

# Part 1

# Base Information

1. Project Title	Mobility as a Service: Implementing an Open-Ticketing Platform
2. Project <i>Start/End</i> points or Geographic Area <i>Provide a map with submittal, as appropriate</i>	RTD jurisdictional boundaries, see attached map
3. Project Sponsor ( <i>entity that will construct/ complete and be financially responsible for the project</i> )	RTD
4. Project Contact Person, Title, Phone Number, and Email	Bill Van Meter, Assistant General Manager - Planning, 303-299-2448, bill.vanmeter@rtd-denver.com

5. Does this project touch CDOT Right-of-Way, involve a CDOT roadway, access RTD property, or request RTD involvement to operate service?  Yes  No  
*If yes, provide applicable concurrence documentation with submittal*

6. What planning document(s) identifies this project?

[DRCOG 2040 Fiscally Constrained Regional Transportation Plan \(2040 FC RTP\)](#)

Local plan:

Other(s): RTD Fare System Vision, 2017 (attached)

*Provide link to document/s and referenced page number if possible, or provide documentation with submittal*

7. Identify the project's **key elements**.

<input type="checkbox"/> Rapid Transit Capacity (2040 FC RTP) <input checked="" type="checkbox"/> Transit Other: Open Platform Ticketing/Mobility as a Service <input type="checkbox"/> Bicycle Facility <input type="checkbox"/> Pedestrian Facility <input type="checkbox"/> Safety Improvements <input type="checkbox"/> Roadway Capacity or Managed Lanes (2040 FC RTP) <input type="checkbox"/> Roadway Operational	<b>Grade Separation</b> <input type="checkbox"/> Roadway <input type="checkbox"/> Railway <input type="checkbox"/> Bicycle <input type="checkbox"/> Pedestrian <input type="checkbox"/> Roadway Pavement Reconstruction/Rehab <input type="checkbox"/> Bridge Replace/Reconstruct/Rehab <input type="checkbox"/> Study <input type="checkbox"/> Design <input type="checkbox"/> Other:
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8. **Problem Statement** What specific Metro Vision-related regional problem/issue will the transportation project address?

RTD's fare payment system can be cumbersome and difficult to understand, particularly for infrequent transit users. This alone creates a deterrent to using transit. For example, when purchasing a transit fare, riders are required to either have exact change, a MyRide card, an EcoPass/CollegePass, access to a Ticket Vending Machine (TVM), or use RTD's mobile ticketing application if purchasing a Day Pass. The MyRide card and RTD's passes use a dated card-based system, which means that payment information, such as the cash balance or pass expiration date, is stored on the card and not in a back office server. Because of this, if the card is lost or stolen, it is a long and tedious process to replace the card. The MyRide card also has high administrative and maintenance costs. Many transit agencies adopted these systems in the 1990s and 2000s as a matter of convenience for their passengers. While this technology was a best practice through the 2000s, advances in technology and the

proliferation of smart phones are compelling transit agencies around the country to upgrade to account-based fare payment systems. These account-based systems offer the following benefits:

- Have lower administrative and maintenance costs
- Operate in real-time (funds deposited into the account are available immediately, as opposed to 24-48 hours with the current card-based system)
- Are more flexible by providing users a wider variety of payment methods
- Allows for seamless and convenient money transfers from lost or stolen cards
- Allows for the integration with other transportation services

Additionally, by gaining the technological ability to integrate with other transportation services, there is an opportunity to improve first and last mile connections to RTD's transit network. In low density areas it is often difficult for a rider to complete the first or last mile of their transit trip if the bus stop is not near their origin/destination. This idea of Mobility as a Service, which integrates multiple transportation modes for seamless trips, offers riders an array of mobility solutions and reduces the need for an automobile. This project will address the following issues listed in the DRCOG MetroVision:

- (1) Non-single-occupancy vehicle mode share to work
- (2) Number of traffic fatalities
- (3) Surface transportation-related greenhouse gas emissions per capita
- (4) Contain urban development in locations designated for urban growth and services
- (5) Make connections that increase access and travel choices
- (6) Embrace new technologies and innovations
- (7) Improve and expand the region's multimodal transportation system, services, and connections
- (8) Improve the region's comprehensive transit system, including the timely completion of the FasTracks program
- (9) Prioritize investments in first- and last-mile connections to transit
- (10) Maintain existing and future transportation facilities in good condition
- (11) Improve transportation system performance and reliability
- (12) Improve transportation system safety and security
- (13) Increase safe and convenient active transportation options for all ages and abilities
- (14) Facilitate public/private partnerships to identify and address first- and last-mile connectivity issues associated with regional transit
- (15) Collaborate with local governments and other stakeholders to address the transportation needs of mobility-limited populations in transportation and landuse planning and decision-making at the regional and local levels.
- (16) Coordinate investments in local and regional transportation services that improve access to health services for those with mobility obstacles or impairments
- (17) Facilitate public/private partnerships to improve first and final-mile connections to the region's high capacity transit services, with an emphasis on enhancing connections to major employment centers and underserved populations
- (18) Ensure traditionally underserved populations receive at least a proportionate share of transportation benefits and are not disproportionately affected by transportation investments relative to the entire regional population

**9. Define the scope and specific elements of the project.**

This TIP grant application has two specific elements as indicated in the 2017 RTD Fare Vision Document (attached):

- (1) Upgrade back-end administration of RTD's fare payment system and shift the operating system from a card-based to an account-based system. An account-based system operates completely online, as opposed to RTD's current card-based system which is housed in an on-site server. This new system has the capability to integrate

payment with other transportation providers through shared API's (application programming interfaces), including other transit agencies, CDOT's Bustang, ride-hailing companies such as Lyft and Uber, and bikeshare/scootershare companies, among others. This modal incorporation would help RTD achieve its goal of becoming a regional "mobility integrator" by increasing regional connectivity, improving first and last mile connections, and providing seamless travel between modes and transit providers.

(2) Install new fare validators on all RTD revenue vehicles. Masabi, RTD's current mobile ticketing vendor, has an existing "Software as a Service" architecture that is used by roughly 35 other transit agencies in the US. By leveraging a partnership with Masabi or other similar vendor, RTD will be able to upgrade its fare payment system at a fraction of the cost that other agencies have spent since the technology already exists. For comparison, the San Francisco Bay Area (BART, Muni, Caltrain, AC Transit, among others) just announced a \$194 million project to upgrade the Clipper Card to an account-based system. By modernizing its fare payment system, RTD would increase flexibility to riders in paying fares (something that riders have indicated is very important to them in recent passenger surveys) as fare media could include smart cards, mobile applications, credit cards, or wearables (such as smartwatches).

**10. What is the status of the proposed project?**

The project is in the planning stage. The project was identified in RTD's 2017 Fare System Vision and feasibility has been assessed. Securing funding for the project is the next key step.

**11. Would a smaller federal funding amount than requested be acceptable, while maintaining the original intent of the project?**

Yes  No

*If yes, define smaller meaningful limits, size, service level, phases, or scopes, along with the cost for each.*

**A. Project Financial Information and Funding Request**

<b>1. Total Project Cost</b>		<b>\$3,626,168</b>
<b>2. Total amount of DRCOG Regional Share Funding Request</b> <i>(no greater than \$20 million and not to exceed 50% of the total project cost)</i>	<b>\$1,813,084</b>	<b>50%</b> of total project cost
<b>3. Outside Funding Partners (other than DRCOG Regional Share funds)</b> List each funding partner and contribution amount.	<b>\$\$</b> <b>Contribution Amount</b>	<b>% of Contribution</b> <b>to Overall Total</b> <b>Project Cost</b>
RTD Local Funds	\$1,813,084	50%
	\$	0%
	\$	0%
	\$	0%
	\$	0%
	\$	0%
<b>Total amount of funding provided by other funding partners</b> <i>(private, local, state, Subregion, or federal)</i>	<b>\$1,813,084</b>	

**Funding Breakdown (year by year)\***

*\*The proposed funding plan is not guaranteed if the project is selected for funding. While DRCOG will do everything it can to accommodate the applicants' request, final funding will be assigned at DRCOG's discretion within fiscal constraint. Funding amounts must be provided in year of expenditure dollars using an inflation factor of 3% per year from 2018.*

