equestrians:
People riding horses may wish to travel in Adams County or connect to the trail network. Appropriate design considerations should be made, especially on key corridors, to accommodate these users.

4.3 - SIDEWALK UPGRADE PRIORITIZATION METHODOLOGY

The Transportation Master Plan prioritizes sidewalk projects using a data-driven approach to determine those needed most and with the greatest likely return on investment. The framework acknowledges the County has limited funding for sidewalks and identifies the most critical sidewalk gap completion and rehabilitation projects.

To determine the highest priority missing sidewalks in Adams County, missing sidewalks were evaluated on several factors related to access to transit, recreation, key destinations, and safety in order to objectively identify the most important segments for pedestrian connections. The methodology for this analysis built off of the ADA Transition Plan and Making Connections Plan, with the addition of criteria and background data that aligns with the Comprehensive Plan. This analysis was conducted for all roadways, regardless of whether sidewalks already existed there, and also for roadways specifically missing sidewalks. This determines both the highest need for upgrading existing sidewalks and highest need for constructing new sidewalks where they are missing. Priority areas were determined through a spatial analysis consisting of the factors in **Table 4.1**. Some factors of higher importance were given a higher weight, as shown in the 'weight' column. The areas with the highest scores were given the highest priority for pedestrian improvement. The results of this analysis are shown in **Map 4.1**. Each tier of projects is then prioritized as illustrated in **Figure 4.1.**

Within each of these six categories, the County should review and prioritize specific locations for gap completion or rehabilitation annually and on a case-by-case basis. In addition to the designated tier, decision makers should also consider the following

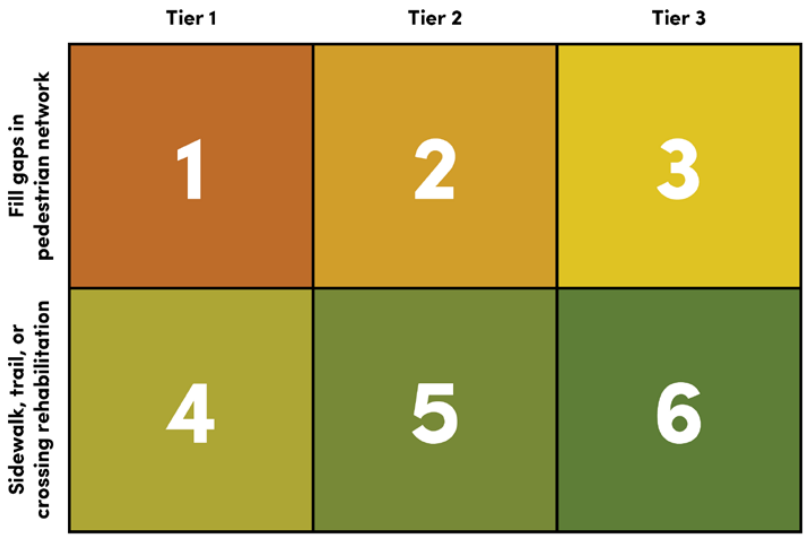


Figure 4.1: Illustration of Pedestrian Prioritization Methodology (Source: Fehr & Peers)

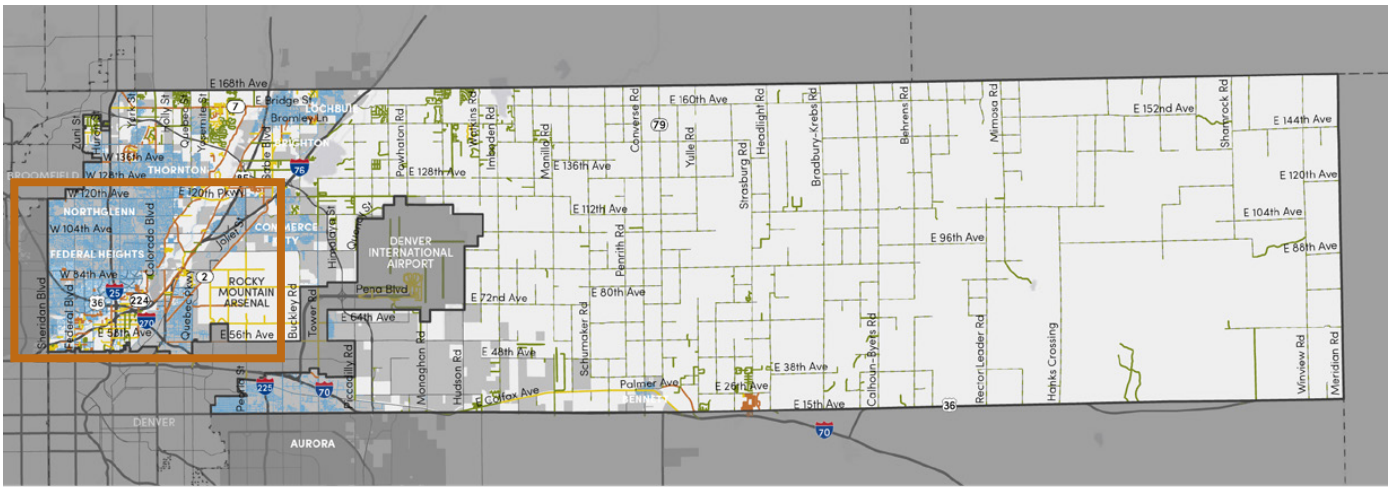
factors that may shift when a sidewalk is completed, regardless of its tier:

- Is there new development and/or a willing property owner adjacent to the sidewalk location?
- How/when does this location tie into the street paving/ rehabilitation schedule?
- Is there a funding source available such as a Safe Routes to School grant?
- Could partnerships be formed with local entities to perform upgrades?

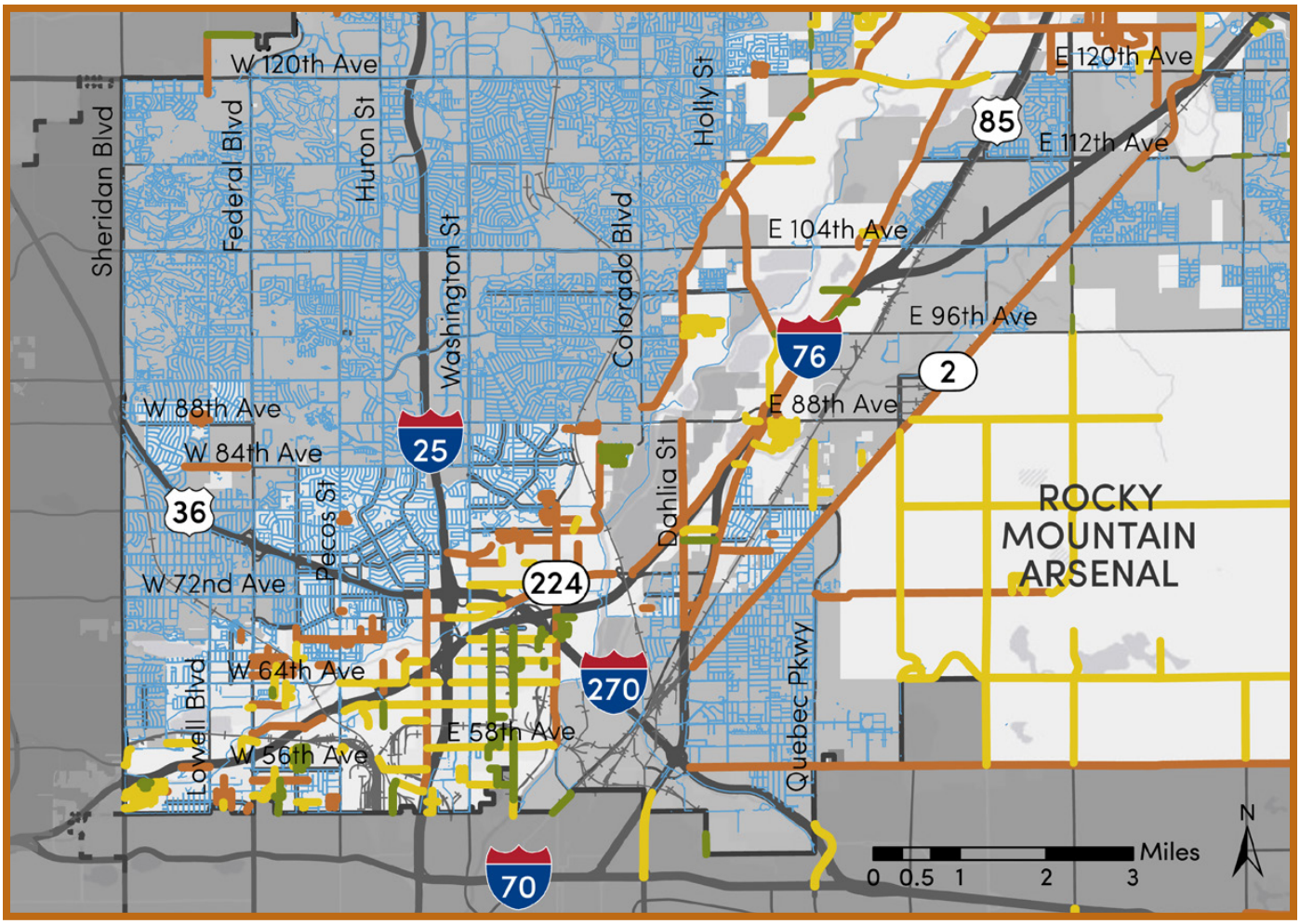
TABLE 4.1: SIDEWALK UPGRADE PRIORITIZATION INPUTS

INPUTS	HOW EACH CORRIDOR WILL BE SCORED	WEIGHT
Proximity to bus stops	1 - if within ¼ mile of bus stop 0 - if not	2
Proximity to commuter rail stations	1 - if within ½ mile of commuter rail station 0 - if not	2
Proximity to parks/open space	1 - if within ¼ mile of a park 0 - if not	1
Proximity to trail access points	1 - if within ¼ mile of trail access point 0 - if not	1
DRCOG Urban Centers	1 - if within DRCOG Urban Center 0 - if not	1
Proximity to key destinations (hospitals/ urgent care, public libraries, grocery stores, rec centers)	2 - if within ¼ mile of 2+ key destinations 1 - if within ¼ mile of 1 key destination 0 - if not	1
Proximity to schools, including early learning centers	2 - if within ½ mile of 2+ schools 1 - if within ½ mile of 1 school 0 - if not	2
Frequency of bike and pedestrian related crashes along corridor (2013-2018)	2 – 6-11 bike and pedestrian related crashes within 100 feet of corridor, or any fatal or serious injury bike and pedestrian crashes within 100 feet of the corridor 1 - 1-5 bike and pedestrian related crashes within 100 feet of corridor 0 - 0 bike and pedestrian related crashes within 100 feet of corridor	2

MAP 4.1: TIERED PEDESTRIAN PRIORITY AREAS



- Adams County Boundary
- Incorporated Places Adams County
- Existing Sidewalks
- Tier 1 (High Priority Missing Sidewalks)
- Tier 2 (Medium Priority Missing Sidewalks)
- Tier 3 (Low Priority Missing Sidewalks)
- Sidewalks Not Required



4.4 - PEDESTRIAN CROSSINGS

Safe pedestrian crossings are critical to the comfort of the overall pedestrian network. Pedestrian networks are only as comfortable as their least comfortable link which in many cases are roadway crossings. There are two basic categories for pedestrian crossings—controlled crossings and uncontrolled crossings. A controlled crossing is a crosswalk across a roadway that is controlled by a stop sign or traffic signal. Controlled crossings are typically installed on roadways with higher vehicle volumes and vehicle speeds such as arterials or collectors. An uncontrolled crossing is a crosswalk where vehicle traffic is not controlled by a stop sign or traffic signal. Uncontrolled crossings are typically located on local roadways where vehicle volumes and speeds are relatively low. The specific treatments at both controlled and uncontrolled crossings (marked crosswalk, signage, flashing beacons, etc.) should be determined using national best practices. For example, the National Association of City Transportation Officials' (NACTO) Urban Street Design Guidelines include important considerations and recommendations for designing safe and comfortable pedestrian crossings for both controlled and uncontrolled crossings. The FHWA and USDOT developed the Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations. This document details the best practices used across the country for building safe and comfortable uncontrolled crossings. It summarizes criteria for pedestrian uncontrolled crossings and details procedures for evaluating the types of crossing treatments that may be applicable for a particular set of vehicular volumes, speeds, and roadway geometries. Creating safe and appropriately spaced roadway crossings is an important component of a complete pedestrian network. Both proactive and reactive approaches are key to a comprehensive pedestrian crosswalk safety strategy.

4.4.1 - REACTIVELY ADDRESSING PEDESTRIAN CROSSING LOCATIONS

Reactive approaches to improving pedestrian crossing locations include responding to a request or concern expressed by community members about a particular crossing location or identifying needed safety improvements based on a location's history of severe or fatal crashes. To address these identified concerns, County staff can refer to the Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations provided by the FHWA, or the Urban Street Design Guidelines created by the NACTO to determine what treatment type is appropriate at each location. The County should also consider developing or adopting its own standards for pedestrian crossings.T reatment type is based on vehicular traffic volume, speed limit, and number of travel lanes.

Treatments to consider include high visibility crosswalks markings, raised crosswalks, signage, curb extensions, pedestrian refuge islands, beacons such as Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB), or road reconfigurations (also known as road diets). Additionally, the crash profiles detailed in DRCOG's Taking Action on Regional Vision Zero plan can be helpful in linking common crash types to safety improvements. Responding to these issues is an important part of improving the pedestrian network but must be in balance with proactively addressing unsafe crossing locations before severe or fatal crashes can occur.

4.4.2 – PROACTIVELY ADDRESSING PEDESTRIAN CROSSING LOCATIONS

The sidewalk completion prioritization in **Table 4.1** should be applied to prioritization of crossing enhancements as well. Proactive approaches to investigating street crossings could include walking audits, fieldwork, and community outreach to identify pedestrian safety, connectivity, or comfort issues that may not be evident in reported crash records or specific requests from the community. Once crossing locations that are missing or in need of upgrades are identified (starting with Tier 1), each crossing should be assigned a priority score. This score could be based on the peak hour pedestrian crossing volume and the corresponding conflicting vehicular volume, divided by the project's cost. Locations with the highest score should be prioritized for planning and implementation.

Score = (Pedestrian volume x Vehicle volume) / Project cost

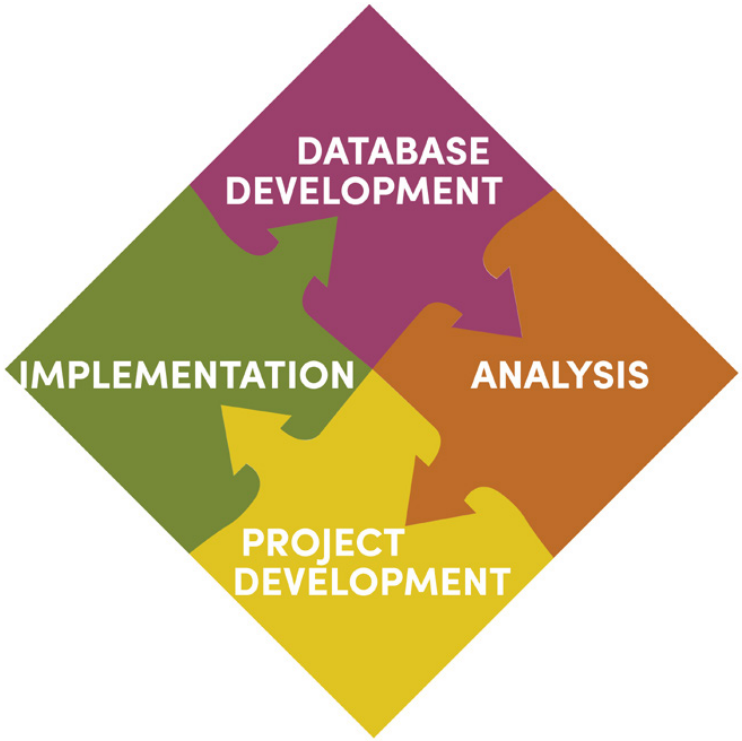
Adams County can also identify priority safety projects based on high-risk roadway features that correlate with particularly severe crash types. This systemic safety approach goes beyond spot treatments where previous crashes have occurred to identifying locations across the system that have the highest potential for future severe crashes. Other factors to consider in identifying and prioritizing crossing locations include proximity to key destinations such as parks or schools, number of vulnerable users (such as school-aged children), and roadway geometry. Additionally, Adams County should adopt pedestrian crossing standards to ensure all future intersections or midblock crossings that are built are in line with national best practices for safe and comfortable crossings for all users).

4.4.3 – PEDESTRIAN AND BICYCLE GRADE SEPARATED CROSSINGS

Grade separated crossings are dedicated crossing facilities for people walking and people biking. Grade separated crossings can be designed as over-passes (bridges) or underpasses (tunnels). Grade separated crossings create a low

stress connection across roadways allowing people walking and people biking to cross without having to navigate vehicle traffic. These crossing types are an essential component of Safe Systems (**Figure 4.3)**, which is an evidenced-based approach defined by FHWA to reduce fatal and severe traffic crashes. The Safe System acknowledges that people make mistakes. A Safe System helps communities design transportation networks that ensure inevitable mistakes made by roadway users do not result in fatalities. Factors to consider include:

Figure 4.2: Illustration of the Components of the Safe Systems Approach (Source: Fehr & Peers)



Speed

Candidates for grade separated crossings include streets operating at or above 35 mph. As shown in **Figure 4.3**, fatalities increase significantly as speed increases.

Facility type

The weakest link approach conveys that a walking experience will be negatively altered by the most stressful point in a trip, typically at a roadway crossing. Investing in grade separated crossings where trails and paths cross arterials extends the low stress facility across the roadway.

Users

Grade separated crossings are valuable to people of all ages and abilities. Grade separated crossings can be located where children are present, including at destinations such as schools, parks, and libraries. Grade separated crossings also

- Collisions
- Safety concerns
- Crowdsourcing
- Roadway characteristics
- Land uses
- Demographics

- Collision landscape
- Collision profiles
- Systemic typologies
- Countermeasure selection

- Benefit / cost
- Community support
- Prioritization
- Concept plans

- Grant applications
- Interim design
- Final plans
- Evaluation

ensure a safe and low stress crossing opportunity for older adults, those with mobility challenges, and others who may have trouble crossing high-speed, high-volume roadways at grade.

4.5 - CONNECTIONS FOR EQUESTRIAN USERS

Adams County has a prominent culture of equestrian users that wish to travel on roadways or access trails. The County should understand the design considerations for these unique users and key corridors that might provide desired access. Equestrians are encouraged to use the multiuse trail network but may need to access trails by connecting on the roadway. A wide sidewalk, at least ten feet, is recommended to provide space between people walking and biking and horses. If there is right-of-way, a parallel soft surface trail provides an ideal surface and separation for people riding horses. Barriers improve safety for all trail users—they can prevent a scared animal from running into the path of others. The barrier must be sturdy and tall (at least 54 inches) enough to gain a horse's respect or the animal may attempt to run through or jump over it. Additional push buttons can be located at a height accessible to those on a horse—on average 70 inches above ground level.

One specific corridor to consider implementing these design considerations is Washington Street. Washington Street provides a key connection to the Western Stock Show and the South Platte Trail.

Figure 4.3: Correlation Between Vehicle Speed and Fatality (Source: ITE)

Source: Fehr & Peers

CHAPTER 5

BICYCLE NETWORK

The bicycle network in Adams County includes both on- and off-street bicycle facilities. Dedicated, connected bicycle facilities offer a comfortable place for those in Adams County to recreate or travel.

Advancing Adams sets forth a vision for bicycling in the County that makes it much more attractive for all users, regardless of their age or ability.

- The benefits of a multimodal transportation system, including a connected bicycle network, include:
- Improved community health outcomes, including physical and mental well being
- Increased equity for affordable and accessible transportation options
- Enhanced quality of life through the expansion of transportation choices
- Expanded safe access to transit facilities for those who cannot or choose not to drive
- Enriched social capital that includes more interactions with and connections to community
- Strengthened environmental sustainability through improved air quality and fewer vehicle miles traveled (VMT)
- Improved economic benefits through spending at local businesses
- Increased safety across all modes and especially for vulnerable roadway users

While there are already 31 miles of bike lanes as well as shared use paths for recreation and transportation, given the size of the County, there are still many gaps in the network and other barriers to bicycling. *Advancing Adams* recognizes these challenges and outlines a future bicycle network that will address them. The bicycle facilities recommended in this plan are based on national best practices including standards and guidelines set by the American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO).

5.1 - KEY ISSUES

Challenges within Adams County's existing bicycle network include connectivity issues, poor wayfinding, and a lack of comfortable bicycle facilities. The current bicycle network is disconnected, with gaps in bicycle facilities. Members of the public and stakeholders identified that despite living close enough to bike to the grocery store, trails, parks, and commuter rail stations, they felt that a lack of direct paths of travel to these destinations prevented them from biking for transportation. Given the investment in trails that do not provide direct connections in the County, missing connections to these existing

amenities is a key barrier to address in the plan.

We heard consistently in public outreach and in focus groups that Adams County residents and visitors generally prefer to bike off-street (on a trail) than on-street (on a bike lane). This provides a more comfortable experience that is separated from vehicles. Therefore, the focus of the bicycle network is to leverage existing and proposed trails and focus on improving access to trails through low-stress on-street facilities. Protected bike lanes (where there is a vertical buffer between people driving and people biking) and sidepaths, (wide sidewalks that provide enough space for people biking and walking), are the most effective way to provide those connections when a trail isn't possible. We recommended protected bike lanes and sidepaths to make sure we are continuing the facilities of neighboring jurisdictions, providing bike facilities along corridors of change per the land use plan, and connecting to key destinations.

High comfort bicycle facilities such as sidepaths and protected bike lanes require tradeoffs. This may come in the form of high costs, expanding curb to curb width, acquiring additional right-of-way, or high maintenance costs.

Figure 5.1: Person Bicycling in Adams County

5.2 - BIG IDEAS

The proposed bicycle facilities in *Advancing Adams* will increase connectivity of the network and support biking for transportation as well as recreation. In order to create a more connected, gridded network and support access to additional destinations, an emphasis was placed on identifying low stress connections to existing and proposed trails. There was also a heavy focus of continuing existing and planned bicycle facilities from neighboring and incorporated jurisdictions into Adams County in order to create a seamless experience for the user. Development of the proposed bicycle network was also coordinated closely with the Preferred Land Use Plan, in order to create comfortable connections for people

biking to existing and planned key destinations.

Especially in the eastern portion of the County, a phased approach will be needed for constructing bicycle infrastructure as areas develop. Because of the types of bicyclists and traffic volumes in the eastern portion of the County, on-street bicycle facilities are recommended rather than off-street facilities. Additionally, based on feedback from public engagement participants, the plan recommends amenities including enhanced wayfinding and signage, additional parking at trailheads, bike racks/bike share stations, and bicycle repair stations, per identification in the programs section of **Chapter 2**.

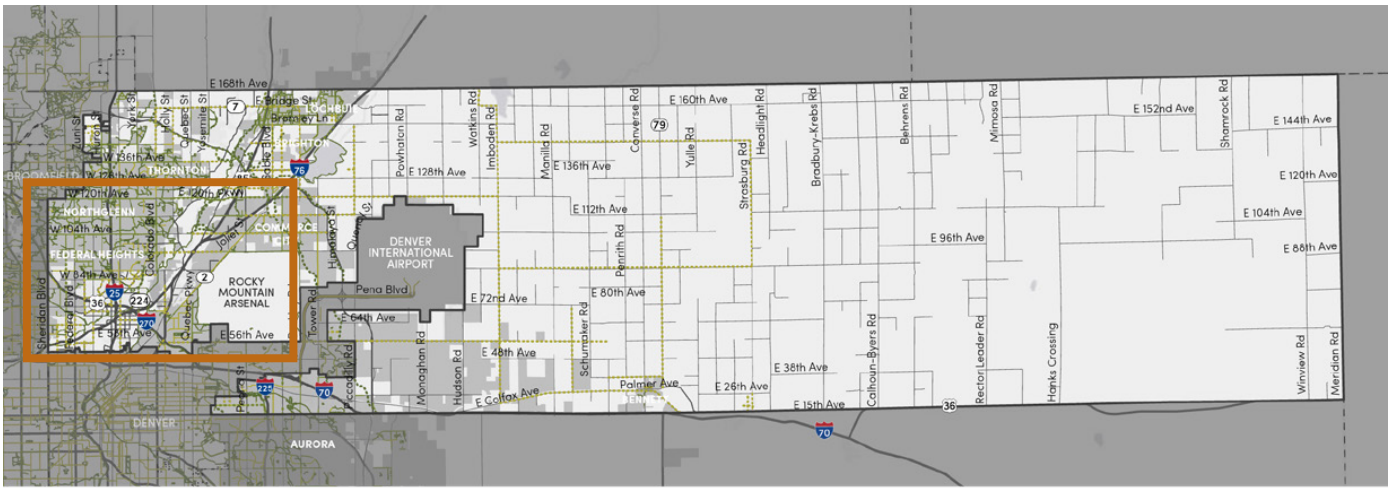
5.3 - FUTURE BICYCLE NETWORK

The future bicycle network and project list are shown in **Map 5.1** and **Table 5.1**, respectively. The development of this network builds off the Adams County 2012 Transportation Master Plan, DRCOG priority bicycle corridors, the existing and proposed bicycle facilities in neighboring jurisdictions, gaps in the existing bicycle network, access to key destinations, and public input.

The network categorizes all proposed facilities as on- or off-street. There are a spectrum of different types of on-street bicycle facilities and spectrum of off-street facility types. This plan does not recommend a specific facility type, understanding that additional analysis of curb-to-curb width, right-of-way, and costs will need to be considered to identify a specific facility type. The County should conduct an additional study before implementation of a bicycle facility.

This plan does identify a glossary of bicycle facility types at this end of this chapter that are recommended that help guide selection of specific facilities and ensure consistency of bicycle facility type within the County. On-street facilities include neighborhood bikeways, bike lanes or buffered bike lanes, or protected bike lanes. Off-street facility types include sidepaths and trails.