	FY 2020	FY 2021	FY 2022	FY 2023	Total
<b>Federal Funds</b>	\$1,813,084	\$	\$	\$	<b>\$1,813,084</b>
<b>State Funds</b>	\$	\$	\$	\$	<b>\$0</b>
<b>Local Funds</b>	\$1,813,084	\$	\$	\$	<b>\$1,813,084</b>
<b>Total Funding</b>	\$3,626,168	\$0	\$0	\$0	<b>\$3,626,168</b>
<b>4. Phase to be Initiated</b> <i>Choose from Design, ENV, ROW, CON, Study, Service, Equip. Purchase, Other</i>	Other	Choose an item	Choose an item	Choose an item	

**5. By checking this box,** the applicant's Chief Elected Official (Mayor or County Commission Chair) or City/County Manager for local governments or Agency Director or equivalent for others, has certified it allows this project request to be submitted for DRCOG-allocated funding and will follow all DRCOG policies and state and federal regulations when completing this project, if funded.



## Part 2 Evaluation Criteria, Questions, and Scoring

### A. Regional significance of proposed project

WEIGHT **40%**

Provide **qualitative and quantitative** (derived from Part 3 of the application) responses to the following questions on the regional significance of the proposed project.

1. Why is this project regionally important?

This is a truly regional project that would benefit the entire Regional Transportation District and anyone using RTD from out of district. Modernizing our fare payment system will attract new riders and provide greater convenience to existing riders. With future potential of integrating with ride-hailing services and bikeshare/scootershare, RTD believes this project will help alleviate the first and last mile problem and increase transit mode-share District-wide.

2. Does the proposed project cross and/or benefit multiple **municipalities**? If yes, which ones and how?

Yes, this project will benefit RTD riders in all 42 municipalities that lie within the Regional Transportation District's boundaries. This includes Arvada, Aurora, Boulder, Bow Mar, Brighton, Broomfield, Centennial, Cherry Hills, Columbine Valley, Commerce City, Denver, Edgewater, Englewood, Erie, Federal Heights, Foxfield, Glendale, Golden, Greenwood, Jamestown, Lafayette, Lakeside, Lakewood, Littleton, Lochbuie, Lonetree, Longmont, Louisville, Lyons, Morrison, Mountain View, Nederland, Northglenn, Parker, Sheridan, Superior, Thornton, Ward, Westminster, and Wheat Ridge. Riders from each of these municipalities would have access to the new fare payment system once it is implemented. Riders using RTD services from outside the district would also benefit from the new system through potential integration with CDOT's Bustang and other transit agencies in the state.

3. Does the proposed project cross and/or benefit another **subregion(s)**? If yes, which ones and how?

Yes, the project will benefit RTD riders in all DRCOG subregions, including Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, and southwest Weld counties. Riders from each of these subregions would have access to the new fare payment system once it is implemented.

4. How will the proposed project address the specific transportation problem described in the **Problem Statement** (as submitted in Part 1, #8)?

This project will address all of the issues described in the problem statement including:

- Lowering administrative and maintenance costs. The project will reduce administrative costs through a more efficient account-based system; maintenance costs will be reduced by replacing current validators, which require significant maintenance attention and resources.
- Operating in real-time (funds deposited into the account are available immediately, as opposed to 24-48 hours with the current card-based system) through the modernized account-based system.
- Offering more flexibility by providing users a wider variety of payment methods including the use of cards, cell phones, and wearables (such as smartwatches).
- Allowing convenient money transfers from lost or stolen cards. Because the new system would be account-based, money on your card would be associated with an account on an online server, rather than on the card itself.
- Allowing for the integration with other transportation services. An account-based platform would be open and therefore allow RTD to partner with other agencies and transportation service providers to integrate trip planning and fare payment into one streamlined process.

Reducing barriers to using transit is key to increasing access to jobs, healthcare, and recreational opportunities. In 2017, RTD had over 100 million boardings and by modernizing the fare payment system, RTD will be able to further capitalize on its robust rapid transit network and help even more people get to where they need to go.

5. One foundation of a sustainable and resilient economy is physical infrastructure and transportation. How will the **completed** project allow people and businesses to thrive and prosper?

This project will help RTD better leverage the existing public transportation network (which includes fixed-route buses, light rail, and commuter rail transit) by making it easier to pay fares. The project will also improve connectivity between modes, helping RTD to attract more passengers without any new substantial physical infrastructure and by maximizing the efficiency of the existing system.