MAP 5.1: FUTURE BICYCLE NETWORK



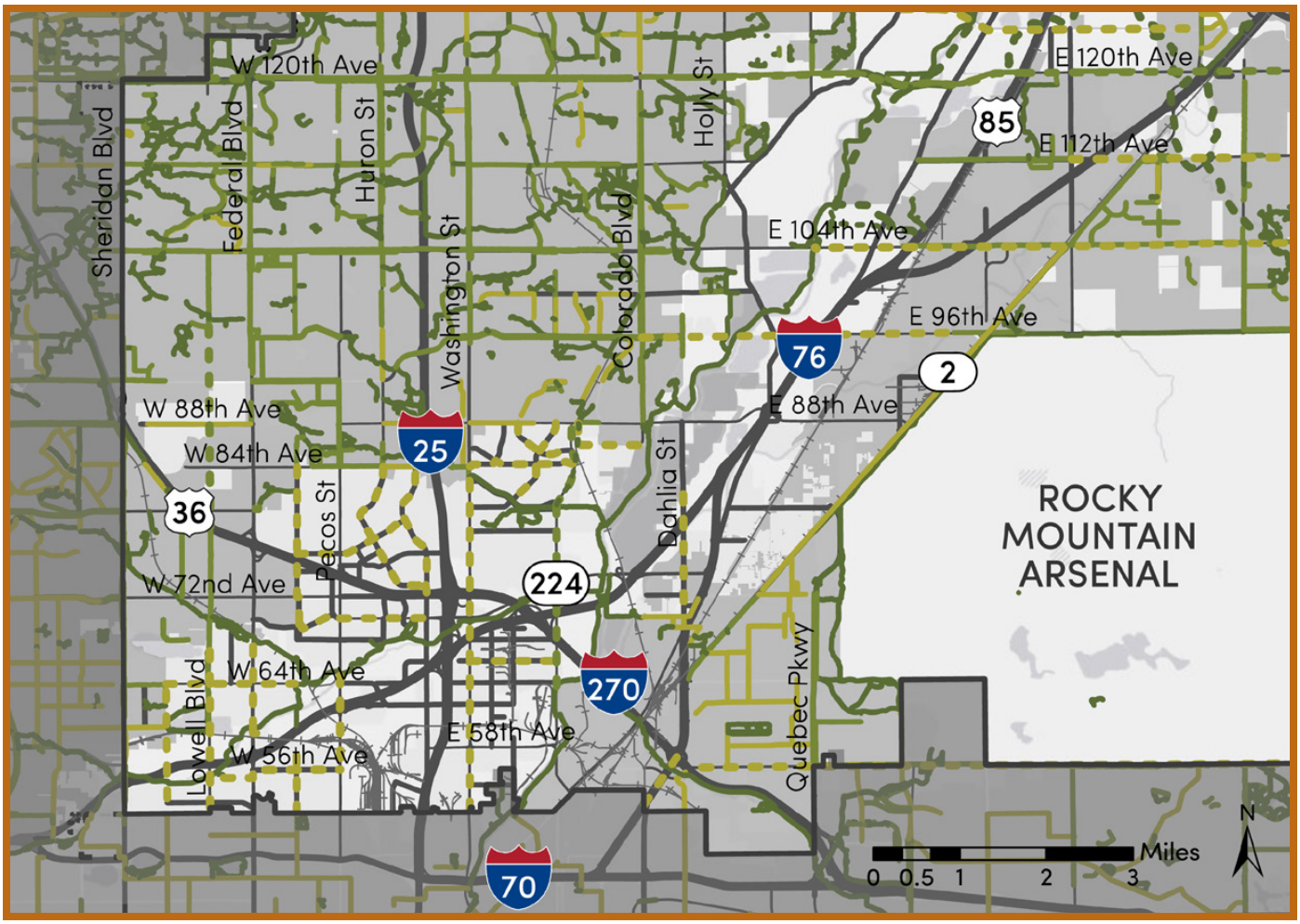


TABLE 5.1: FUTURE BICYCLE NETWORK PROJECTS

FACILITY NAME	EXTENT 1	EXTENT 2	FACILITY TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
76th Ave/El Paso Blvd	Zuni St	Conifer Rd	On-Street	1.4	$168,000	Adams County
Broadway Blvd	84th Ave	Denver Boulder Turnpike	On-Street	1.6	$199,000	Adams County
Buckley Rd	Bridge St	120th Ave	On-Street	5.0	$626,000	Adams County
Clear Creek - Federal Station	Clear Creek Trail	Clear Creek - Federal Station	On-Street	0.2	$21,000	Adams County
CO-2	Eisenhower Hwy	E 53rd Ave	On-Street	0.7	$83,000	Commerce City
CO-79	E 112th Ave	Palmer Ave	On-Street	9.6	$1,193,000	CDOT
Colorado Blvd	141st Ave	CO-7	On-Street	2.3	$282,000	Adams County
Dahlia St	Frontage Rd	E 70th Ave	On-Street	1.4	$175,000	Adams County
E 104th Ave	Colorado Front Range Trail	E-470	On-Street	7.4	$923,000	CDOT, Commerce City
E 112th Ave	Peoria St	Picadilly Rd	On-Street	6.0	$744,000	Commerce City
E 120th Ave	High Plains Pkwy	Imboden Rd	On-Street	11.0	$1,364,000	Adams County
E 124th Ave	Park Blvd	Sable Blvd	On-Street	3.1	$385,000	CDOT
E 132nd Ave	Second Creek Trail	US-6	On-Street	2.6	$325,000	Adams County
E 132nd Ave	Barr Lake	Picadilly Rd	On-Street	0.5	$60,000	Adams County
E 136th Ave	Monaco St	Riverdale Rd	On-Street	2.2	$272,000	Thornton
E 144th Ave	Brighton Rd	27th Ave	On-Street	2.7	$336,000	Adams County
E 144th Ave	Imboden Rd	Strasburg Rd	On-Street	14.0	$1,740,000	Adams County
E 160th Ave	Colorado Blvd	27th Ave	On-Street	7.9	$981,000	CDOT
E 38th Ave	Harback Rd	Kiowa Bennett Rd	On-Street	3.0	$373,000	Adams County
E 56th Ave	Eudora St	E-470	On-Street	11.3	$1,408,000	Adams County
E 56th Ave	E-470	West Sand Creek	On-Street	13.1	$1,623,000	Colorado Air and Space Port
E 60th Ave	Dunkirk St	New Trail	On-Street	0.7	$85,000	Aurora
E 66th Ave	Washington St	York St	On-Street	1.0	$124,000	Adams County
E 88th Ave	Imboden Rd	Strasberg Rd	On-Street	14.0	$1,737,000	Adams County
E 96th Ave	Colorado Blvd	Heinz Way	On-Street	3.6	$447,000	Adams County
Essex Dr/84th Ave	Washington St	Devonshire Blvd	On-Street	1.3	$156,000	Adams County

FACILITY NAME	EXTENT 1	EXTENT 2	FACILITY TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
Explorador Calle/ Rainbow Ave	88th Ave	Coronado Pkwy	On-Street	1.1	$134,000	Adams County
Federal Blvd	Little Dry Creek Trail	Clear Creek Trail	On-Street	1.1	$132,000	CDOT
Fulton St	E 26th Ave	Montview Blvd	On-Street	0.5	$62,000	Aurora
Greenwood Blvd	84th Ave	Broadway Blvd	On-Street	1.9	$232,000	Adams County
Henderson Rd	Riverdale Rd	Park Blvd	On-Street	0.4	$49,000	Adams County
Holly St	E 160th Ave	E 144th Ave	On-Street	2.0	$246,000	Adams County
Iola St	E 26th Ave	Montview Blvd	On-Street	0.5	$64,000	Aurora
Jordan Dr	Zuni St	W 70th Ave	On-Street	0.6	$70,000	Adams County
Lowell Blvd	W 67th Ave	W 52nd Ave	On-Street	1.9	$232,000	Adams County
Manilla Rd	E 72nd Ave	Eisenhower Hwy	On-Street	4.8	$597,000	Colorado Air and Space Port
McElwain Blvd	88th Ave	Devonshire Blvd	On-Street	0.8	$103,000	Adams County
Monroe St	E 26th Ave	US-36	On-Street	1.0	$122,000	Adams County
N Imboden Rd	US-6	Colfax Ave	On-Street	24.4	$3,027,000	Adams County
Pecos St	Clear Creek Trail	56th Ave	On-Street	1.1	$134,000	Adams County
Pecos St	W 152nd Ave	W 144th Ave	On-Street	1.1	$133,000	Adams County
Picadilly Rd	E 152nd Ave	E 122nd Ave	On-Street	5.0	$620,000	Adams County
S 50th Ave	E Southern St	Frontage Rd	On-Street	0.4	$51,000	Adams County
Sable Blvd	Bromley Ln	E-470	On-Street	3.0	$374,000	Adams County
Spruce Ave	Aspen St	Basil St	On-Street	0.7	$87,000	Adams County
Strasburg Rd	144th Ave	88th Ave	On-Street	7.0	$866,000	Adams County
Future Street	Bromley Ln	E-470	On-Street	3.1	$385,000	Adams County
Future Street	E Southern St	E 152nd Ave	On-Street	0.5	$63,000	Adams County
Tennyson St	W 63rd Dr	W 52nd Ave	On-Street	1.4	$176,000	Adams County
Tower Rd	E Southern St	E 152nd Ave	On-Street	0.5	$59,000	Adams County
US-36	Imboden Rd	Monroe St	On-Street	14.4	$1,794,000	CDOT
W 115th Ave	Sheridan Blvd	Wolff St	On-Street	0.3	$33,000	Westminster
W 149th Ave	Zuni St	Huron St	On-Street	1.0	$122,000	Adams County
W 152nd Ave	Zuni St	Huron St	On-Street	1.0	$122,000	Adams County
W 55th Pl/W 56th Ave	Julian St	Pecos St	On-Street	1.4	$179,000	Adams County
W 64th Ave	Tennyson St	Clear Creek Trail	On-Street	1.5	$185,000	Adams County

FACILITY NAME	EXTENT 1	EXTENT 2	FACILITY TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
W 70th Ave	Pecos St	Broadway Blvd	On-Street	1.0	$124,000	Adams County
Wagner St	E 24th Ave	US-36	On-Street	0.8	$102,000	Adams County
Washington St	E 83rd Dr	E 52nd Ave	On-Street	3.8	$475,000	Adams County
Welby Rd/E 86th Ave	E 88th Ave	Colorado Blvd	On-Street	0.9	$118,000	Adams County
Zuni St	W 59th Pl	W 52nd Ave	On-Street	0.7	$93,000	Adams County
Zuni St	84th Ave	Fern Dr	On-Street	1.8	$228,000	Adams County
Chambers Rd	Montview Blvd	Colfax Ave	Sidepath	0.5	$251,000	Aurora
Chambers Rd	E 40th Ave	Moncrieff Pl	Sidepath	0.7	$355,000	Aurora
E 120th Ave	Sheridan Blvd	Federal Blvd	Sidepath	0.6	$276,000	CDOT, Westminster
E 120th Ave	US-85	High Plains Pkwy	Sidepath	3.6	$1,775,000	CDOT, Commerce City
E 120th Pkwy	Holly St	US-85	Sidepath	3.5	$1,741,000	Adams County
E Colfax Ave	Espana St	Himalaya Rd	Sidepath	0.4	$218,000	Aurora
E Colfax Ave	Himalaya Rd	E-470	Sidepath	1.9	$963,000	Aurora
E Montview Blvd	Central Park Blvd	Fitzsimons Pkwy	Sidepath	2.9	$1,466,000	Aurora
E-470 Trail	Signal Ditch	Quebec St	Sidepath	1.5	$745,000	CDOT
E-470 Trail	Rail Tracks	Signal Ditch	Sidepath	1.1	$531,000	CDOT
E-470 Trail	Quebec St	East of Boston St	Sidepath	1.5	$772,000	CDOT
E-470 Trail	East of Boston St	Fishing Is Fun Pond	Sidepath	1.5	$731,000	Adams County
E-470 Trail	South Platte Trail	Second Creek Trail	Sidepath	2.6	$1,279,000	CDOT
Fitzsimons Pkwy	Montview Blvd	13th Ave	Sidepath	0.8	$400,000	Aurora
Lowell Blvd	W 97th Ave	Denver Boulder Turnpike	Sidepath	2.3	$1,157,000	Westminster, Federal Heights
Quivas St	W 136th Ave	End of Quivas St	Sidepath	0.3	$148,000	Westminster
S 4th Ave/Sable Blvd	Bromley Ln	144th Ave	Sidepath	1.0	$493,000	Adams County
So. Platte River Trail	Adams County Boundary	Smith Park	Sidepath	0.8	$386,000	Adams County
US-6	E 152nd Ave	Eagle Blvd	Sidepath	1.4	$723,000	CDOT
Washington St	E 104th Ave	E 102nd Ave	Sidepath	0.3	$138,000	Thornton
Washington St	Washington Center Pkwy	120th Ave	Sidepath	0.4	$182,000	Thornton

FACILITY NAME	EXTENT 1	EXTENT 2	FACILITY TYPE	MILES	PLANNING LEVEL COST ESTIMATE	LEAD
Welby Rd/ Devonshire Blvd	E 88th Ave	Niver Creek Trail	Sidepath	1.0	$508,000	Adams County
York St	Niver Creek Trail	South Platte Trail	Sidepath	2.1	$1,040,000	Adams County
First Creek Trail	E 38th Ave	Colfax Ave	Trail	2.7	$5,299,000	Adams County
Little Dry Creek Trail Spur	Little Dry Creek Trail	Midtown	Trail	0.0	$50,000	Adams County
Little Dry Creek Trail Spur	Little Dry Creek Trail	Midtown	Trail	0.0	$37,000	Adams County
So. Platte River Trail	Fishing Is Fun Pond	North of E-470	Trail	0.8	$1,513,000	Adams County
So. Platte River Trail	North of E-470	North of 144th Ave	Trail	0.8	$1,501,000	Adams County
So. Platte River Trail	North of 144th Ave	South of Bromley Ln	Trail	1.0	$2,050,000	Brighton
So. Platte River Trail	120th Ave	104th Ave	Trail	2.1	$4,175,000	Adams County
So. Platte River Trail	South of 120th Pkwy	North of 120th Pkwy	Trail	0.4	$832,000	Adams County
So. Platte River Trail	South of 120th Ave	124th Ave	Trail	0.8	$1,479,000	Adams County
New Trail	Adams County Boundary	56th Ave	Trail	2.3	$4,449,000	Aurora
New Trail	E 168th	E-470	Trail	1.8	$3,434,000	Adams County
New Trail	South Platte Trail	Pena Blvd	Trail	12.4	$24,226,000	Adams County
New Trail	Montview Blvd	Colfax Ave	Trail	0.7	$1,429,000	Aurora
New Trail	120th Ave	E 112th Ave	Trail	1.2	$2,317,000	Adams County
New Trail	Chambers Rd	120th Ave	Trail	5.3	$10,357,000	Adams County
New Trail	So. Platte River Trail	Brighton Rd	Trail	0.6	$1,218,000	Adams County
New Trail	Brighton Rd	US-85	Trail	0.4	$877,000	Commerce City
Westerly Creek Trail	E 26th Ave	Montview Blvd	Trail	0.6	$1,086,000	Aurora

5.4 - GLOSSARY OF BICYCLE FACILITIES

This section defines and describes characteristics of the future bicycle facility types. Understanding the characteristics of these facilities is critical for successful implementation that applies both best practices and local standards.

5.4.1 - NEIGHBORHOOD BIKEWAYS

Neighborhood bikeways (or bike boulevards or bike routes) are bikeways on streets with low vehicle volumes and speeds where people bicycling share the travel lane with people driving. Neighborhood bikeways use signs, pavement markings, and speed/volume management to communicate the presence and prioritization of people bicycling. Typically, these streets are local, residential roads generally not used for through travel of vehicles. Bicycle routes should include wayfinding signage with distance, direction, and destination information. The Level of Traffic Stress methodology identifies that the posted speed limit for roadways designated as low stress neighborhood bikeways should generally be 25 mph or less and move fewer than 3,000 vehicles per day. To ensure travel speeds do not exceed 25 mph, neighborhood

Figure 5.2: Neighborhood Bikeway

bikeways may include traffic calming features that control volume or speed through vertical deflection (speed humps) and horizontal deflection (bulb outs, chicanes, medians). The US Traffic Calming Manual (Ewing, Reid, & Steven Brown) can be used to identify the appropriate treatment type for each neighborhood bikeway corridor. A study of each identified neighborhood bikeway should be completed to plan and design the appropriate treatments (i.e., traffic calming, pavement markings, such as bicycle stamps, and wayfinding) for each specific corridor.

5.4.2 – BICYCLE LANES AND BUFFERED BICYCLE LANES

A bicycle lane is a designated lane for people bicycling, separated from the general-purpose travel lane or parking lane by a single white line. NACTO recommends that bicycle lanes be five to six-feet wide (but not more than seven-feet wide), not including curb and gutter. When adjacent to on-street parking, a "door zone" between the bicycle lane and parked cars reduces conflicts between people opening car doors and people biking. A buffered bicycle lane has a painted buffer with limited cross hatching between the bicycle lane and vehicle travel lane. A buffer can increase safety and provide additional comfort for bicyclists, especially on higher speed, higher volume roadways. The identification of future bicycle lane and buffered

Figure 5.3: Bicycle Lane

Figure 5.4: Buffered Bicycle Lane

Figure 5.5: Protected Bike Lane

bicycle lane locations should include the consideration of existing right-of-way, vehicle speeds, vehicle volumes, travel lane requirements, and on-street parking. Bicycle lanes and buffered bicycle lanes should be located on roadways with average vehicle speeds 30 mph or less and less than 7,000 vehicles per day. It is recommended to require bicycle lanes built with new development to have a six-foot bicycle lane accompanied by a three-foot painted buffer with limited cross-hatching between the bicycle lane and travel lane.

5.4.3 - PROTECTED BICYCLE LANES

Protected bicycle lanes are buffered bicycle lanes with a vertical barrier (bollards, curb, or raised barricade) between people and vehicular traffic. Protected bicycle lanes can create low stress bicycling environments on higher volume, higher speed roadways where traditional bike lanes feel uncomfortable or unsafe for many riders. It is recommended that protected bicycle lanes be six feet wide and have a three-foot buffer with a vertical barrier.

5.4.4 - SIDEPATH OR TRAIL (PAVED AND SOFT SURFACE)

A sidepath or trail is an off-street low stress facility that supports opportunities for both recreation and transportation. A sidepath more specifically is a wide sidewalk (at least ten feet wide) alongside a roadway, separated by a buffer. People who walk, bicycle, skate, or use wheelchairs or mobility devices can experience increased comfort and safety on a trail or sidepath because it is entirely separated from motor vehicles. All trails serving bicyclists should be a minimum width of ten feet. There should be at least a two-foot vertical buffer (concrete or landscaping) between the path and any roadway.

Figure 5.6: Paved Multiuse Trail

Source: Fehr & Peers

CHAPTER 6

TRANSIT NETWORK

6.1 - KEY ISSUES

This chapter provides a summary of future investments Adams County can make to improve the comfort, reliability, and convenience of taking transit within the County.

There are three primary challenges associated with transit service in Adams County today:

1. First and last mile gap – or barriers to accessing transit service
2. No transit service in the eastern portion of the County
3. Insufficient transit service in other portions of the County

Barriers to accessing transit, also known as the first and final mile gap, are a significant challenge to many existing and potential transit users. This gap can be in the form of long distances to the nearest bus stop or commuter rail station, a lack of bicycle and pedestrian amenities, or insufficient available transportation options. Even in areas with significant RTD investment and frequent, reliable service, such as the N Line, there are many barriers to accessing N Line stations.

There is also a lack of transit options for the eastern portion of the County. The RTD service area boundary terminates at the Denver International Airport, leaving many communities in Adams County unserved by transit, including Colorado Air and Space Port, Bennett, and Strasburg.

Even areas within the RTD service area, such as the southwest portion of the County and around Brighton, are often underserved. RTD routes in these areas are infrequent, do not go where users are seeking to travel, or do not operate at sufficient days per week or hours per day.

6.2 - BIG IDEAS

To address the challenges outlined in the previous section, the County can pursue the following recommendations for improving the transit network.

6.2.1 - FIRST AND LAST MILE CONNECTIONS

To address the first and last mile gap, a suite of infrastructure, policy, and program strategies are recommended (**Figure 6.1**).

Bicycle and pedestrian infrastructure improvements

A connected network of low stress pedestrian and bicycle facilities provides an opportunity for transit users to access bus stop or commuter rail stations comfortably without a vehicle. This includes enhanced and frequent pedestrian crossings, a complete and ADA-compliant sidewalk network, and on- and off-street bicycle facilities such as protected bike lanes and trails. To enhance walk and bikeability, facilities should form a dense grid to reduce out of direction travel and increase access. Providing bicycle and pedestrian

Figure 6.1: First and Last Mile Connections

with opportunities to cut-through when roadways do not connect is an effective way to increase connectivity for people walking and biking.

Transit-oriented development (TOD) and mobility hubs

TOD is the planning and design of a development around high frequency transit stops and stations in order to increase access to transit for the most residents, visitors, and employees. This development should be compact, dense, walkable, and mixed use. The Comprehensive Plan coordinated closely with the Transportation Master Plan throughout the planning effort and identifying locations for TOD was a significant part of that coordination. They are identified on the preferred land use map shown in **Map 2.1**. These development patterns would make living without a vehicle in Adams County viable and convenient. Mobility hubs are centers that integrate various transportation modes to allow users to make seamless connections between their origins and destinations. Often centered around transit stations or high frequency bus stops, mobility hubs enable quick transfers from a bus onto a scooter or shared bike, and can also share real-time information on connecting buses, availability of shared-use mobility devices, and walking directions to nearby destinations.

Transportation Demand Management (TDM) strategies

TDM strategies are policies, services, and programs to encourage people to travel by walking, rolling, bicycling, using transit, or carpooling, rather than driving alone. Shifting travel modes away from driving alone allows existing infrastructure (like roadways, signals, and sidewalks) to operate more efficiently. TDM strategies are a cost-effective compliment to infrastructure and help optimize available infrastructure and services. These strategies cover a wide range of approaches to improving access to transit. The most effective TDM strategies for improving transit access include: education and marketing; carpool to transit programs; promotion of RTD passes; employer outreach; trip planning information such as smart phone apps; Guaranteed Ride Home; bike parking; and improved amenities and information (real time transit

arrival information, maps, schedules in English and Spanish) at transit stops and stations.

6.2.2 - SUPPLEMENTAL TRANSIT SERVICE

The second and third items addressed in the key issues section were a lack of transit service in the eastern and central portions of the County and insufficient service in other unincorporated portions of the County. This plan recommends a package of three service types as shown in **Figure 6.2** to supplement RTD service with improved coverage and frequency. Together, these services can connect people in the eastern and central portions of the County with either RTD fixed route service or destinations in the western portion of the County.

- A shuttle is proposed (shown in the solid yellow line) to connect small rural communities (such as Watkins, Bennett, and Strasburg along I-70) to either their final destination in the denser, western portions of the County or into the RTD network (shown as pink circles). Having this shuttle makes not owning a vehicle a viable option.
- In order to provide access to the shuttle for those that live outside of the core rural community, a paratransit or on-demand door-to-door service could connect people in the very low-density rural parts of the County to the shuttle stops in Watkins, Bennett, or Strasburg. The service area for this on-demand service is designated by the yellow area, meaning anyone traveling from a point in the yellow area to a shuttle stop, would be eligible for this service. This service would only operate when requested and advanced bookings would be required, as this service can be expensive to provide.
- The orange circles represent other areas in the central and northwestern parts of the County where existing RTD service does not cover or operates at a low frequency. An additional on-demand door-to-door service is recommended to connect users from the orange circles to key

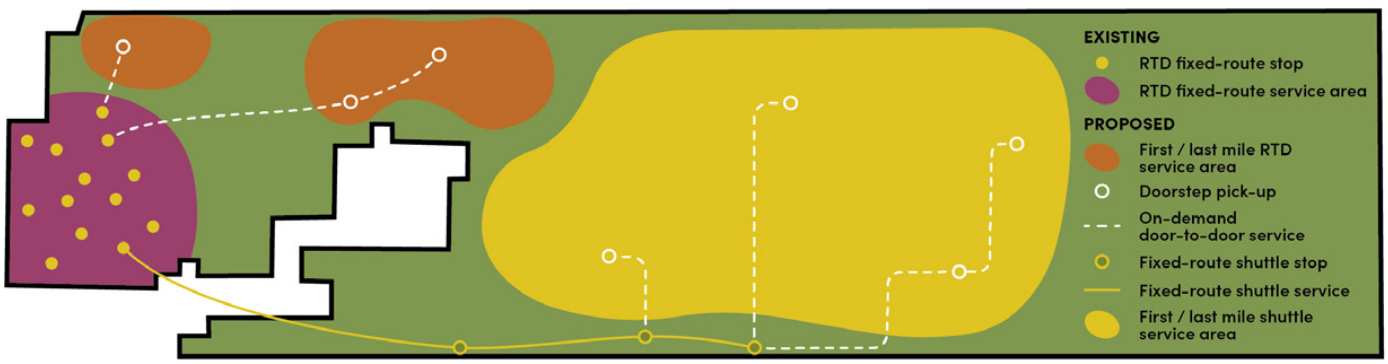


Figure 6.2: Illustration of Potential Locations for Supplemental Transit Service Across Adams County

Figure 6.3: Existing Transit Hub in Adams County

destinations or RTD transit stations within the denser parts of the County (shown in the pink circles). This service is recommended east of Brighton and north of Thornton. This service would only operate when requested and advanced bookings would be required, as this service can be expensive to provide.

In summary, with this package of recommendations, those in rural areas use an on-demand service (white dashed lines) that can include shared rides that they have scheduled in advance to access a fixed route shuttle stop (in communities such as Watkins, Bennett, and Strasburg) (hollow yellow circle). The shuttle then travels at a fixed schedule (yellow line) to a larger city in the region where it may make multiple stops based on previously identified common and key destinations and RTD transit stations. An additional service shown in the orange circles can also be offered that connects users to areas in western Adams County that have poor transit coverage. This package should be supplemented by programs including marketing, a dispatch service, and travel trainings.

Further study should be performed to forecast demand for these services and determine the operational models and costs. It is important to note, that these services will need to be heavily subsidized, but providing comprehensive, equitable, and affordable transit service to all residents and employees should be a priority for the County.

Source: Design Workshop

CHAPTER 7

INNOVATION & NEW TECHNOLOGY

7.1 - KEY ISSUES

As part of the Phase 1 existing conditions analysis, the *Advancing Adams* team conducted a future trends workshop called TrendLab+ to explore how local travel behavior might change in the future, particularly in light of the COVID-19 pandemic. TrendLab+ is a Fehr & Peers tool that uses both national research and local trends in Adams County to explore how the response to the COVID-19 pandemic, its impacts on the economy, and other travel-related trends may affect short- and long-term travel behavior, traffic levels, and transit use in the County. Inputs includes changes such as labor force participation, working from home, goods and service delivery, technology, and micromobility. Workshop participants identified a range of trends that may impact transportation in Adams County:

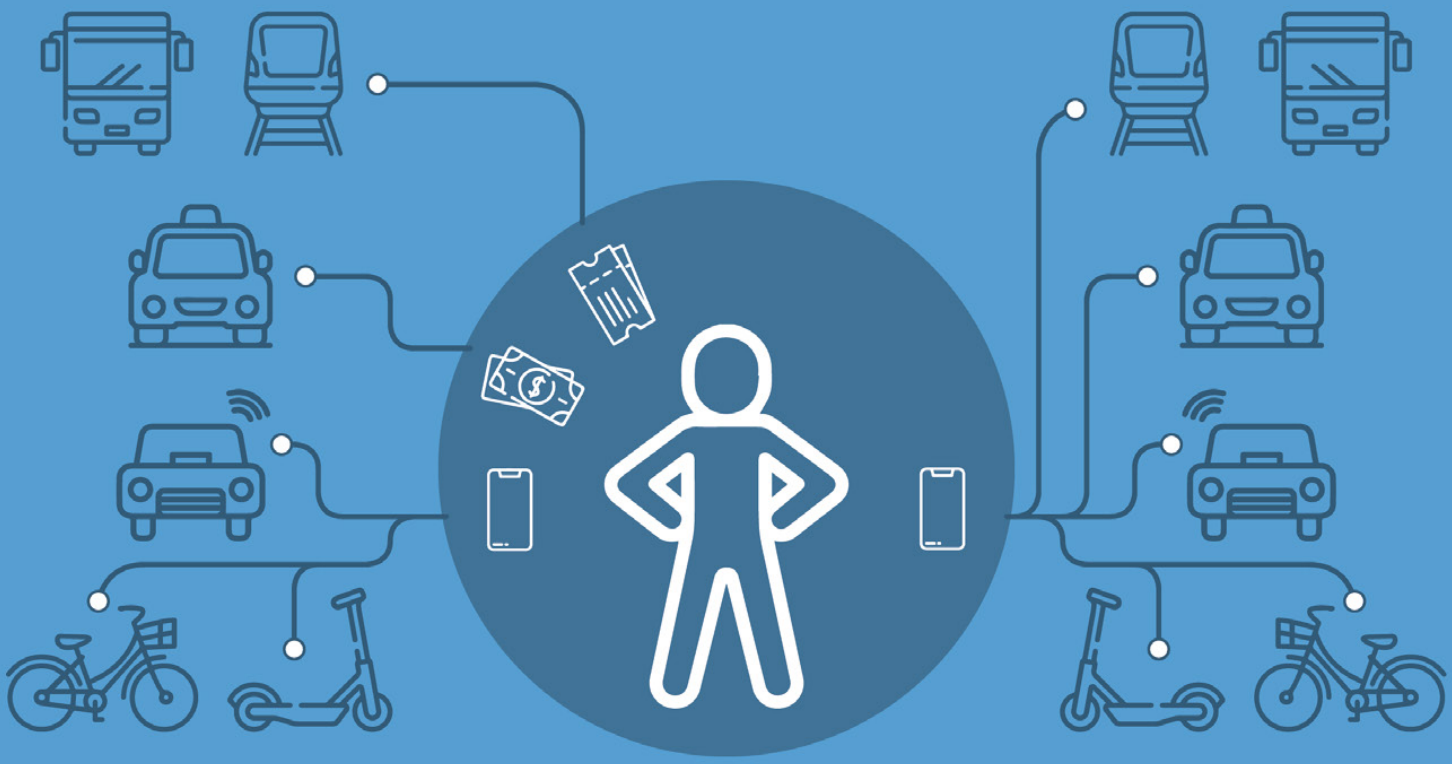
- The local economy is changing, with a potential reduction in fossil fuel-related industries and an increase in warehousing and logistics. This will create a need for technologies that can enable more efficient movement of goods.
- Adams County has experienced growing demand for single family homes, which has led to the increased prevalence of lower density residential areas where residents are vehicle dependent. In addition, during the COVID-19 pandemic, it became evident that workers living in Adams County tend to be employed in essential roles and many do not have the option to replace commute trips with teleworking. These two trends combine to suggest that demand for vehicle travel in Adams County will continue to grow.
- As Adams County continues to see investment in public transit, namely the addition of new RTD commuter rail lines, there will be opportunities to leverage emerging mobility technologies connections to help connect County resident and visitors with transit.