The public transportation network is key to a sustainable and resilient economy in the Denver Metro Region. RTD has calculated that 10 million square feet of office, 1.4 million square feet of retail, and 38,000 residential units can be attributed to the construction of RTD's rapid transit network (excluding Downtown Denver). With continued private investments near RTD transit facilities, ensuring the system operates efficiently and is easy for riders to use is critical; modernizing the fare payment system will help RTD to continue providing the region with transportation services that are a lifeblood to the economy.

6. How will connectivity to different travel modes be improved by the proposed project?

In addition to simplifying fare payment, the adoption of this account-based system will also provide RTD with the technological capability to provide seamless integrated trip planning and ticketing between multiple transportation providers. Transportation modes could be integrated by sharing API's with RTD's mobile ticketing platform, thus achieving a "mobility as a service" model. For example, if RTD were to integrate with ride-hailing companies such as Lyft and Uber, you could take a Lyft/Uber from your home to Union Station and then ride the University of Colorado A Line to Denver International Airport, using a single trip planning and fare payment platform.

7. Describe funding and/or project partnerships (*other subregions, regional agencies, municipalities, private, etc.*) established in association with this project.

RTD's current mobile ticketing vendor, Masabi, has an account-based fare payment platform that is used by 35 other transit agencies in the US. By using an existing platform developed by Masabi or a similar vendor and not developing our own, the price to implement an account-based system is significantly reduced. The San Francisco Bay Area just announced a \$194 million overhaul to upgrade the Clipper Card to an account-based system. Through RTD's partnership with Masabi or a similar vendor, we would be paying a fraction of this cost; leveraging an existing platform is key to implementing the new fare payment system at a reasonable cost.

Integration with other public and private transportation providers would also be enabled through this project. These partnerships could include CDOT's Bustang, other transit agencies (Transfort, RFTA, etc), TNCs, or bikeshare/scootershare. Through these partnerships, RTD would be able to provide seamless travel between modes and better connectivity between regional destinations. Partnerships with municipally or privately operated parking garages could allow RTD patrons to park and pay for their transit fare and parking fee in one transaction.

## B. DRCOG Board-approved Metro Vision TIP Focus Areas

WEIGHT **30%**

Provide **qualitative and quantitative** (derived from Part 3 of the application) responses to the following questions on how the proposed project addresses the three DRCOG Board-approved Focus Areas (in bold).

1. Describe how the project will **improve mobility infrastructure and services for vulnerable populations (including improved transportation access to health services)**.

Transitioning to an account-based fare payment systems will improve access to the transit system for all RTD patrons, including vulnerable populations, through greater flexibility with fare payments and increased connectivity between modes of travel. This increased connectivity between modes will improve access to healthcare and jobs for vulnerable populations. It will also allow for better balance protection for lost cards. A 2017 RTD passenger survey found that 81% of low income riders have access to a smartphone and 82% of low income riders have access to a debit or credit card. Though this is a high percentage of riders, RTD recognizes that smartphones and debit/credit cards are not owned by everyone. RTD will therefore continue accepting cash on all bus routes and at rail stations.

**2. Describe how the project will increase reliability of existing multimodal transportation network.**

RTD's current validators require significant maintenance, wasting limited resources and staff time. Implementing a new fare payment system will drastically reduce maintenance costs associated with the old validators and free up staff time to maintain other critical pieces of infrastructure, such as transit vehicles and rail lines. This would allow RTD to focus on improved on-time performance and increased system reliability.

**3. Describe how the project will improve transportation safety and security.**

This project will lead to an increase in the number of people using RTD's services, which is proven to be a safer mode of transportation. RTD's 2017 Quality of Life Report found that you are three times more likely to die traveling in a car than on a bus. The project will also reduce the number of cash transactions that occur on transit platforms, improving overall personal security.

**C. Consistency & Contributions to Transportation-focused Metro Vision Objectives**

WEIGHT **20%**

Provide **qualitative and quantitative** responses (derived from Part 3 of the application) to the following items on how the proposed project contributes to Transportation-focused Objectives (in bold) in the adopted Metro Vision plan. Refer to the expanded Metro Vision Objective by clicking on links.