This chapter profiles the strategies Adams County will undertake to ensure it both deploys innovative and technologically up to date resources for managing transportation demand and is prepared the future of mobility across the Front Range.

7.2 - EMERGING MOBILITY SOLUTIONS

The follow section profiles various emerging mobility strategies and solutions for managing transportation demand. These strategies address the range of transportation trends anticipated in Adams County as identified by participants in the *Advancing Adams* planning process.

The Mobility as a Service (MaaS) Model



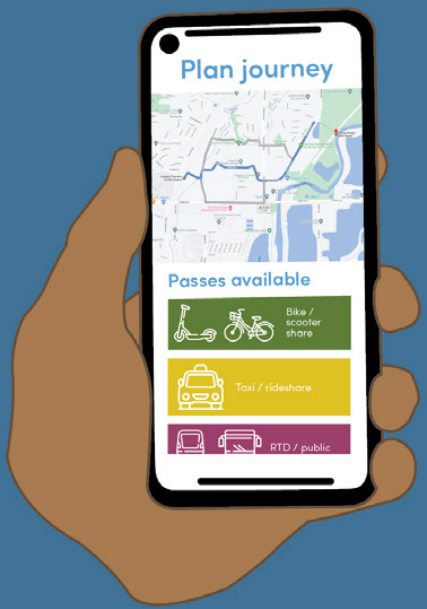
Today

With MaaS

Multiple mobility options brought together in an app, accessed with or without a subscription

Package examples	Base $60/mo	Weekend $250/mo	Unlimited $500/mo	No package Pay as you go
RTD / public transit	30-day pass	30-day pass	30-day pass	Pay as you go
Taxi / rideshare (5 mi)	$10	-15%	Unlimited	Pay as you go
Car share	$50	Weekends	Unlimited	Pay as you go
Bike / scooter share	Unlimited	Unlimited	Unlimited	Pay as you go

Every option in the palm of your hand



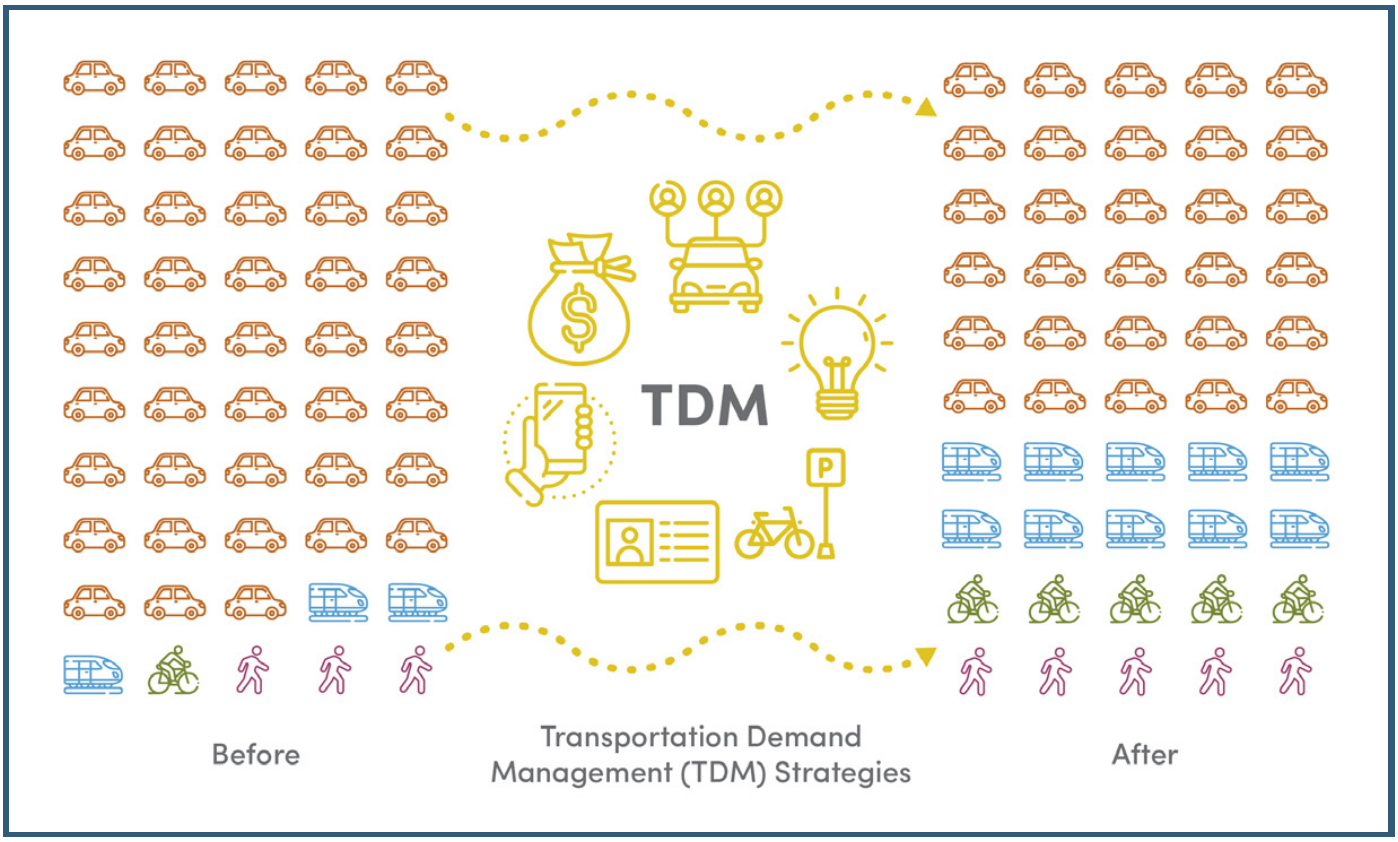
7.2.1 – MOBILITY AS A SERVICE

Given that many Adams County residents currently rely on driving due to existing land use patterns and a lack of choice regarding when to travel, the County can promote transportation alternatives by lowering the barrier to identifying ways trips can be made using a combination of walking, bicycling, and transit. Mobility as a Service (MaaS) describes the shift away from privately owned automobiles and toward transportation that is offered as a service. This includes both public and private providers that can work together to provide a holistic landscape of transportation options, either as a subscription or pay-as-you-go service. MaaS provides reliable and comprehensive transportation options and information that can reduce the reliance on or eliminate the need for private automobiles. Instead of incurring auto ownership related costs, like loan payments, insurance, and fuel, MaaS instead shifts personal transportation spending to paying for access to transportation services, which reduces the "sunk costs" of automobile ownership, decreases congestion, reduces emissions, increases the use of public infrastructure, and provides transportation providers with the data they need to be more cost-effective. MaaS can become increasingly appealing and viable through an integration of modes that includes payment integration, a trip-planning app, and mobility hubs.

In order to address the challenges that can result from Adams County residents being vehicle dependent, the County can use MaaS as a platform to make transportation alternatives more attractive and easier to use. This can be achieved by working with private transportation providers to share data with the County, which would facilitate providing trip planning resources to County residents. One option is partnering with a third-party vendor to create a trip planning smartphone app for Adams County. Alternatively, the County can promote existing applications that give travelers access to trip planning information for RTD. In areas beyond the RTD service area, the County can explore public-private partnerships that use private providers to provide public transit. These partnerships can also help improve human service transportation provision.

7.2.2 – TRANSPORTATION DEMAND MANAGEMENT

Transportation Demand Management is also described under programs and policies in **Chapter 2** but has a focus on innovation in this section. According to Smart Commute Metro North, the Transportation Management Organization that serves the Denver metro north region and is based in Adams County, the main barriers that prevent Adams County commuters from traveling by means other than single occupancy vehicle are the



lack of transit connectivity and the limited opportunities for walking or bicycling to work due to existing land use patterns (**Figure 7.1**). Previously, the most effective tools for shifting commute trips away from driving were promoting carpooling and raising awareness of the opportunity to take transit for many people commuting from Adams County communities into downtown Denver. Today, with travel behavior being impacted by the COVID-19 pandemic, many workers have either replaced commute trips with telework or scaled back on the volume of commute trips they take each week. Adams County can launch a Transportation Demand Management (TDM) program that closely coordinates with economic development to understand what types of employers are coming to the County, how their workforces commute, and what opportunities exist to work with major employers to shape TDM strategies that align with *Advancing Adams*.

When working with employers who have essential workers as the core of their workforce, the Adams County TDM program can focus on promoting carpooling, identifying opportunities to put in place microtransit or shuttle systems, and raising awareness on opportunities to connect with high-capacity transit. To ensure the success of these initiatives, Adams County can coordinate with major employers to provide commute incentives like transit passes or toll lane reimbursements

Figure 7.1: Transportation Demand Management Concept (source: Fehr & Peers)

and gas vouchers for employees who carpool. In addition, the TDM program could develop tools for lowering the barrier to carpooling like sponsoring a ride matching smartphone application that allows employees who carpool to locate one another and identify the most efficient routes between their home locations and place of work.

For employers with a predominantly white collar, information-based workforce, the TDM program can focus on promoting the benefits of teleworking. Specifically, by reducing the volume of commute trips, the County can help manage congestion and improve air quality.

Figure 7.2: Example of Booking a Ride with a Transportation Network Company (source: Fehr & Peers)

7.2.3 - SHARED MOBILITY

Shared mobility, which is the shared use of a motor vehicle, bicycle or scooter, represents a growing segment of the wider mobility network. Users have short-term access to a mode of transportation on an as-needed basis rather than relying on private ownership of the mode. Shared mobility provides a broader set of transportation options for users that reduces reliance on the private automobile, therefore reducing congestion and carbon emissions. Shared mobility is a key component of MaaS, which was described earlier in this chapter. Shared mobility options require relatively high population densities to be successful, since the providers need to serve a large volume of users making frequent, relatively short trips in order to be financially viable. While shared mobility might not be appropriate for areas like eastern Adams County, the southwestern portion of the County and the future Town Centers are two locations where shared mobility can play a more significant role. Further feasibility studies should be performed to determine if and where shared mobility is appropriate in Adam County. The subsections following go into greater detail on the various forms of shared mobility—ride-hailing, bike/scooter share, and car-share.

7.2.3.1 - Ride-hailing

The best known form of shared mobility is ride-hailing, which is

provided primarily by Transportation Network Companies (TNC), like Uber and Lyft (**Figure 7.2**). At its most basic level, ride-hailing is simply the modern version of a taxi, using a website and/or smartphone apps that match passengers with drivers. TNCs currently operating within Adams County and the surrounding region are Uber and Lyft.

Nationally, TNCs/ride-hailing represent the fastest growing transportation mode. Ride-hailing services meet a wide range of travel needs including evening and weekend trips when transit does not operate, airport trips that can be easily timed, or trips to locations where parking will be difficult or expensive. Ride-hailing also has some negative impacts. TNC drivers must spend time driving alone between trips (called deadhead time), which can lead to increased cars on the road, energy use/greenhouse gas emissions, and traffic congestion. This problem is especially prevalent in lower density areas where riders are spread out. In more urbanized settings, TNC vehicles compete for curbspace with freight vehicles, people seeking to park, bicyclists, and other users. Ride-hailing is also not always equitable, since lower income households cannot rely on ride-hailing. This is predominantly due to TNC providers using dynamic pricing, which causes trips during periods of higher demand to be a higher price. Without being able to predict the price of a trip, lower income households cannot know in advance whether a TNC trip will be affordable.

Figure 7.3: Image of Dockless Electronic Scooters (source: Fehr & Peers)

Because Adams County residents have a high rate of reliance on their private vehicles, it is unlikely that TNC trips will replace a significant share of trips in a personal vehicle. However, as the southwestern portion of the County continues to densify and receive more transit service, TNCs may begin to play a larger role. Adams County can partner with TNCs to provide subsidized rides to and from transit stations in order to help boost transit ridership. This strategy has successfully been employed in other communities to help bridge first and final mile gaps in lower density areas.

7.2.3.2 - Bike/Scooter Share

Bike share systems for both human-powered and electric bicycles, and

more recently electric-scooter share, have been a rapidly evolving trend over the last decade and have growing presence in communities around the country (**Figure 7.3**). Bike share and scooter share have the potential to increase transportation options available in Adams County, especially in the areas surrounding transit stations. For example, the new Pecos Junction Station is close (one mile) to the Midtown development, but far enough away to make walking access difficult for some users. With the addition of more comfortable multimodal facilities – something that can be planned through *Advancing Adams* – bike share or scooter share can serve as a first and last mile solution for accessing transit. Introducing these types of mobility options would require the County to manage the services so they complement land use and transportation goals, while mitigating potential issues. Up-to-date policies on where and how users can operate these mobility devices are needed to ensure that users are safely using these devices and integrating with other modes. The integration of scooters into the network would have an impact on the maintenance needs and even design of roadways, sidewalks, and bicycle facilities; for example, the small wheels of the scooter are more sensitive to potholes, cracks, and debris.

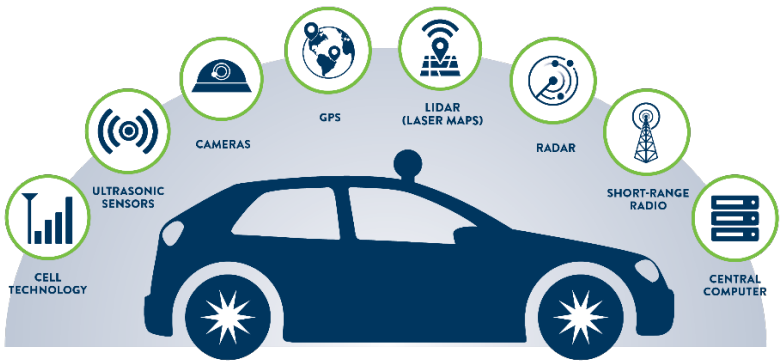


Figure 7.4: Illustration of the concept of Autonomous Vehicles (source: Minnesota Department of Transportation)

7.2.3.3 - Car-Share

Car-sharing is a model for car rental, similar to bike share or scooter share, which allows users to pay for access to vehicles for limited periods of time. Car-share systems tend to have vehicles dispersed throughout an area and can be easily reserved on a webpage or smartphone app. Adams County can support car-share in the future by dedicating parking spaces for car-share providers both on-street and partnering with RTD to provide car-share services at rail stations. In addition, the County can provide incentives or requirements for new developments to provide car-share and/or car-share parking. The appetite for introducing car-share depends on the extent to which people can travel by foot, bicycle, and transit, all of which afford the ability to travel to and from designated car-share parking without a private automobile.

7.2.4 - AUTONOMOUS VEHICLES

Autonomous and Connected Vehicles (AV/CV), are two technologies that are rapidly evolving with the potential to significantly impact travel patterns

and trip choices in the future. AVs are capable of sensing the environment and moving through the street network with little or no human input. CVs are vehicles that communicate with other vehicles on the road, as well as connected infrastructure (e.g., signals), to improve roadway use and safety. As discussed in the TrendLab+ workshop summary, near-term widely adopted use of AVs in Adams County is not likely, but the County can use *Advancing Adams* as an opportunity to prepare for and have a foundation of policies in place for this new mode and its associated challenges. For example, research on travel behaviors suggests that AVs may decrease transit usage except for high-frequency transit services like trains or bus rapid transit that operate on a dedicated facility. AVs may pose new risks to pedestrian safety or implications for lower income communities who are not able to adopt the new technology as quickly. AVs may also increase vehicle miles traveled (VMT) as the opportunity cost of driving goes down. Strategies for proactively addressing any potential negative impacts from AVs include:

- Setting maximum speed limit standards that vehicles must adhere to on local streets where bicyclists and pedestrians are more likely to be present.
- In the case of shared AVs, adopting policies that overcome the digital divide by enabling users without smartphones to have equal access to the mobility service.

Figure 7.5: Example of an EV Charging Station (source: Colorado Energy Office)

- Establishing programs and incentives for using AVs as a formal first and last mile connection to transit stations.

It is recommended that Adams County pursue these strategies during implementation of the Transportation Master Plan.

7.2.5 – ELECTRIC VEHICLES AND CHARGING INFRASTRUCTURE

Electric vehicle (EV) technology continues to advance at a rapid pace with increasing regulatory and financial incentives to encourage production and use at both the State and Federal level. While EVs do not reduce traffic congestion, they do reduce emissions, which is in line with the environmental sustainability goals for Adams County. The presence

of oil and gas refineries as well as other industrial land uses causes Adams County to have somewhat poor air quality. The United States Environmental Protection Agency reported that in 2019, Adams County had the third highest number of days with a moderate Air Quality Index in Colorado. Moderate air quality is defined as air quality being acceptable, though people who are unusually sensitive to air pollution, like individuals with underlying health conditions or older adults, may be at risk. In Adams County, Air Quality Index was in the moderate range for nearly 39% of days in 2019. Achievement of lower emissions through EVs can partially offset the air quality impacts caused by these other users. In planning for future EV integration, Adams County can consider provision of on-street and off-street EV charging stations and preferential parking and increasing the number of charging stations on public property as well as incentives and requirements for provision of EV charging stations and infrastructure by developers. An example of a public EV charging station is shown in **Figure 7.5**. In addition, I-25 is a federally recognized alternative fuel corridor, where infrastructure upgrades are being made to support the use of electric and other alternative fuel vehicles.

7.2.6 – ESTABLISHING MOBILITY HUBS

As discussed in the profile of Washington Street in **Chapter 2**, mobility hubs could play a role in the future Adams County transportation network. Mobility hubs are enhanced transit stops where bus and/or rail lines converge to provide rapid connections for transit riders. Mobility hubs are designed to act as a user-friendly travel resource that lowers the barrier to using transit. Mobility hubs can include TNC loading zones, secure bike parking, charging stations for e-bikes, free wi-fi, power outlets, and real-time transit information so anyone arriving at the mobility hub can easily plan the rest of their trip (**Figure 7.6**). Adams County can partner with RTD to implement mobility hubs on corridors with high levels of transit ridership or in locations where transit supportive land uses are anticipated.

Figure 7.6: Illustration of a Mobility Hub (source: Fehr & Peers)

Source: Design Workshop

CHAPTER 8

IMPLEMENTATION & MONITORING

8.1 - IMPLEMENTING ADVANCING ADAMS

8.1.1 - RECOMMENDED PROJECTS

8.1.1.1 - Project Prioritization Methodology

The following section outlines the approach for prioritizing projects listed in the *Advancing Adams* bicycle and roadway plans. The prioritization methodology, driven by data on access to key destinations, safety, demand, land use, equity, and sustainability, enables the city to determine which projects best accomplish plan goals and serves as a guide for the city to make informed choices regarding the order of project implementation. This methodology provides a transparent approach that informs decisions, with the understanding that funding sources and circumstances may alter the order of implementation.

Each project is scored based on criteria that measures how closely the project addresses the goals of the plan. These criteria include:

- Access to key destinations: number of transit stops, schools, healthcare facilities, libraries, government/civic buildings, grocery stores, recreation centers, and parks and open space lands within a half mile of the project.
- Safety: the total number of crashes along a project segment, with those resulting in a serious injury or fatality weighted more heavily in both roadway and bikeway projects, and bicycle- or pedestrian-involved crashes weighted more heavily in bikeway projects.
- Demand: how many people a project serves, represented by maximum population and employment density along a corridor.
- Alignment with land use plan: whether the project falls within geographies that Adams County's land use plan designates as high density and/or within proposed future town or urban centers.
- Equity: whether a project improves access for underserved populations, represented by the share of low-income households along a corridor.
- Sustainability: whether the project has the potential to reduce vehicle trips, taking into account induced demand and bikeway comfort.

Scores are based on the existing conditions at a project location rather than future outcomes. For example, the safety score reflects the number of crashes near the proposed project as opposed to the project's capacity for improving safety outcomes. The safety outcomes of a project will be measured as a part of future evaluation during the project-specific planning and design process.

Table 8.1 through **Table 8.6** display projects from the roadway and bicycle projects, along with a prioritization tier for each project. **Appendix D** shows the full breakdown of criteria scoring by project. It is recommended that Adams County implements projects in the order of the prioritization score, with higher score projects being implemented in the short range (0-10 years), medium priority projects being implemented in the 10-20 year range, and lower priority projects being implemented in the long-term (20-30 years). Although projects are prioritized as a part of this plan, this prioritization should maintain a level of flexibility, with the County assessing needs on an on-going basis. If a funding source becomes available that is geared towards a certain project type or location, the County can modify the prioritization list to leverage this opportunity.

8.1.1.2 - Funding Sources

Section 8.3 describes each of the funding sources available to implement the recommended projects in this plan and the following tables. Each funding source, per its description in the following section, will have unique circumstances and criteria under which projects are eligible. Further study of each of the proposed projects will help identify the specific funding source that is most appropriate for each project.

TABLE 8.1: TIER 1 PRIORITIZED ROADWAY PROJECTS - SHORT-TERM 2022-2030

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
Study improvements	Pecos St	I-76 to 84th Ave	2.77	$485,000
Study improvements	Federal Blvd	52nd to 72nd Ave	4.00	$699,000
Study improvements	Sheridan Blvd	52nd to 72nd Ave	2.50	$438,000
Widen by 2 travel lanes	York St	58th Ave to 88th Ave	4.41	$13,633,000
Widen by 2 travel lanes	CO-224	Broadway St to US 85	2.00	$6,184,000
Study improvements	CO-7	I-25 to US 85	8.80	$2,200,000
Study improvements	E 96th Ave	Colorado Blvd to I-76	2.42	$424,000
New 4 lane roadway	Colorado Blvd	88th Ave to I-76	1.62	$16,078,000
Widen by 4 travel lanes	E 120th Ave	US-85 to Tower	4.57	$21,408,000

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
Study improvements	Monaco St	104th Ave to 88th Ave	1.91	$191,000
Widen by 2 travel lanes	Pecos St	52nd to 58th	0.70	$2,179,000
Widen by 2 travel lanes	Buckley Rd	120th Ave to 136th Ave	4.01	$12,383,000
Widen by 2 travel lanes	E 120th Ave	Tower to Imboden	9.98	$30,837,000
New 2 lane roadway	E 152nd Ave	I-76 to Imboden	8.94	$58,363,000
New 2 lane roadway	E 104th Ave	Shamrock to Winview	3.89	$25,370,000
Widen by 2 travel lanes	E 104th Ave	Colorado Blvd to I-76	3.82	$11,796,000
New 2 lane roadway	E 120th Ave	SH 79 to Strasburg	5.02	$32,753,000
New 2 lane roadway	Hudson Rd	US 36 to 72nd Ave	5.89	$38,478,000
New 2 lane roadway	Imboden Rd	56th Avenue to 160th	13.01	$84,911,000

TABLE 8.2: TIER 2 PRIORITIZED ROADWAY PROJECTS - MEDIUM-TERM 2030-2040

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
New 2 lane roadway	CO-79	I-70 to 168th Ave	17.89	$116,775,000
Widen by 2 travel lanes	E 120th Ave	Holly St to US 85	7.62	$23,548,000
New 2 lane roadway	E 56th Ave	Imboden to SH 79	15.01	$97,946,000
New 4 lane roadway	Piccadilly Rd	96th Ave to 120th Ave	3.03	$29,947,000
Widen by 2 travel lanes	E 168th Ave	I-25 to Quebec St	3.85	$11,892,000

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
New 2 lane roadway	Harvest Rd	120th Ave to 168th Ave	5.96	$38,913,000
New 2 lane roadway	Manilla Rd	I-70 to 48th Ave	2.98	$19,484,000
New 2 lane roadway	Schumaker Rd	I-70 to 136th Ave	13.99	$91,286,000
New 2 lane roadway	To Be Determined	E-470 to E 152nd Pkwy	1.39	$9,066,000
New 2 lane roadway	E 120th Ave	Deter to Shamrock	8.66	$56,501,000
New 2 lane roadway	E 48th Ave	Imboden Rd to Manilla Rd	3.00	$19,574,000
New 2 lane roadway	E 64th Ave	E 56th Ave to E 64th Ave	1.36	$8,871,000
New 2 lane roadway	Mimosa Rd	112th Ave to 168th Ave	7.05	$46,018,000
New 2 lane roadway	Piccadilly Rd	120th Ave to 152nd Ave	4.00	$26,126,000
New 2 lane roadway	Strasburg Rd	48th Ave to 144th Ave	12.01	$78,412,000
New 2 lane roadway	Cty Rd 24	Watkins Rd to E 48th Ave	1.99	$12,987,000
New 4 lane roadway	Imboden Rd	I-70/Quail Run Rd to 56th Ave	3.53	$34,947,000
New 2 lane roadway	Manilla Rd	56th Ave to 144th Ave	11.00	$71,813,000
New 2 lane roadway	Piggott Rd	US 36 to 48th Ave	3.01	$19,619,000
New 2 lane roadway	Strasburg Rd	US 36 to 48th Ave	5.90	$38,500,000
New 2 lane roadway	Watkins Rd	Watkins Rd to Imboden Rd	1.02	$6,678,000
New 2 lane roadway	Winview Rd	US 36 to 56th Ave	18.04	$117,767,000

TABLE 8.3: TIER 3 PRIORITIZED ROADWAY PROJECTS - LONG-TERM 2040-2050

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
New 2 lane roadway	Calhoun-Byers Rd	US 36 to 88th Ave	8.05	$52,553,000
New 2 lane roadway	E 112th Ave	Rector to Deter	4.02	$26,241,000
New 2 lane roadway	E 120th Ave	Imboden to SH 79	8.92	$58,230,000
New 2 lane roadway	E 144th Ave	Imboden to Peoria Crossing	24.96	$162,938,000
New 2 lane roadway	Petterson Rd	144th Ave to 168th Ave	3.02	$19,745,000
New 2 lane roadway	Rector Leader Rd	US 36 to 112th Ave	10.98	$71,681,000
New 2 lane roadway	E 112th Ave	Strasburg to Horrogate	10.33	$67,450,000
New 2 lane roadway	E 152nd Ave	Mimosa to Philmay	5.93	$38,677,000
New 2 lane roadway	E 56th Ave	Bradbury to Rector	9.01	$58,789,000
New 2 lane roadway	E 56th Ave	East Rd to Winview	2.93	$19,118,000
New 2 lane roadway	E 64th Ave	Strasburg to Bradbury	4.03	$26,337,000
New 2 lane roadway	Hanks Crossing	US 36 to 112th Ave	10.94	$71,425,000
New 2 lane roadway	Headlight Rd	US 36 to 48th Ave	2.98	$19,446,000
New 2 lane roadway	Horrogate Rd	112th Ave to 148th Ave	4.63	$30,230,000
New 2 lane roadway	Imboden Rd	160th to 168th	1.05	$6,886,000
New 2 lane roadway	Peoria Crossing Rd	136th Ave to 168th Ave	4.03	$26,315,000
New 2 lane roadway	Shamrock Rd	96th Ave to 168th Ave	9.04	$59,032,000
New 2 lane roadway	Wolf Creek Rd	26th Ave to 48th Ave	1.98	$12,920,000
New 2 lane roadway	Yulle Rd	I-70 to 56th Ave	4.38	$28,610,000

PROJECT	CORRIDOR NAME	EXTENTS	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
New 2 lane roadway	Behrens Rd	88th Ave to 112th Ave	3.01	$19,649,000
New 2 lane roadway	Bradbury-Krebs Rd	US 36 to 168th Ave	18.07	$117,924,000
New 2 lane roadway	Deter-Winters Rd	112th Ave to 152nd Ave	5.06	$33,035,000
New 2 lane roadway	E 96th Ave	Behren to Rector	4.01	$26,152,000
New 2 lane roadway	E 96th Ave	Hanks to East rd	10.67	$69,650,000
New 2 lane roadway	East Rd	US 36 to 56th Ave	4.04	$26,343,000
New 2 lane roadway	Philmay Rd	152nd Ave to 168th Ave	2.02	$13,164,000
New 2 lane roadway	Piggott Rd	48th Ave to 56th Ave	0.99	$6,487,000

TABLE 8.4: TIER 1 PRIORITIZED BICYCLE PROJECTS - SHORT-TERM 2022-2030

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	Washington St	E 83rd Dr	E 52nd Ave	3.83	$475,000
On-Street	E 160th Ave	Colorado Blvd	27th Ave	7.9	$981,000
On-Street	E 56th Ave	Eudora St	E-470	11.34	$1,408,000
On-Street	Broadway Blvd	84th Ave	Denver Boulder Turnpike	1.6	$199,000
On-Street	Essex Dr/84th Ave	Washington St	Devonshire Blvd	1.26	$156,000
On-Street	Lowell Blvd	W 67th Ave	W 52nd Ave	1.87	$232,000
On-Street	76th Ave/El Paso Blvd	Zuni St	Conifer Rd	1.35	$168,000
On-Street	E 104th Ave	Colorado Front Range Trail	E-470	7.44	$923,000
On-Street	Explorador Calle/ Rainbow Ave	88th Ave	Coronado Pkwy	1.08	$134,000

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	Federal Blvd	Little Dry Creek Trail	Clear Creek Trail	1.06	$132,000
On-Street	Fulton St	E 26th Ave	Montview Blvd	0.5	$62,000
On-Street	Greenwood Blvd	84th Ave	Broadway Blvd	1.87	$232,000
On-Street	Zuni St	84th Ave	Fern Dr	1.84	$93,000
On-Street	Dahlia St	Frontage Rd	E 70th Ave	1.41	$175,000
On-Street	E 96th Ave	Colorado Blvd	Heinz Way	3.6	$447,000
On-Street	McElwain Blvd	88th Ave	Devonshire Blvd	0.83	$103,000
On-Street	Tennyson St	W 63rd Dr	W 52nd Ave	1.41	$176,000
On-Street	W 64th Ave	Tennyson St	Clear Creek Trail	1.49	$185,000
On-Street	W 70th Ave	Pecos St	Broadway Blvd	1	$124,000
On-Street	Welby Rd/E 86th Ave	E 88th Ave	Colorado Blvd	0.95	$118,000
On-Street	Buckley Rd	Bridge St	120th Ave	5.04	$626,000
On-Street	CO-2	Eisenhower Hwy	E 53rd Ave	0.67	$83,000
On-Street	Iola St	E 26th Ave	Montview Blvd	0.51	$64,000
On-Street	Pecos St	Clear Creek Trail	56th Ave	1.08	$134,000
Sidepath	E Montview Blvd	Central Park Blvd	Fitzsimons Pkwy	2.93	$1,466,000
Sidepath	Fitzsimons Pkwy	Montview Blvd	13th Ave	0.8	$400,000
Sidepath	Lowell Blvd	W 97th Ave	Denver Boulder Turnpike	2.31	$1,157,000
Sidepath	Welby Rd/ Devonshire Blvd	E 88th Ave	Niver Creek Trail	1.02	$508,000
Sidepath	York St	Niver Creek Trail	South Platte Trail	2.08	$1,040,000
Sidepath	Chambers Rd	E 40th Ave	Moncrieff Pl	0.71	$251,000

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
Sidepath	E 120th Pkwy	Holly St	US-85	3.48	$1,741,000
Sidepath	Chambers Rd	Montview Blvd	Colfax Ave	0.5	$355,000
Trail	To Be Determined	Montview Blvd	Colfax Ave	0.73	$4,449,000
Trail	To Be Determined	South Platte Trail	Pena Blvd	12.38	$3,434,000
Trail	Westerly Creek Trail	E 26th Ave	Montview Blvd	0.55	$1,086,000

TABLE 8.5: TIER 2 PRIORITIZED BICYCLE PROJECTS - MEDIUM-TERM 2030-2040

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	Clear Creek - Federal Station	Clear Creek Trail	Clear Creek - Federal Station	0.17	$21,000
Sidepath	E 120th Ave	US-85	High Plains Pkwy	3.55	$276,000
Sidepath	Washington St	Washington Center Pkwy	120th Ave	0.36	$138,000
On-Street	E 120th Ave	High Plains Pkwy	Imboden Rd	10.99	$1,364,000
On-Street	E 66th Ave	Washington St	York St	1.00	$124,000
On-Street	Sable Blvd	Bromley Ln	E-470	3.01	$374,000
On-Street	W 55th Pl/W 56th Ave	Julian St	Pecos St	1.44	$179,000
Sidepath	E 120th Ave	Sheridan Blvd	Federal Blvd	0.55	$1,775,000
Sidepath	Washington St	E 104th Ave	E 102nd Ave	0.28	$182,000
Trail	To Be Determined	Chambers Rd	120th Ave	5.29	$24,226,000
Trail	To Be Determined	Adams County Boundary	56th Ave	2.27	$1,429,000
On-Street	E 124th Ave	Park Blvd	Sable Blvd	3.10	$385,000
On-Street	Jordan Dr	Zuni St	W 70th Ave	0.56	$70,000
On-Street	N Imboden Rd	US-6	Colfax Ave	24.38	$3,027,000

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	Zuni St	W 59th Pl	W 52nd Ave	0.75	$228,000
Sidepath	S 4th Ave/Sable Blvd	Bromley Ln	144th Ave	0.99	$493,000
Trail	Little Dry Creek Trail Spur	Little Dry Creek Trail	Midtown	0.02	$50,000
On-Street	Colorado Blvd	141st Ave	CO-7	2.27	$282,000
On-Street	E 112th Ave	Peoria St	Picadilly Rd	5.99	$744,000
On-Street	E 144th Ave	Brighton Rd	27th Ave	2.70	$336,000
Sidepath	So. Platte River Trail	Adams County Boundary	Smith Park	0.77	$386,000
Sidepath	US-6	E 152nd Ave	Eagle Blvd	1.45	$723,000
Trail	So. Platte River Trail	South of 120th Ave	124th Ave	0.76	$1,513,000
On-Street	E 136th Ave	Monaco St	Riverdale Rd	2.19	$272,000
On-Street	E 56th Ave	E-470	West Sand Creek	13.07	$1,623,000
On-Street	US-36	Imboden Rd	Monroe St	14.45	$1,794,000
On-Street	W 115th Ave	Sheridan Blvd	Wolff St	0.27	$33,000
Sidepath	E Colfax Ave	Himalaya Rd	E-470	1.93	$218,000
Sidepath	E Colfax Ave	Espana St	Himalaya Rd	0.44	$963,000
Sidepath	E-470 Trail	South Platte Trail	Second Creek Trail	2.56	$745,000
Trail	Little Dry Creek Trail Spur	Little Dry Creek Trail	Midtown	0.03	$37,000
Trail	So. Platte River Trail	North of 144th Ave	South of Bromley Ln	1.05	$1,501,000
Trail	To Be Determined	E 168th	E-470	1.75	$2,317,000

TABLE 8.6: TIER 3 PRIORITIZED BICYCLE PROJECTS - LONG-TERM 2040-2050

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	To Be Determined	Bromley Ln	E-470	3.10	$385,000
Trail	First Creek Trail	E 38th Ave	Colfax Ave	2.71	$5,299,000
Trail	So. Platte River Trail	120th Ave	104th Ave	2.13	$2,050,000
Trail	So. Platte River Trail	South of 120th Pkwy	North of 120th Pkwy	0.42	$4,175,000
Trail	To Be Determined	So. Platte River Trail	Brighton Rd	0.62	$10,357,000
Trail	To Be Determined	120th Ave	E 112th Ave	1.18	$1,218,000
Trail	To Be Determined	Brighton Rd	US-85	0.45	$877,000
On-Street	CO-79	E 112th Ave	Palmer Ave	9.61	$1,193,000
On-Street	E 38th Ave	Harback Rd	Kiowa Bennett Rd	3.00	$373,000
On-Street	Holly St	E 160th Ave	E 144th Ave	1.99	$246,000
On-Street	Manilla Rd	E 72nd Ave	Eisenhower Hwy	4.81	$597,000
On-Street	Picadilly Rd	E 152nd Ave	E 122nd Ave	5.00	$620,000
On-Street	S 50th Ave	E Southern St	Frontage Rd	0.41	$51,000
On-Street	To Be Determined	E Southern St	E 152nd Ave	0.51	$63,000
On-Street	Tower Rd	E Southern St	E 152nd Ave	0.48	$59,000
Sidepath	Quivas St	W 136th Ave	End of Quivas St	0.30	$148,000
Trail	So. Platte River Trail	North of E-470	North of 144th Ave	0.77	$832,000
On-Street	E 132nd Ave	Second Creek Trail	US-6	2.61	$325,000
On-Street	E 60th Ave	Dunkirk St	New Trail	0.69	$85,000
On-Street	Monroe St	E 26th Ave	US-36	0.98	$122,000
On-Street	Pecos St	W 152nd Ave	W 144th Ave	1.07	$133,000
On-Street	Spruce Ave	Aspen St	Basil St	0.70	$87,000

TYPE	FACILITY NAME	EXTENT	EXTENT	LENGTH (MI)	PLANNING LEVEL COST ESTIMATE
On-Street	Wagner St	E 24th Ave	US-36	0.82	$102,000
Sidepath	E-470 Trail	East of Boston St	Fishing Is Fun Pond	1.46	$531,000
Sidepath	E-470 Trail	Rail Tracks	Signal Ditch	1.06	$772,000
Trail	So. Platte River Trail	Fishing Is Fund Pond	North of E-470	0.77	$1,479,000
On-Street	E 132nd Ave	Barr Lake	Picadilly Rd	0.48	$60,000
On-Street	E 88th Ave	Imboden Rd	Strasberg Rd	13.99	$1,737,000
On-Street	Henderson Rd	Riverdale Rd	Park Blvd	0.39	$49,000
On-Street	W 152nd Ave	Zuni St	Huron St	0.98	$122,000
Sidepath	E-470 Trail	Signal Ditch	Quebec St	1.49	$731,000
On-Street	E 144th Ave	Imboden Rd	Strasburg Rd	14.01	$1,740,000
On-Street	Strasburg Rd	144th Ave	88th Ave	6.97	$866,000
On-Street	W 149th Ave	Zuni St	Huron St	0.98	$122,000
Sidepath	E-470 Trail	Quebec St	East of Boston St	1.54	$1,279,000

8.1.2 – OVERVIEW OF TOOLS FOR IMPLEMENTATION

Achieving the safety and mobility goals of the Transportation Master Plan will require ongoing funding for project implementation over the next two decades. A short-term emphasis on funding and building the multimodal transportation network, especially over the next five years, will be critical to slow the rate of crashes, accommodate the changing travel needs of new business and residents, and maintain economic vitality. Over the next five years the following are steps that should be taken by staff, the community, and elected officials.

8.1.2.1 – Phasing

Although most projects are listed in this plan as a single project, Adams County and relevant municipalities should consider the phasing of projects, as appropriate. Projects can be completed in segments if deemed appropriate. This desire to implement projects in a phased approach may arise if there are opportunities through partnerships, funding sources, repaving schedules, or changes in project needs. For example, a grant specific for active transportation may fund the bicycle and pedestrian components of a multimodal project but not the roadway components.

8.1.2.2 – Pursue New Internal and External Funding Sources

Additional local funding will be required to maintain older transportation infrastructure that will be passed on to future generations. A list of the current funding sources and possible new external funding sources for projects is outlined in this chapter. It will be critical for the County to expand the use of grant funding through additional resources and to strategically consider the best opportunities for the investment in completing grant applications. A critical step in obtaining external grants is having a Transportation Master Plan and project priorities that are supported by the community and elected officials. It will be critical to have the projects "shovel ready" so that the funding can be used for implementation. In most cases the list of external funding sources requires local matching funds of up to 30%.

8.1.2.3 – Partner With New Development to Implement Multimodal Network

Given the number of neighboring jurisdictions and governing bodies in the northern Colorado region, coordinating between and within various municipalities and departments is especially important. Ensuring the right stakeholders are at the table during the planning and design phases of a project will be important to ensure: the project scope encompasses the needs of all users; all available funding sources are being leveraged; and project implementation is coordinated with other related efforts. Over the next five years, on-going development in Adams County will present

opportunities to co-fund multimodal transportation projects. Some of the projects might be in new development areas that allow Adams County to complete missing trail links, or in already developed areas where upgrades to existing infrastructure allow for new multimodal enhancements.

8.1.3 – KEY IMPLEMENTATION GROUPS / AGENCIES

Coordinating within the County is equally as important. For example, if a proposed project includes restriping a roadway to add bicycle lanes, being aware of the repaving schedule will allow the leveraging of funds to implement the project in a much more cost-effective manner. Adams County should coordinate both internally and externally to implement proposed projects in a manner that ensures efficiency, potential cost savings, and the most effective long-term solutions. The Public Works Department should coordinate with the Parks, Open Space & Cultural Arts Department and the Community & Economic Development Department. Coordination can help ensure there is a seamless connection between transportation facilities and trails, new development, and other investments in the right-of-way. The County should also coordinate with external partners including the Colorado Department of Transportation (CDOT), Regional Transportation District (RTD), Denver Regional Council of Governments (DRCOG), Smart Commute Metro North, Adams County Council of Governments Subregional Forum (ADCOG), and local incorporated jurisdictions. This collaboration will allow for a seamless travel experience for users across the region, opportunities to leverage funding sources, and consistency with future planning efforts.

8.2 – MONITORING PROGRESS

Monitoring Adams County in achieving the Transportation Master Plan's goals is an important way of evaluating current success, modifying the path forward, and building momentum and support within the community. **Table 8.7** lists each of the eleven transportation goals and performance measures for each goal. This monitoring table should be completed by Adams County staff on an annual basis. Performance measures are intended to track the effectiveness of the implementation of recommendations towards the County's goals introduced in Phase 1 (**Appendix A**). These performance measures also will enable County staff to communicate outcomes of the transportation system changes in future years and can be used on a continuous basis for evaluation of the proposed recommendations.

TABLE 8.7: ADVANCING ADAMS TRANSPORTATION PERFORMANCE MEASURES

TOPIC	PERFORMANCE MEASURE	METRIC
Safety	Reduce the number of fatal and severe injury collisions	Number of crashes year over year
	Reduce the number of bicycle/pedestrian-related collisions	Number of crashes year over year
	Reduce the annual crash rate (number of crashes/volume or VMT) on key corridors or County-wide	Crashes per 1,000 vehicles year over year (use the same corridors each year)
Transportation options for all ages and abilities	Implement low stress, connected bicycle facilities	Miles of bicycle facilities implemented, per **Chapter 5** bicycle network
	Complete sidewalk gaps and ensure pedestrian facilities are ADA compliant	Miles of sidewalk gaps filled, per **Chapter 4** sidewalk prioritization
	Employee and resident participation in Transportation Demand Management programs/strategies	Reporting through program participants
	Increase awareness of the availability and benefits of alternative transportation options (walking, biking, transit)	Mode split (through American Community Survey, local survey data, or DRCOG Focus Model)
	Prioritize first and last mile connections to commuter rail stations	Miles of bicycle and pedestrian facilities implemented within a 1-mile buffer of stations
	Provide transportation options where the older population can age in place, when driving is no longer an option	New transit or human service provider options implemented
Access to trails for recreation and transportation	Implement bicycle and pedestrian facilities that connect to trails and trailheads	Miles of bicycle and pedestrian facilities implemented within a 1/2-mile buffer of trail access point
Upgrade and maintain rural roadway network	Implement the prioritization system for paving rural roadways that reflects a balance of access and maintenance costs	Number of times rural road prioritization process applied

TOPIC	PERFORMANCE MEASURE	METRIC
Sustainability	Reduce vehicle miles traveled (VMT) per capita	VMT per capita of unincorporated population per DRCOG Focus Model outputs
	Reduce single occupancy vehicle mode split	Mode split (through American Community Survey, local survey data, or DRCOG Focus Model)
Align transportation and land use	Increase density and mix-uses along transit corridors	Per success of Comprehensive Plan implementation
	Implement planned Transit Oriented Developments	Per success of Comprehensive Plan implementation
	Continue to identify policy, regulations and locations that support the transit center concept and TODs	Per success of Comprehensive Plan implementation
Regional connectivity	Leverage partnerships with local jurisdictions and neighboring communities to implement projects that cross boundaries and create a consistent experience for users	Number of collaborative cross-boundary efforts
Freight	Plan for an intermodal freight hub	Tracking of establishment data-- employment data collected by NAICS code
Travel reliability	Travel time along major corridors in both the peak and non-peak hours remains consistent each year	Using BlueToad, Streetlight or Inrix data, compare minutes/mile along the same key corridors each year
Equity	Ensure investments are made in areas of the County with more vulnerable populations	Number of investments in CDC High Vulnerability census tracts (.75-1) (See Comprehensive Plan Existing Conditions and Opportunities Report (Phase I)Map 6)
Innovation	Implement partnership, technology or policy that leverages innovation to improve mobility	Number of new partnerships, technologies or policies
	Conduct temporary pilot projects that test out new technologies and providers	Number of pilot projects
	Identify innovative opportunities through this Plan (e.g., signage, ITS, counts, signalization, Big Data)	Number of new innovative opportunities having seen progress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8.3 – FUNDING

There are a variety of funding measures that Adams County, in partnership with its local municipalities, can pursue to support the implementation and operations of innovative transportation programs and services. The funding landscape is competitive and often requires County departments to enter the planning phase having considered grant requirements and opportunities to position the County for successful grant applications. Identifying project priorities in a Transportation Master Plan that are supported by the community and elected officials, and will help meet anticipated travel demand, is a critical step in obtaining external grants. An initial step for implementing the Transportation Master Plan can be the further study and design needed to bring high priority projects from the concept level to the "shovel ready" level in order to demonstrate to potential funders that an award would go directly towards project implementation. In most cases, the list of external funding sources featured in this chapter requires local matching funds.

Funding sources will continue to change between now and 2040, but this section identifies grant and funding streams available as of October 2021. Descriptions of grant opportunities come from federal, state, and regional sources.

8.3.1 – FEDERAL GRANTS

There are a variety of grants that could be used to fund innovative programs and services.

Federal Highway Safety Improvement Program (HSIP):

Eligible projects in this category include improvements or corrections to safety issues on any local or regional public roads and trails or paths. Funded activities must be consistent with Colorado's Strategic Highway Safety Plan. Projects are selected competitively through CDOT.

USDOT Rebuilding American Infrastructure with Sustainability and Equity (RAISE) (formerly BUILD and TIGER):

Since 2009, USDOT has distributed grants for planning and capital investments in surface transportation infrastructure. Grants are awarded on a competitive basis for projects that will have a significant local or regional impact. RAISE funding can support roads, bridges, transit, rail, ports, or intermodal transportation.

Infrastructure for Rebuilding American (INFRA):

The FAST (Fixing America's Surface Transportation) Act established the Nationally Significant Freight and Highway Projects (NSFHP) program to provide financial assistance—competitive grants, known as INFRA grants, or credit assistance—to nationally and regionally significant

freight and highway projects that align with the program goals to improve safety, efficiency and reliability of freight; improve global competitiveness; reduce highway congestion; improve connectivity; and addressing growing demand for freight.

Advanced Transportation and Congestion Management Technologies Deployment Program (ATCMTD) grants:

In July 2020, the U.S. Department of Transportation's Federal Highway Administration (FHWA) published a Notice of Funding Opportunity (NOFO) for $60 million in ATCMTD grants to fund new technologies that improve transportation efficiency and safety.

5310 Enhanced Mobility of Seniors and Individuals with Disabilities:

This formula fund supports public transportation for seniors and individuals with disabilities by funding eligible capital, purchased service, and preventive maintenance projects for transportation providers. Eligible projects include vehicle purchases, passenger shelters, purchased services, preventive maintenance, travel training, marketing programs, development of centralized call centers, and other equipment that supports transportation to meet the special needs of seniors and individuals with disabilities. DRCOG administers 5310 funding for the Denver-Aurora Urbanized Area, which includes Adams County.

FTA Mobility On-Demand (MOD) Sandbox Program:

The MOD program envisions a multimodal, integrated, automated, accessible, and connected transportation system in which personalized mobility is a key feature. The Sandbox Demonstration Program seeks to fund project teams to innovate, explore partnerships, develop new business models, integrate transit and MOD solutions, and investigate new, enabling technical capabilities such as integrated payment systems, decision support, and incentives for traveler choices.

Surface Transportation Block Grant:

A formula grant distributed to states who then distribute it through discretionary grants. This grant primarily funds capital improvements.

Public Transportation Innovation Program:

The program is a competitive grant process that provides funding to develop innovative products and services assisting transit agencies in better meeting the needs of their customers. It funds research, development, demonstration and deployment projects, and evaluation of technology of national significance to public transportation.

8.3.2 - STATE

CDOT Funding Advancements for Surface Transportation and Economic Recovery Act (FASTER):

This category includes safety-related projects, such as: asset management, transportation operations, intersection and interchange improvements, and shoulder and safety-related widening, and pedestrian and advanced by local governments and selected based on priority and data within CDOT Region 1.

Safe Routes to School (SRTS): This program was formed to:

Enable and encourage children to walk and bike to school; make walking and biking safer and more appealing; facilitate planning development, and implementation of projects that improve safety, reduce traffic, fuel consumption, and air pollution around schools. There is no longer dedicated federal SRTS funding, but the Colorado SRTS program has been continued with state funding and a local agency match requirement. This is a competitive program where projects are screened by a statewide selection advisory committee.

Great Outdoors Colorado (GOCO):

Funding from the Colorado Lottery is awarded to a variety of project types, including trail projects, across the state by the GOCO Board. GOCO Board members are appointed by the Governor and confirmed by the Colorado State Senate.

Regional Priorities Program (RPP):

The goal of this program is to implement regionally significant projects identified through the transportation planning process. These funds are flexible in use and are allocated to the regions by the Colorado Transportation Commission on an annual basis. The allocations are based on regional population, CDOT on-system lane miles, and CDOT on-system truck vehicle miles traveled (VMT).

8.3.3 - REGIONAL

Metropolitan Planning: Federal funds are allocated to DRCOG to provide for a continuing, comprehensive, and cooperative (3C) transportation planning process in the region.

Multimodal Options Fund (MMOF):

The legislation states that the Multimodal Options Fund should promote a "complete and integrated multimodal system" through objectives such as benefitting seniors, providing enhanced mobility for the disabled population, or providing safe routes to school. Local recipients are required to provide a match of project funding equal to the amount of the grant, with exemptions allowed. The current MMOF funding is available through June 30, 2023.

DRCOG Congestion Mitigation and Air Quality Improvement Program (CMAQ):

The FAST (Fixing America's Surface Transportation) Act continued the CMAQ program to provide a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas). Adams County is in non-attainment for 8-hour Ozone.

DRCOG Surface Transportation Block Grants:

The Surface Transportation Block Grant program (STBG) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

CDOT/DRCOG Transportation Alternatives (TA):

Eligible projects for TA grants include planning or construction projects for on and off-road pedestrian and bicycle facilities, community enhancement activities, and safe routes to schools. Projects are screened and selected by CDOT Region 1 and funds are awarded through a competitive process to local entities.

DRCOG Community Mobility Planning and Implementation (CMPI):

The purpose of the CMPI set-aside is to support small area planning and small infrastructure projects that contribute to the implementation of key outcomes within Metro Vision and the Metro Vision Regional Transportation Plan. The current program goals are to: Support diverse, livable communities; Support the development of connected urban centers and multimodal corridors; Support a transportation system that is well-connected and serves all modes of travel; Support healthy and active choices; Expand access to opportunity for residents of all ages, incomes, and abilities; and supports a transportation system that is safe, reliable, and well maintained.

Highway Users Tax Fund (HUTF):

Revenues generated from the Road Safety Surcharge, Oversize Overweight Surcharge, Rental Car Surcharges, and late vehicle registration fees are credited to the Highway Users Tax Fund (HUTF) and distributed per statute to the Colorado Department of Transportation, counties, and municipalities.

Colorado Energy Office:

Funding is available through HB21-1253 to local government proposed projects to support the development and construction of renewable and clean energy infrastructure in all areas of the state especially in communities in which renewable and clean energy infrastructure is sparse and with consideration to geographical diversity in these awards.

8.3.4 - LOCAL FUNDING

While local funding is more limited, it is also feasible to supplement State and Federal funding options.

Adams County Road and Bridge Tax Fund:

This fund accounts for the proceeds the County receives from the Adams County Road and Bridge sales tax of 0.50 percent. The Adams County Road and Bridge capital projects are managed by the Infrastructure Department.

Local Property Taxes:

Funds generated by sales, use, specific ownership, and property taxes can be transferred to general funds or directed towards capital projects. These can either be permanent or a local option tax that is subject to voter approval. Community Partners Shared mobility programs could seek funding from large employers in Adams County or interested community partners could contribute to mobility services as they serve their users and provide better access to their services, including Business Improvement Districts (BID), Front Range Community College, or local Urban Renewal Authorities. These local partners may gift funds to the program, or they could help to subsidize trips for their employees or students. The Lone Tree Link is a strong example of shared mobility funded in part by local partners.

Dedicated Sales Tax:

Additional sales tax could be collected as the result of a County or citizen sponsored ballot initiative to collect sale tax for specific/dedicated uses for transportation related use. This can include funding for sustainability and resilience. This additional funding would be collected over a set amount of time and used to fund the included items.

Local Payroll Tax:

It is an option to assess a local payroll tax on employers or employees. This can raise funds but can also burden low-income workers and may not have public support.

Farebox Revenue and Advertisements:

These are direct revenues from fares for shared mobility programs or advertisements through transit or bike

share. Raising fees and fares would increase income from this source but may lead to decreased ridership and reduced mobility options for underserved populations. Increasing advertisement options could increase revenue from local sources.

Transportation Utility Fees:

Transportation utility fees are a financing mechanism that treats the transportation system like a utility in which residents and businesses pay fees based on their use of the transportation system rather than taxes based on the value of property they occupy. The fees are not subject to voter approval and are based on the number of trips generated by different land uses. They are enacted on property owners and renters alike, paid on an ongoing monthly basis.

Other funding options that could be considered with further analysis are parking fees, private sources, transportation impact fees, fuel taxes, bond measures, and special assessments.

8.4 - CONCLUSION

The Adams County Transportation Master Plan is a long-term transportation and mobility plan that will serve as a guide for the County as growth continues to occur. Many projects, programs, policies, and studies are recommended for all modes of transportation (vehicle, transit, bikes, walking, wheeling, and travel by horse) to help maintain or improve the quality of life for the County's residents. Creating a plan far in advance provides the County with a blueprint to support funding requests for implementing recommendations, as well as guidance for right-of-way preservation to ensure sufficient roadway capacity as well as curb space for transit stops and stations and safe pedestrian and bicycle facilities. In the future, new forces and emerging technologies will impact Adams County and most communities around the globe. Examples of these include telecommuting, microtransit, electric vehicles, autonomous vehicles, and many others that will present challenges but also opportunities to better serve communities. As these continue to appear, growth continues to occur, and as projects are implemented, the Monitoring Table included in this chapter will help the County track the success of the plan or make adjustments and modifications if plan goals are not being achieved.

APPENDIX A
EXISTING CONDITIONS REPORT

Source: Design Workshop

APPENDIX B

COMMUNITY ENGAGEMENT SUMMARY

Source: Design Workshop

APPENDIX C
SCENARIO FRAMEWORK

Source: Design Workshop

APPENDIX D
PRIORITIZATION RESULTS

Source: Design Workshop

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