[MV objective 2](#)

**Contain urban development in locations designated for urban growth and services.**

1. Will this project help focus and facilitate future growth in locations where urban-level infrastructure already exists or areas where plans for infrastructure and service expansion are in place?

Yes  No

Describe, including supporting quantitative analysis

Public transportation is most successful in developed areas that have the housing and employment density to support it. This project will increase flexibility in fare collection, improve access for all passengers, and increase connectivity between travel modes, making transit more usable in urban growth areas. This project maximizes the efficiency of existing infrastructure while requiring only a modest investment.

[MV objective 3](#)

**Increase housing and employment in urban centers.**

2. Will this project help establish a network of clear and direct multimodal connections within and between urban centers, or other key destinations?

Yes  No

Describe, including supporting quantitative analysis

This project will directly enhance multimodal connections within urban centers. With the technological ability to integrate with other transportation services under the new fare payment system, RTD could provide even better service to the district by leveraging private sector companies to provide first and last mile connections from transit stops.

<a href="#">MV objective 4</a>	<b>Improve or expand the region’s multimodal transportation system, services, and connections.</b>
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3. Will this project help increase mobility choices within and beyond the region for people, goods, or services?  Yes  No

*Describe, including supporting quantitative analysis*  
 In 2017, a survey among Denver B-cycle users found that more than half of B-cycle users stated that joint access to B-cycle and public transportation allowed them to leave their cars at home; the co-location of bikeshare stations with transit stations has allowed passengers to easily complete multi-modal trips. This project will increase mobility choices within the District and beyond by further improving connections with B-cycle and other operators by establishing the technology needed to integrate fare payment. With potential integration of fare payment and trip planning with TNCs, CDOT’s Bustang, and other transit agencies, people would be able to travel throughout the region more easily without owning an automobile. Making mobility choices easy and convenient is critical to getting people to switch travel modes.

<a href="#">MV objective 6a</a>	<b>Improve air quality and reduce greenhouse gas emissions.</b>
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4. Will this project help reduce ground-level ozone, greenhouse gas emissions, carbon monoxide, particulate matter, or other air pollutants?  Yes  No

*Describe, including supporting quantitative analysis*  
 Public transportation systems play a key role in reducing greenhouse gas emissions. The Metro Denver region experienced 40 days in 2017 where the EPA Air Quality Index was “Unhealthy for Sensitive Groups” or worse. Increasing public transportation ridership can help reduce greenhouse gas emissions as well as improve air quality; with less people driving, there are fewer cars on the road to emit pollutants. According to a 2015 TCRP report, modernizing fare payment systems can lead to increased ridership system-wide. This increase in ridership will have a positive impact on air quality and emissions by reducing the number of people driving single occupancy vehicles.

<a href="#">MV objective 7b</a>	<b>Connect people to natural resource or recreational areas.</b>
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5. Will this project help complete missing links in the regional trail and greenways network or improve other multimodal connections that increase accessibility to our region’s open space assets?  Yes  No

*Describe, including supporting quantitative analysis*  
 RTD prioritizes access to multimodal networks including regional trails and greenways. All 1,035 RTD fixed-route buses are equipped with bicycle racks, allowing passengers to easily complete their trip using a bike and the bus. RTD’s commitment to multimodal connectivity is evident in this project, as it will allow for the integration of even more modes of transportation.

<a href="#">MV objective 10</a>	<b>Increase access to amenities that support healthy, active choices.</b>
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6. Will this project expand opportunities for residents to lead healthy and active lifestyles?  Yes  No

*Describe, including supporting quantitative analysis*  
 Many studies have shown that regular public transportation users get more daily exercise than those who commute by car. According to the 2012 Journal of Environmental Research and Public Health, a transit commuter walks up to 33 more minutes a day than an automobile commuter. By improving RTD’s fare payment system, we



will increase access to the transit system in the region. This will encourage more people to commute by transit, increasing the amount of physical activity they get on a daily basis. Future integration with bikeshare could also promote a healthy and active lifestyle.

**MV objective 13**

**Improve access to opportunity.**

7. Will this project help reduce critical health, education, income, and opportunity disparities by promoting reliable transportation connections to key destinations and other amenities?

Yes  No

Describe, including supporting quantitative analysis

This project will enhance multimodal connections within the district, helping reduce critical health, education, income, and opportunity disparities. RTD provides high capacity transportation to the two largest employment centers in the state (Downtown Denver and the Denver Tech Center). With the ability to integrate with other transportation services under the new fare payment system, RTD could connect a greater number of people to the transit network by leveraging private sector companies to provide first and last mile connections from transit stops.

**MV objective 14**

**Improve the region’s competitive position.**

8. Will this project help support and contribute to the growth of the region’s economic health and vitality?

Yes  No

Describe, including supporting quantitative analysis

The public transportation network plays a key role in the region's economy by providing transportation to individuals who do not own an automobile, as well as providing a more sustainable alternative to driving on congested roads. Since 2010, more than 22,000 jobs have been created within a half mile of rapid transit stations and in 2016, nearly 40% of downtown employees commuted via transit. It is clear that employers value the public transportation network.

This project will improve the existing public transit network, including the University of Colorado A Line, which provides a vital economic connection between Downtown Denver and Denver International Airport. Increased utilization of the system by tourists and business travelers will lead to further economic growth in the region. This project will also increase flexibility and access to riders as well as improve multimodal connections between businesses, residences, and other points of interest in the region, helping to further increase RTD's ability to move people and have a positive impact on the economy.

**D. Project Leveraging**

**WEIGHT 10%**

9. What percent of outside funding sources (non-DRCOG-allocated Regional Share funding) does this project have?

50%

80%+ outside funding sources ..... High  
 60-79% .....Medium  
 59% and below .....Low

### Part 3

## Project Data Worksheet – Calculations and Estimates

(Complete all subsections applicable to the project)

### A. Transit Use

1. Current ridership weekday boardings	0
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	0	0	0
2040	0	0	0

Transit Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional daily transit boardings after project is completed. <i>(Using 50% growth above year of opening for 2040 value, unless justified)</i> <i>Provide supporting documentation as part of application submittal</i>	0	0
4. Enter number of the additional transit boardings (from #3 above) that were previously using a different transit route. <i>(Example: {#3 X 25%} or other percent, if justified)</i>	0	0
5. Enter number of the new transit boardings (from #3 above) that were previously using other non-SOV modes (walk, bicycle, HOV, etc.) <i>(Example: {#3 X 25%} or other percent, if justified)</i>	0	0
6. = Number of SOV one-way trips reduced per day (#3 – #4 – #5)	0	0
7. Enter the value of <b>{#6 x 9 miles}</b> . (= the VMT reduced per day) <i>(Values other than the default 9 miles must be justified by sponsor; e.g., 15 miles for regional service or 6 miles for local service)</i>	0	0
8. = Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	0	0
9. If values would be distinctly greater for weekends, describe the magnitude of difference:		
10. If different values other than the suggested are used, please explain here:		

### B. Bicycle Use

1. Current weekday bicyclists	0
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	0	0	0
2040	0	0	0

Bicycle Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional weekday one-way bicycle trips on the facility after project is completed.	0	0
4. Enter number of the bicycle trips (in #3 above) that will be diverting from a different bicycling route. (Example: <b>{#3 X 50%}</b> or other percent, if justified)	0	0
5. = Initial number of new bicycle trips from project (#3 – #4)	0	0
6. Enter number of the new trips produced (from #5 above) that are replacing an SOV trip. (Example: <b>{#5 X 30%}</b> or other percent, if justified)	0	0
7. = Number of SOV trips reduced per day (#5 - #6)	0	0
8. Enter the value of <b>{#7 x 2 miles}</b> . (= the VMT reduced per day) (Values other than 2 miles must be justified by sponsor)	0	0
9. = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	0	0
10. If values would be distinctly greater for weekends, describe the magnitude of difference:		
11. If different values other than the suggested are used, please explain here:		

### C. Pedestrian Use

1. Current weekday pedestrians (include users of all non-pedaled devices)	0
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	0	0	0
2040	0	0	0

Pedestrian Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional weekday pedestrian one-way trips on the facility after project is completed	0	0
4. Enter number of the new pedestrian trips (in #3 above) that will be diverting from a different walking route (Example: <b>{#3 X 50%}</b> or other percent, if justified)	0	0
5. = Number of new trips from project (#3 – #4)	0	0
6. Enter number of the new trips produced (from #5 above) that are replacing an SOV trip. (Example: <b>{#5 X 30%}</b> or other percent, if justified)	0	0
7. = Number of SOV trips reduced per day (#5 - #6)	0	0

<b>12.</b> Enter the value of <b>{#7 x .4 miles}</b> . (= the VMT reduced per day) <i>(Values other than .4 miles must be justified by sponsor)</i>	0	0
<b>8.</b> = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	0	0
<b>9.</b> If values would be distinctly greater for weekends, describe the magnitude of difference:		
<b>10.</b> If different values other than the suggested are used, please explain here:		

## D. Vulnerable Populations

	Vulnerable Populations	Population within 1 mile
	Use Current Census Data	<b>1.</b> Persons over age 65
<b>2.</b> Minority persons		0
<b>3.</b> Low-Income households		0
<b>4.</b> Linguistically-challenged persons		0
<b>5.</b> Individuals with disabilities		0
<b>6.</b> Households without a motor vehicle		0
<b>7.</b> Children ages 6-17		0
<b>8.</b> Health service facilities served by project		0

## E. Travel Delay *(Operational and Congestion Reduction)*

Sponsor must use industry standard Highway Capacity Manual (HCM) based software programs and procedures as a basis to calculate estimated weekday travel delay benefits. *DRCOG staff may be able to use the Regional Travel Model to develop estimates for certain types of large-scale projects.*

<b>1.</b> Current ADT (average daily traffic volume) on applicable segments	0
<b>2.</b> 2040 ADT estimate	0
<b>3.</b> Current weekday vehicle hours of delay (VHD) (before project)	0

Travel Delay Calculations	Year of Opening
<b>4.</b> Enter calculated future weekday VHD (after project)	0
<b>5.</b> Enter value of <b>{#3 - #4}</b> = Reduced VHD	0
<b>6.</b> Enter value of <b>{#5 X 1.4}</b> = <b>Reduced person hours of delay</b> <i>(Value higher than 1.4 due to high transit ridership must be justified by sponsor)</i>	0
<b>7.</b> <b>After project peak hour congested average travel time reduction</b> per vehicle (includes persons, transit passengers, freight, and service equipment carried by vehicles). <i>If applicable, denote unique travel time reduction for certain types of vehicles</i>	0
<b>8.</b> If values would be distinctly different for weekend days or special events, describe the magnitude of difference.	

9. If different values other than the suggested are used, please explain here:

## F. Traffic Crash Reduction

1. Provide the current number of crashes involving motor vehicles, bicyclists, and pedestrians ( <i>most recent 5-year period of data</i> )		Sponsor must use industry accepted crash reduction factors (CRF) or accident modification factor (AMF) practices ( <i>e.g., NCHRP Project 17-25, NCHRP Report 617, or DiExSys methodology</i> ).
Fatal crashes	0	
Serious Injury crashes	0	
Other Injury crashes	0	
Property Damage Only crashes	0	
2. Estimated reduction in crashes <u>applicable to the project scope</u> ( <i>per the five-year period used above</i> )		
Fatal crashes reduced	0	
Serious Injury crashes reduced	0	
Other Injury crashes reduced	0	
Property Damage Only crashes reduced	0	

## G. Facility Condition

Sponsor must use a current industry-accepted pavement condition method or system and calculate the average condition across all sections of pavement being replaced or modified.  
Applicants will rate as: Excellent, Good, Fair, or Poor

### Roadway Pavement

1. Current roadway pavement condition	Choose an item
2. Describe current pavement issues and how the project will address them.	
3. Average Daily User Volume	0

### Bicycle/Pedestrian/Other Facility

4. Current bicycle/pedestrian/other facility condition	Choose an item
5. Describe current condition issues and how the project will address them.	
6. Average Daily User Volume	0

## H. Bridge Improvements

1. Current bridge structural condition from CDOT
2. Describe current condition issues and how the project will address them.

3. Other functional obsolescence issues to be addressed by project

4. Average Daily User Volume over bridge 0

**I. Other Beneficial Variables** *(identified and calculated by the sponsor)*

1.

2.

3.

**J. Disbenefits or Negative Impacts** *(identified and calculated by the sponsor)*

1. Increase in VMT? *If yes, describe scale of expected increase*  Yes  No

2. Negative impact on vulnerable populations

3. Other: