



2020–2023 Transportation Improvement Program (TIP)  
Subregional Share Project Application Form

# 95<sup>th</sup> and Arapahoe Multimodal Intersection Project

Submitted on behalf of the Boulder County

February 27, 2018



# Part 1

# Base Information

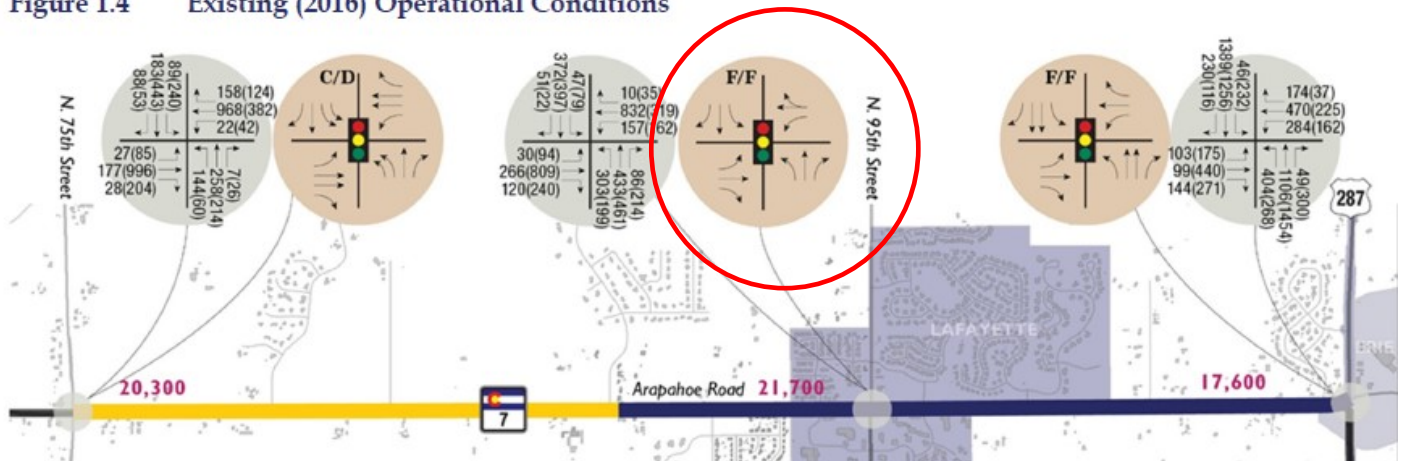
1. Project Title	95 <sup>th</sup> and Arapahoe Multimodal Intersection Project			
2. Project <i>Start/End</i> points or Geographic Area <i>Provide a map with submittal, as appropriate</i>	95 <sup>th</sup> and Arapahoe intersection including approximately 500' of each approach.			
3. Project Sponsor ( <i>entity that will construct/ complete and be financially responsible for the project</i> )	Boulder County			
4. Project Contact Person, Title, Phone Number, and Email	Scott McCarey, PE, AICP Multimodal Division Manager 720-564-2665 <a href="mailto:smccarey@bouldercounty.org">smccarey@bouldercounty.org</a>			
5. Does this project touch CDOT Right-of-Way, involve a CDOT roadway, access RTD property, or request RTD involvement to operate service?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>If yes, provide applicable concurrence documentation with submittal</i>			
6. What planning document(s) identifies this project?	<input type="checkbox"/> <a href="#">DRCOG 2040 Fiscally Constrained Regional Transportation Plan (2040 FC RTP)</a>			
	<input checked="" type="checkbox"/> Local plan:	City of Lafayette Comprehensive Plan (2013)		
	<input checked="" type="checkbox"/> Other(s):	State Highway 7 BRT Feasibility Study (2017) <a href="https://www.bouldercounty.org/transportation/multi-modal/bus/sh7-brt-study/">https://www.bouldercounty.org/transportation/multi-modal/bus/sh7-brt-study/</a> State Highway 7 Planning and Environmental Linkages (PEL) (2018) <a href="https://www.bouldercounty.org/transportation/multi-modal/bus/sh7-brt-study/state-highway-7-planning-environmental-linkages/">https://www.bouldercounty.org/transportation/multi-modal/bus/sh7-brt-study/state-highway-7-planning-environmental-linkages/</a> RTD Regional BRT Feasibility Study (on-going) <a href="http://www.rtd-denver.com/BRT-study.shtml">http://www.rtd-denver.com/BRT-study.shtml</a> RTD North Area Mobility Study <a href="http://www.rtd-fastracks.com/nams_1">http://www.rtd-fastracks.com/nams_1</a>		
	<i>Provide link to document/s and referenced page number if possible, or provide documentation with submittal</i>			
<b>7. Identify the project's key elements.</b> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 50%;"> <input type="checkbox"/> Rapid Transit Capacity (2040 FC RTP)  <input checked="" type="checkbox"/> Transit Other: Transit Priority Lanes  <input checked="" type="checkbox"/> Bicycle Facility  <input checked="" type="checkbox"/> Pedestrian Facility  <input checked="" type="checkbox"/> Safety Improvements  <input type="checkbox"/> Roadway Capacity or Managed Lanes (2040 FC RTP)  <input checked="" type="checkbox"/> Roadway Operational         </td> <td style="vertical-align: top; width: 50%;"> <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:         </td> </tr> </table>			<input type="checkbox"/> Rapid Transit Capacity (2040 FC RTP) <input checked="" type="checkbox"/> Transit Other: Transit Priority Lanes <input checked="" type="checkbox"/> Bicycle Facility <input checked="" type="checkbox"/> Pedestrian Facility <input checked="" type="checkbox"/> Safety Improvements <input type="checkbox"/> Roadway Capacity or Managed Lanes (2040 FC RTP) <input checked="" 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?

The State Highway 7 and 95<sup>th</sup> Street intersection is a major multimodal travel hub in Boulder County. The intersection is the confluence of two of the most important regional corridors in our region. Running east-west there is travel between Brighton and Boulder on State Highway 7. Running north-south there is travel between Longmont and Louisville/Broomfield on State Highway 42 (also known as 95<sup>th</sup> Street). Approximately 30,000 personal vehicles, bicycles, trucks, and RTD buses currently travel through the intersection each day. The existing intersection is deficient and incomplete for all modes of travel. People driving automobiles on average witness crashes every two weeks and experience significant peak hour traffic congestion. There are no bicycle facilities leading up to and through the intersection forcing cyclists to use vehicle lanes. Pedestrian facilities are incomplete and transit riders experience intersection delay and harsh conditions while waiting at inadequate bus stops.

The 95<sup>th</sup> Street intersection is a major bottleneck for east-west travel on SH7. The SH 7 75th-287 PEL Corridor Conditions Assessment Report found that the 95<sup>th</sup> Street intersection currently operates at failing level of service in both the AM and PM peak periods. (Circled in red in the image below)

**Figure 1.4 Existing (2016) Operational Conditions**



Source: SH7 PEL: 75<sup>th</sup> to US287

As part of the PEL there was also a real-time traffic analysis performed in the corridor. Pilot cars with GPS software drove the corridor numerous times to understand typical vehicle speeds at various points in the corridor. As can be seen, 95<sup>th</sup> Street is a major source of congestion westbound in the morning and eastbound in the evening. The red areas approaching the intersection literally correspond with the traffic signal cycles. Motorists typically wait three cycles to get through the intersection in peak periods.





While congestion is bad now, using DRCOG’s 2040 land use projections the SH 7 75th-287 PEL estimated traffic volumes in the corridor will increase by 40% by 2040. Unaddressed this additional traffic volume will exacerbate the safety issues, have negative economic conditions for adjacent commercial businesses, reduce the social fabric of the surrounding neighborhoods and further reduce air quality in the local area and the Denver Region.

The complete intersection project supports many of the goals in DRCOG’s MetroVision, Boulder County’s Comprehensive Plan, and the City of Lafayette’s master plans (Source: *DRCOG Denver Region Active Transportation Plan*). One common goal is to address regional jobs and housing imbalance. While not solving this problem all together, this project will reduce an existing bottleneck on a key regional corridor that connects employment centers, education hubs, medical services, neighborhoods, and commercial centers. It also improves transit travel time reliability, first and final mile connections to transit and the overall transit passenger experience.

This project will improve transit travel times on day one for RTD’s existing JUMP service connecting Boulder County’s eastern and western communities. It is also, however, a key intersection to the future SH 7 BRT service. At 35 miles, this regional BRT service will be one of the longest regional transit routes in the RTD district connecting Brighton, Adams County, Thornton, Broomfield, Erie, Lafayette, Boulder County and the City of Boulder.

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

**Project Scope**

The requested federal funds will construct all components of the SH7 and 95<sup>th</sup> intersection enhancements. The scope of the project is a culmination of several years of multi-agency planning and engineering efforts. This started with the SH7 BRT Feasibility Study and the SH7 Planning and Environmental Linkages (PEL) completed in 2018. These two efforts quantified the need for the project and developed the initial conceptual designs. Second, was the Station Area Master Planning work that refined elements of the BRT stations, located the transit platforms and identified first and final mile connections. For this intersection, the Station Area planning efforts have identified exact location and space needed for the transit platforms as well as for the adjacent multiuse path. Third is the SH7 Preliminary Engineering that is just getting underway and is slated to be completed in summer of 2021.





Summary of the work done to date on the intersection:

Phase	Purpose	Funded	Status
NW Area Mobility Study	Identified the top BRT corridors	Yes	Completed in 2014
SH7 BRT Feasibility Study	Define routing and station location	Yes	Completed in 2018
SH7 PEL: 75th to 287	Conceptual Design	Yes	Completed in 2018
SH7 Station Area Master Planning	Station design and ROW estimates	Yes	Complete in Summer 2019
SH7 Preliminary Engineering	Survey and engineering of final design	Yes	Complete Summer 2021
This Project	Construction	Not yet!	Applying for funds

Given all of this work in the corridor and at this intersection, the scope of work was determined to be the following:

- **New Bus Access Transit lanes (BAT lanes)** – for the JUMP and future BRT to bypass intersection queuing
- **New transit stops** – Bus platforms large enough for two BRT vehicles; shelters; ticket vending machines; signage and lighting
- **New general purpose travel lanes** – Operational improvements with new east-west lanes
- **New multiuse path** – on SH7 for bikes, pedestrians to increase safety and meet ADA requirements

Most notably, based on the Station Area designs for the intersection, the scope of work for the project appears to occur completely within the CDOT right of way. Should final design bear that out in the next several years, there will be no property acquisition needed for the project leading to reduced project costs and on-time reliability. The federal funds requested for this project will be used entirely for construction and the final construction plans will leverage the results of a collaborative effort between Boulder County, City of Lafayette, RTD, and CDOT.

	SH7 (Arapahoe)		95 <sup>th</sup> Street	
	<i>Before</i>	<i>After</i>	<i>Before</i>	<i>After</i>
	Missing on NW corner 5' in other places	12' multiuse path all corners	5' sidewalks	12' multiuse path all corners
	None	12' multiuse path	None	5' Bike Lanes through entire intersection
	No priority lanes 30' platforms WB shelter No amenities	BAT lanes 225' platforms (Sufficient for 2 BRT vehicles) WB/EB branded shelter Public Information Displays, Ticket Vending Machine	None	None
	Two	Four	Two	Two

**Project Component Details**

- **Business Access Transit Lanes (BAT lanes):** The current intersection design lacks any transit priority infrastructure. Currently the JUMP buses sit in the same traffic congestion the cars do on the approach to the 95<sup>th</sup> Street intersection. With no travel time savings to take transit, there is little motivation for motorist to switch modes to take the bus. To address this issue, the complete intersection will include Business Access Transit lanes, or BAT lanes, to allow east and westbound buses (both the JUMP and future BRT service) to bypass vehicle queuing reducing travel

times and increasing on-time reliability. The BAT lanes will be shared with right turning vehicles and provide safe access to business along Arapahoe. This is similar to the treatment seen on Arapahoe between Cherryvale and the Boulder Valley School District Tech Center (photo below).



- **Walk and Wheel Multiuse Paths:** The current intersection has no bicycle facilities forcing cyclist to share the lanes with the roughly 30,000 vehicles that travel the corridor each day. The complete intersection will include new 12' wide multiuse paths on along all sides of the intersection in all directions given physical separation from this heavy traffic volume. There is a possibility to include protected bikeways and protected intersection concepts based on the final survey and ROW.
- **New through travel lanes at the intersection:** The current intersection design has one through lane in each direction. This results in increased delay and unsafe conditions when turn lane queuing backs into through lanes. The complete intersection design will include an additional through travel lane in the east and westbound directions. Left turn lanes will also be lengthened to increase storage.
- **SH 7 BRT Stations:** The current intersection has near side bus stops that are too short for the future regional SH 7 BRT vehicles. There are also inadequate transit station amenities. The improved intersection will include extended boarding platforms on the far side of the intersection that include BRT branded shelters, RTD ticket vending machines for off-board fare purchase and first and final mile station amenities such as Bike-n-Ride shelters for long-term, secure bike parking. Moving the platforms to the far side of the intersection also allows for Transit Signal Priority at this intersection which is difficult to impossible with near-side stops.



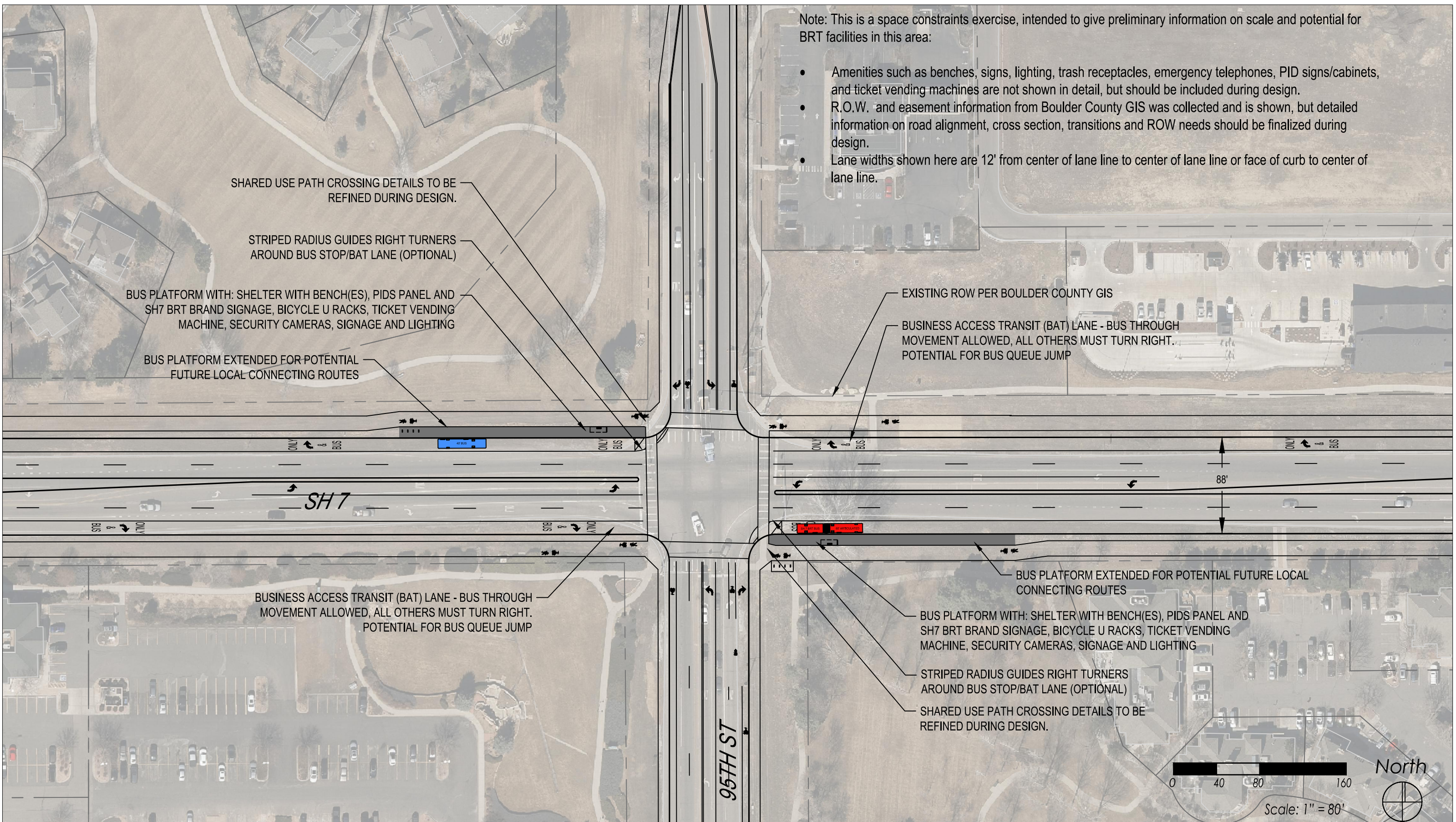
The construction plans will incorporate both NACTO and FHWA complete street design guidelines that are endorsed by CDOT. After finalizing the construction plans, bidding for the project will be conducted to select a contractor to build the project. As with all construction projects in Boulder County, local agency staff will conduct extensive public outreach to business owners, neighborhood and the traveling public. Public meetings on the PEL were very well attended (photo to the right is of the April 26, 2017 meeting). Upon completion of the project RTD will reevaluate their JUMP service plan to improve service reliability and reduce travel times.



The following page shows the conceptual design of the intersections.

Note: This is a space constraints exercise, intended to give preliminary information on scale and potential for BRT facilities in this area:

- Amenities such as benches, signs, lighting, trash receptacles, emergency telephones, PID signs/cabinets, and ticket vending machines are not shown in detail, but should be included during design.
- R.O.W. and easement information from Boulder County GIS was collected and is shown, but detailed information on road alignment, cross section, transitions and ROW needs should be finalized during design.
- Lane widths shown here are 12' from center of lane line to center of lane line or face of curb to center of lane line.



**95th St and SH 7- STATION CONCEPT**  
Lafayette BRT Stations - State Highway 7 BRT Project

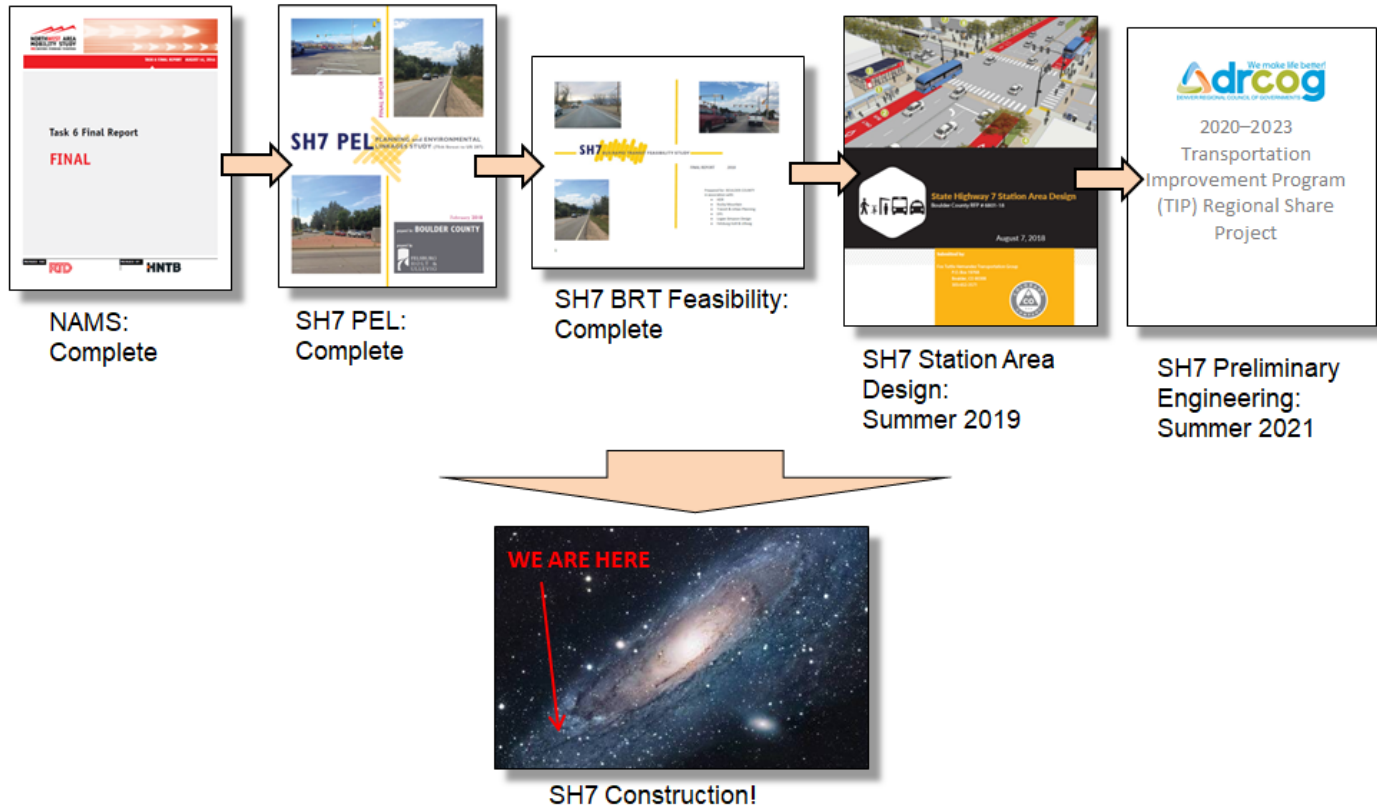


Lafayette 3  
February 2019

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

As mentioned above, constructing a multimodal intersection at SH7 and 95<sup>th</sup> is the culmination of many years of planning, engineering and partnership with multiple agencies along the corridor. The conceptual designs and preliminary right of way analysis will be finalized as part of the SH 7 BRT Station Area Master Plan project in the Summer 2019. These conceptual designs indicate the complete intersection could be built entirely within the existing CDOT and City of Lafayette right of way. The SH7 Preliminary Engineering will be kicking off in January 2020 with an expected completion date of Summer 2021. This is a very large \$10,000,000 engineering project that will leverage all of the preliminary design work that has already occurred for this intersection. The goal for that project is to have completed or nearly completed the construction plans.

**The SH7 Timeline: How we got here**



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

Yes  No

There are large economies of scale and significant cost savings by constructing all components of the project simultaneously (BAT lanes, multiuse path and new through lanes). It would be an inefficient use of public funds to split the intersection apart into smaller segments (for example, only build the BAT lanes now).

That said there could be significant opportunities to combine a partial DRCOG award with other funding sources to achieve the entire needed construction budget. For example, if there is another transportation ballot initiative presented to the voters it is almost guaranteed that this corridor would be identified for significant funding.



## A. Project Financial Information and Funding Request

<b>1. Total Project Cost</b>		<b>\$6,500,000</b>
<b>2. Total amount of DRCOG Subregional Share Funding Request</b>	<b>\$5,200,000</b>	<b>80%</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>
Boulder County	\$1,300,000	20%
<b>Total amount of funding provided by other funding partners</b> (private, local, state, or federal)	<b>\$1,300,000</b>	<b>20%</b>

<b>Funding Breakdown (year by year)*</b>	*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.				
	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>Total</b>
<b>Federal Funds</b>	\$0	\$0	\$0	\$5,200,000	<b>\$5,200,000</b>
<b>State Funds</b>	\$0	\$0	\$0	\$0	<b>\$0</b>
<b>Local Funds</b>	\$0	\$0	\$0	\$1,300,000	<b>\$1,300,000</b>
<b>Total Funding</b>	\$0	\$0	\$0	\$6,500,000	<b>\$6,500,000</b>
<b>4. Phase to be Initiated</b> Choose from Design, ENV, ROW, CON, Study, Service, Equip. Purchase, Other				Construction	

**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%**

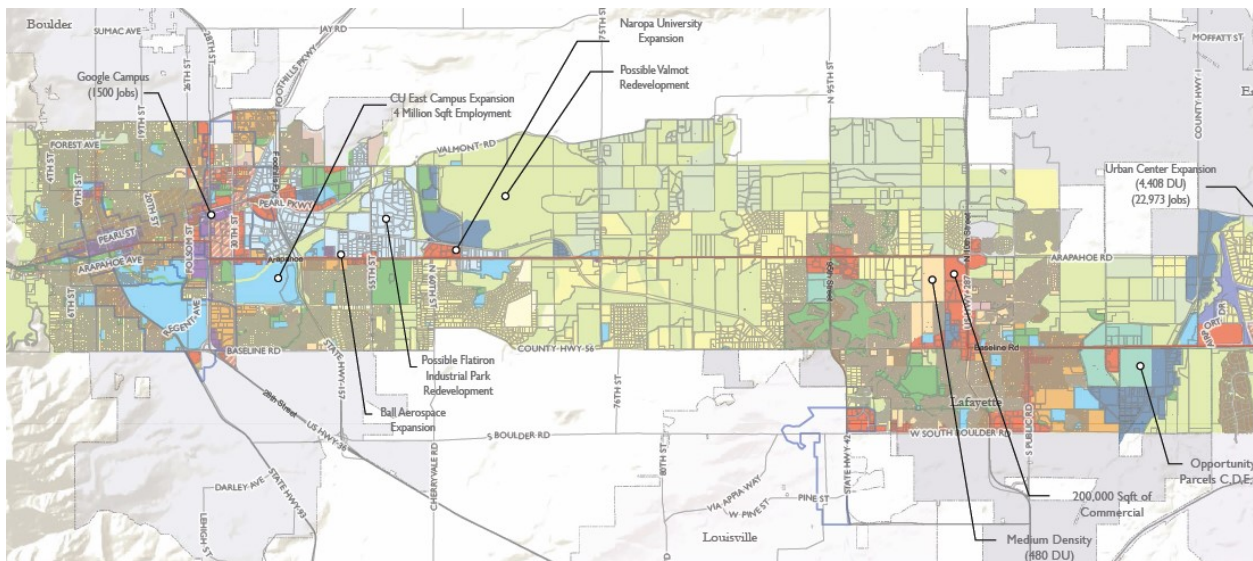
Provide **qualitative and quantitative** (derived from Part 3 of the application) responses to the following questions on the regional significance of the proposed project.

#### 1. Why is this project regionally important?

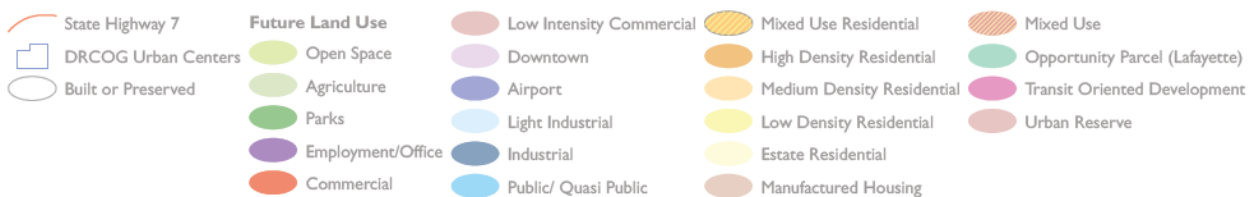
The State Highway 7 (SH 7) corridor between Brighton and Boulder is well positioned to develop as a corridor of local livability and multimodal regional access. This is due in large part to the attraction of the well-established employment areas along the corridor, coupled with large areas of undeveloped parcels in unincorporated areas of Adams and Boulder Counties, Lafayette, Erie, Broomfield, Thornton and the east side of Brighton.

Combine these land use opportunities with the strategic location of SH 7 in the regional transportation network, and regional Bus Rapid Transit (BRT) has been deemed an effective mobility solution to serve local and regional transportation needs. SH 7 corridor communities are intentionally planning for BRT to enhance quality of life and connect communities with a safe, fast, and reliable transit system on a vibrant multimodal corridor.

Due to the rapid population and employment growth in the Denver Metro region, the relative affordability of housing throughout much of the SH 7 corridor and the availability of large swaths of undeveloped land, development pressures in the SH 7 corridor are increasing. This trend is a contributing factor to SH 7's current and projected growth further exacerbating travel demands along the corridor through 2040.



#### Legend

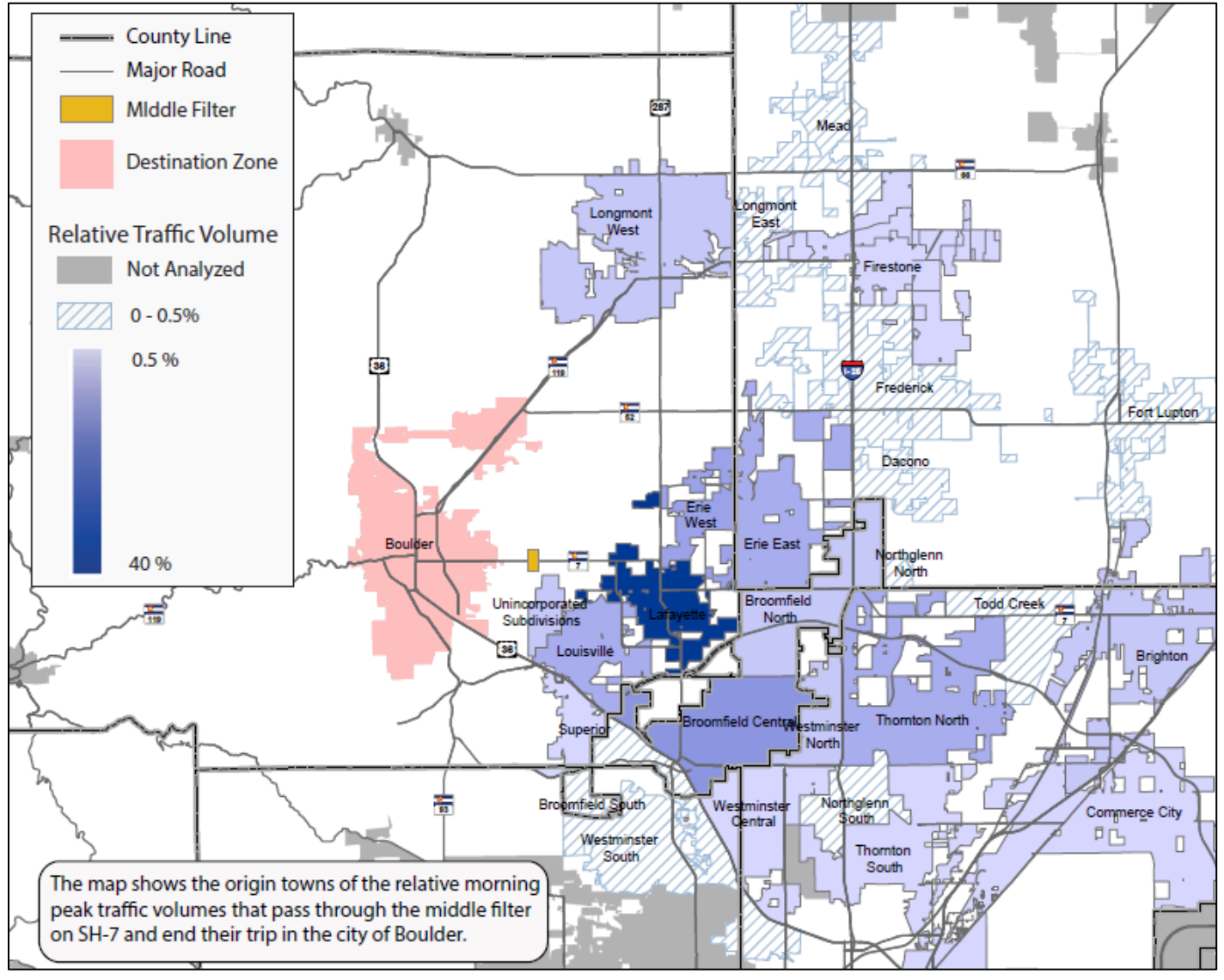


Source: SH7 BRT Feasibility Study

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

Residents in the City of Lafayette, City of Boulder, and City of Erie all benefit from reduce travel times at the 95<sup>th</sup> and Arapahoe intersection when driving in a car or riding transit to and from their respective communities. Erie, Louisville and Boulder residents that are riding bicycles through the intersection for commuting and recreation purposes would also benefit from the enhanced intersection. Pedestrians coming from anywhere and getting off at this BRT station would also benefit.

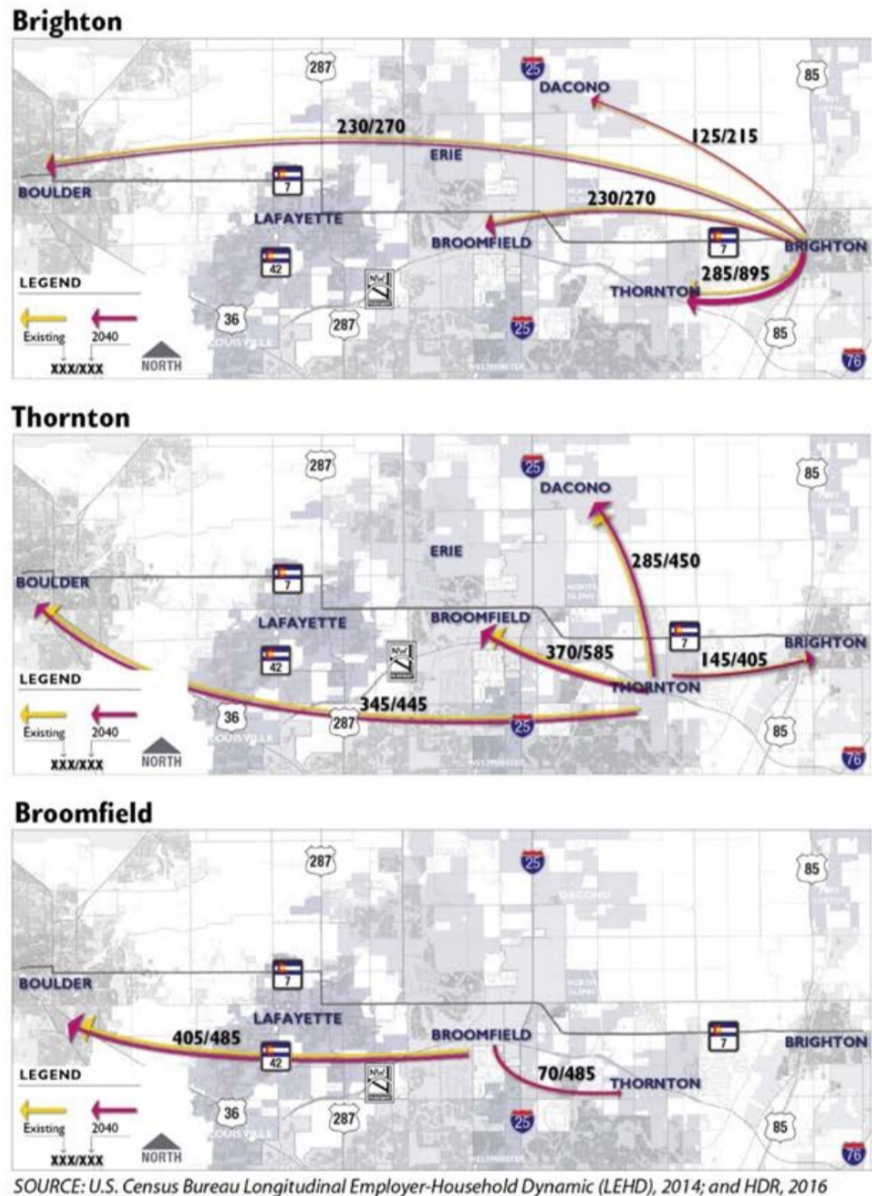
The map below shows all of the home locations of SH7 commuters that work in the City of Boulder. This map was created using anonymous cell phone data compiled by a travel data company called Street Light.



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

The intersection is a key part of the SH 7 Regional BRT project that provides mobility for people beyond the Boulder County subregion. Specifically, this project would benefit the communities of Brighton and Thornton in the Adams County subregion, and the City and County of Broomfield in the Broomfield subregion.

As jobs continue to grow in Boulder County, and housing continues to be built in Broomfield and Adams county more trips will be generated on the corridor. Trip purposes will range from accessing existing and new employment centers to accessing services, healthcare, and recreational opportunities to meet their personal needs. Data from the U.S. Census Bureau Longitudinal Employer-Household Dynamics was combined with DRCOG 2040 projections to estimate current and future home-to-work trips among the SH 7 communities for these graphics.



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

As discussed above, the intersection is currently inadequate for all modes. The following is a mode by mode breakdown of the project benefits.

**People walking:** People walking from adjacent neighborhoods to destinations on all sides of the intersection will have set back pathways that provide a buffer between the roadway and the walking routes. The pathways will be 12' wide to allow people riding bicycles to pass pedestrians with plenty of space. The pathway network will be built on all sides of the intersection and provide signalized crossings for all walking movements at the intersection.



**People riding bicycles:** People riding bicycle for commuting or recreation will have multiuse paths on all sides of the intersection. The pathways will be 12' wide to allow people riding bicycles to safely pass slower cyclists or people walking. The pathway network will be built on all sides of the intersection and provide signalized crossings for all non-motorized movements. The pathway will connect to the on-street bicycle lanes and wide shoulders both upstream and downstream of the intersection. In addition, the on-street bicycle lanes on 95<sup>th</sup> Street will be widened to meet the minimum MUTCD standards of five feet. In addition to cyclist traveling through the intersection, these multiuse paths will provide safe access to and from the SH7 BRT platforms.



**People riding transit:** People waiting for the SH 7 BRT will have highly visible waiting areas with adequate lighting, signage, and travel information. The stations will have places to wait during all types of weather conditions.



*The JUMP cresting the SH7 hill, faithfully delivering its precious cargo*

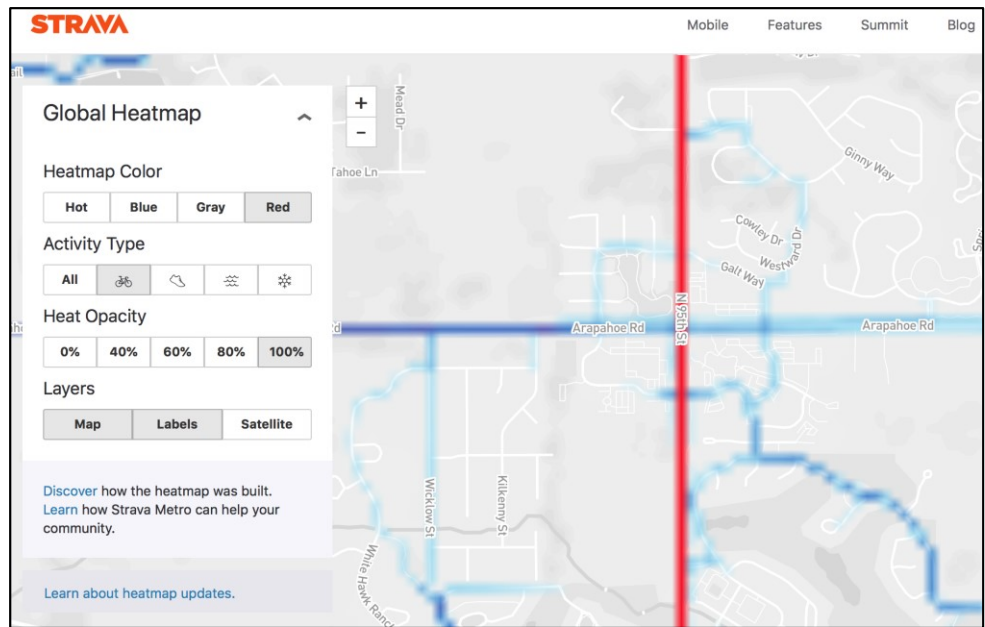
**People driving:** People driving will experience reduced travel times when operating their own vehicles or riding transit. The number of through travel lanes at the intersection has been increased by a lane in each east and westbound direction. The BAT (Bus and Through/Turn lanes) lanes also provide a space for the current JUMP buses and future SH 7 BRT buses to bypass through traffic. The left turn lanes have also been extended to increase storage capacity for vehicles waiting to make turns.

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?

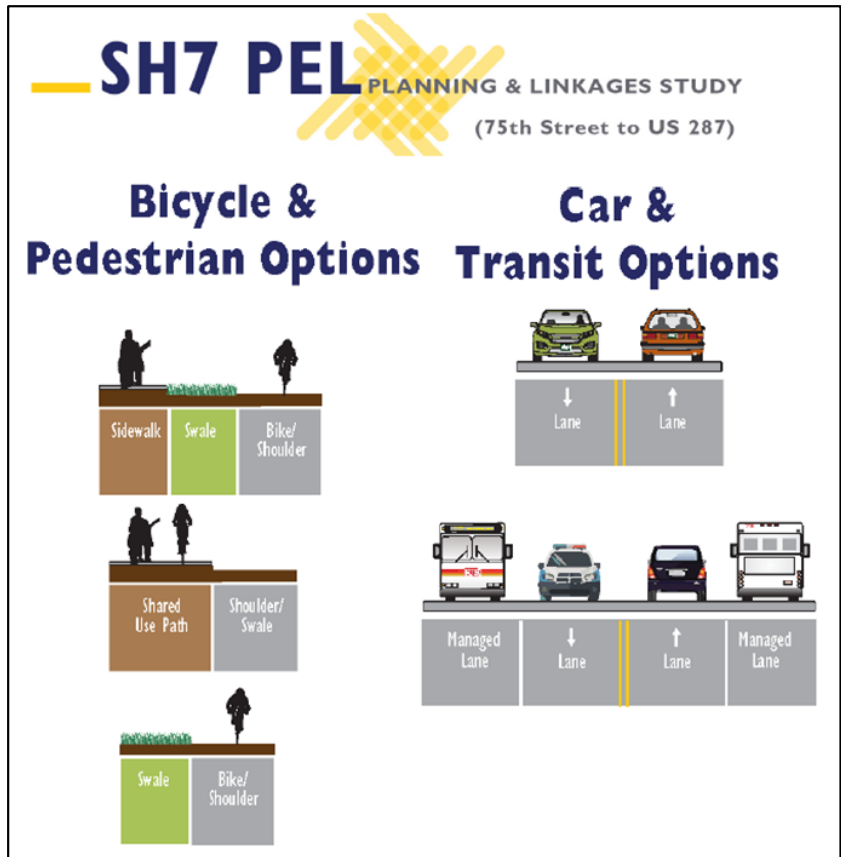
The complete intersection will safely connect the Forest Park Village commercial area and Atlas Valley shopping center to the adjacent neighborhoods. The new intersection design will provide sidewalks that connect offices in Forest Park to retail business in Atlas Valley. Likewise, both Atlas Valley and Forest Park will be directly connected to Boulder and Erie via the JUMP and ultimately the SH 7 BRT. This bus connection will assist with employee retention and recruitment. The multiuse pathways will be connected to Lafayette’s citywide Walk and Wheel Network. This would put businesses at Forest Park and Atlas valley within a 3 mile (15 minute or less bike ride) of most Lafayette residents.

6. How will connectivity to different travel modes be improved by the proposed project?  
People traveling by all modes and abilities will have an improved experience with the complete intersection at 95<sup>th</sup> and Arapahoe. Currently, the intersection design focuses on moving people in cars through the intersection. The complete intersection design safely accommodates people who will walk, run, scoot, ride and ride transit through this intersection.

This image comes from Strava – an app for recreational and utilitarian cycling. Strava collects anonymous data from its users and represents this data in the form of “heat maps.” This heat map shows that 95<sup>th</sup> is a strong bicycle corridor, likely because of the 4-5 foot shoulders and connectivity to other bicycle friendly routes. Arapahoe, on the other hand, is not currently well used by cyclist. It is believed that after this project is constructed, cyclists would have increased perceived and actual safety, thus increasing cycling at the intersection.

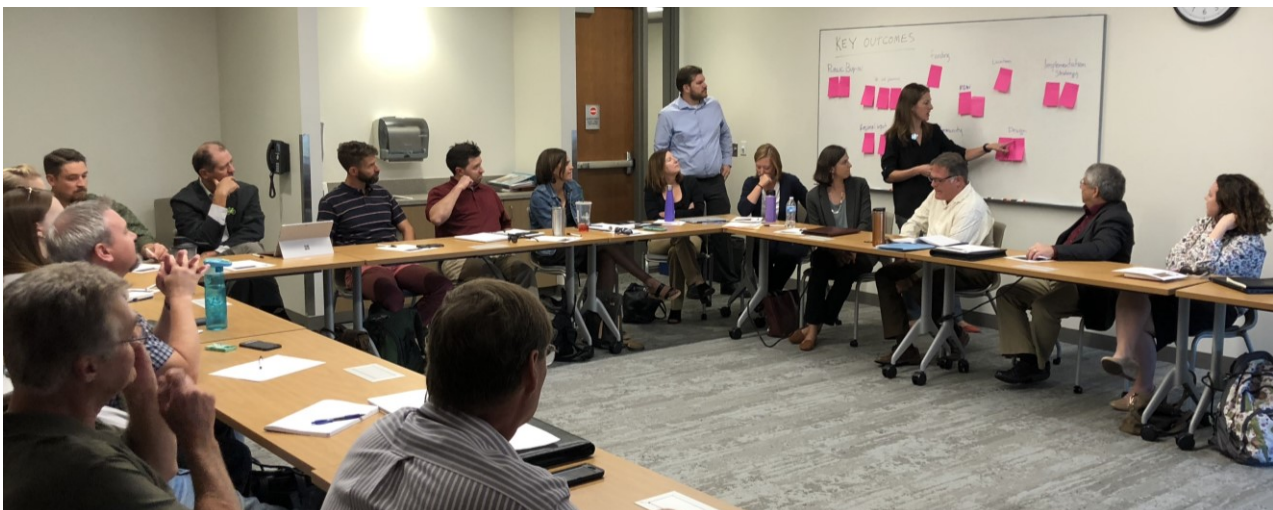


Currently there are no shoulders on Arapahoe for the majority of the corridor between 75<sup>th</sup> and US287. The SH 7 PEL from 75<sup>th</sup> to 95<sup>th</sup> identified the need for either bikeable shoulders on the corridor or a shared use path, depending upon the location in the corridor. While there is no funding identified for either of these components at this time, the 95<sup>th</sup> intersection will eventually connect the west half bike infrastructure improvements (75<sup>th</sup> to 95<sup>th</sup>) and the east half of the bike infrastructure improvements (95<sup>th</sup> to US287).



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

In 2015, a Coalition of elected officials was organized under the leadership of the City and County of Broomfield. Later formalized as the SH 7 Coalition, this group meets quarterly and provides a forum to coordinate and advocate for the planning and implementation of multimodal transportation improvements and transit supportive development in the SH 7 corridor between Brighton and Boulder. The SH7 Coalition supports multimodal projects and programs that are consistent with plans and studies conducted in the corridor. This SH7 Coalition has been actively working on station area plans as part of the SH 7 BRT Station Area Plan project (completion in Summer 2019). Funding the complete intersection project at 95<sup>th</sup> and Arapahoe would benefit all the agencies working toward the SH7 BRT implementation.



## Part 3

# Project Data Worksheet – Calculations and Estimates

(Complete all subsections applicable to the project)

## A. Transit Use

1. Current ridership weekday boardings	565
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	3,500	1,415	4,915
2040	4,800	2,100	6,900

Transit Use Calculations	Year of Opening	2040 Weekday Estimate
3. Enter estimated additional daily transit boardings after project is completed. (Using 50% growth above year of opening for 2040 value, unless justified) <i>Provide supporting documentation as part of application submittal</i>	25	300
4. Enter number of the additional transit boardings (from #3 above) that were previously using a different transit route. (Example: <b>{#3 X 25%}</b> or other percent, if justified)	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.) (Example: <b>{#3 X 25%}</b> or other percent, if justified)	0	0
6. = Number of SOV one-way trips reduced per day (#3 – #4 – #5)	25	300
7. Enter the value of <b>{#6 x 9 miles}</b> . (= the VMT reduced per day) (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)	225	2,700
8. = Number of pounds GHG emissions reduced (#7 x 0.95 lbs.)	214	2,565

9. If values would be distinctly greater for weekends, describe the magnitude of difference:

None

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

Ridership projections were estimated from the low TOD land use scenarios prepared during the *SH7 Bus Rapid Transit Feasibility Study* in 2018. The daily ridership projections from Operating Scenario 1-1 and 1-2 were assumed for the 95<sup>th</sup> and Arapahoe BRT station. This station is part of the SH 7 BRT system that has a year 2040 low TOD land use ridership forecast of approximately 9,000 daily weekday riders. There is only one transit route serving the BRT stations. As such, none of the additional boardings would have come from other transit routes.

This is a regional BRT route with a median stop distance of 2 to 3 miles. Most of the street networks do not connect and are located along high stress cycling roads with low sidewalk connectivity. There are effectively no walking or cycling trips that are going to convert to the SH 7 BRT because of this project. While there are people who will bicycle commute this distance, these are not time sensitive commuters and it is unlikely that the travel time savings on the BRT of under 10 minutes would induce them to switch modes. The opening year ridership forecasts are based on recent BRT intersection improvements the City of Denver demonstrated on Broadway Avenue for RTD route 0.



## B. Bicycle Use

1. Current weekday bicyclists	325
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	58,843	56,601	115,444
2040	62,749	69,363	132,112

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.	110	220
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	70
5. = Initial number of new bicycle trips from project (#3 – #4)	110	150
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)	35	50
7. = Number of SOV trips reduced per day (#5 - #6)	75	100
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)	150	200
9. = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	143	
10. If values would be distinctly greater for weekends, describe the magnitude of difference: None		
11. If different values other than the suggested are used, please explain here:  The current bicycle lanes at the intersection are incomplete and they are designed for experienced road cyclists. The current bike mode share at the intersection is 1.5%. Based on other multiuse pathway projects and complete intersections built around Boulder County, the opening day forecast would be 2% bike mode share. It would grow to 10% bike mode share by year 2040. The forecast only assumes 5% diversion of current riders in the Baseline Road Corridor to this intersection. These neighborhood riders would change their route in the future to access the SH7 regional pathway in year 2040.		

## C. Pedestrian Use

1. Current weekday pedestrians (include users of all non-pedaled devices)	55
2. Population and Employment	

Year	Population within 1 mile	Employment within 1 mile	Total Pop and Employ within 1 mile
2020	3,500	1,415	4,915
2040	4,800	2,100	6,900

Pedestrian Use Calculations	Year	2040
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	of Opening	Weekday Estimate
3. Enter estimated additional weekday pedestrian one-way trips on the facility after project is completed	110	1,175
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	60
5. = Number of new trips from project (#3 – #4)	110	1,115
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)	30	370
7. = Number of SOV trips reduced per day (#5 - #6)	80	745
12. Enter the value of <b>{#7 x .4 miles}</b> . (= the VMT reduced per day) (Values other than .4 miles must be justified by sponsor)	32	298
8. = Number of pounds GHG emissions reduced (#8 x 0.95 lbs.)	30	292
9. If values would be distinctly greater for weekends, describe the magnitude of difference: None		
10. If different values other than the suggested are used, please explain here:  The current sidewalks at the intersection are incomplete. The current walk mode share at the intersection is 0.025%. Based on other multiuse pathway projects and complete intersections built around Boulder County, the opening day forecast would be 0.05% walk mode share. It would grow to 5% walk mode share by year 2040. The forecast also assumes only 5% diversion of current residents would change their walk route to this intersection. The new crossings and multiuse path would induce new walking trips from neighborhoods to the commercial centers and BRT service in the future.		

## D. Vulnerable Populations

	Vulnerable Populations	Population within 1 mile
Use Current Census Data	1. Persons over age 65	615
	2. Minority persons	300
	3. Low-Income households	670
	4. Linguistically-challenged persons	21
	5. Individuals with disabilities	88
	6. Households without a motor vehicle	6
	7. Children ages 6-17	970
	8. 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.*

1. Current ADT (average daily traffic volume) on applicable segments	21,700
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2. 2040 ADT estimate	24,600
3. Current weekday vehicle hours of delay (VHD) (before project)	83

Travel Delay Calculations	Year of Opening
4. Enter calculated future weekday VHD (after project)	50
5. Enter value of {#3 - #4} = Reduced VHD	32
6. Enter value of {#5 X 1.4} = <b>Reduced person hours of delay</b> <i>(Value higher than 1.4 due to high transit ridership must be justified by sponsor)</i>	45
7. <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>	3.5
8. 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	11	
Other Injury crashes	0	
Property Damage Only crashes	48	
2. Estimated reduction in crashes <u>applicable to the project scope</u> <i>(per the five-year period used above)</i>		
Fatal crashes reduced	CMF/AMF unavailable for transit lanes and multiuse paths	
Serious Injury crashes reduced	CMF/AMF unavailable for transit lanes and multiuse paths	
Other Injury crashes reduced	CMF/AMF unavailable for transit lanes and multiuse paths	
Property Damage Only crashes reduced	CMF/AMF unavailable for transit lanes and multiuse paths	

## 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

Fair

2. Describe current pavement issues and how the project will address them.

The complete intersection project will repave the entire intersection

3. Average Daily User Volume

21,400

### Bicycle/Pedestrian/Other Facility

4. Current bicycle/pedestrian/other facility condition

Fair

5. Describe current condition issues and how the project will address them.

The current design is missing sidewalk connections and protected bicycle facilities. The complete intersection project will connect neighborhoods and adjacent commercial centers with new multiuse pathways.

6. Average Daily User Volume

400

### H. Bridge Improvements

1. Current bridge structural condition from CDOT

None

2. Describe current condition issues and how the project will address them.

None

3. Other functional obsolescence issues to be addressed by project

none

4. Average Daily User Volume over bridge

None

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

1. None

2. None

3. None

### 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



**COLORADO**  
Department of Transportation  
Region 4

Regional Director's Office  
10601 W. 10th Street  
Greeley, CO 80634-9000

February 7, 2019

Doug Short  
City of Lafayette  
1290 S. Public Road  
Lafayette, CO 80026

SH 42 (95<sup>th</sup> Street) and SH 7 (Arapahoe Road)  
Intersection Improvements

Dear Mr. Short,

RE: CDOT Region 4 Support Request for DRCOG TIP Sub-Regional Call FY20-23

This letter is to inform you that the Colorado Department of Transportation (CDOT) Region 4 staff concurs with the following Boulder County application for the DRCOG Sub-Regional FY20-23 TIP Call. This applies only to the SH 42 (95<sup>th</sup> Street) and SH 7 (Arapahoe Road) Intersection Improvements project, in the event it is selected by DRCOG as a sub-regional project around Summer 2019. If this project is awarded DRCOG funds at a later date, the Local Agency (LA) will need to re-affirm CDOT's concurrence at that time.

This concurrence is conditionally granted, based on the scope as described. CDOT does, however, retain final decision-making authority for all improvements and changes within CDOT's right of way. As the project progresses, the LA will need to work closely with CDOT Region staff to ensure CDOT's continued concurrence.

This project must comply with all CDOT and/or FHWA requirements, including those associated with clearance for right of way, utilities and environmental. All costs associated with clearances, including right of way acquisition, utilities relocation and environmental mitigation measures, such as wetland creation, must be included in the project costs. CDOT staff will assist in determining which clearances are required for your project. The *CDOT Local Agency Manual* includes project requirements to assist with contracting, design and construction, accessed at: [http://www.coloradodot.info/business/designsupport/bulletins\\_manuals](http://www.coloradodot.info/business/designsupport/bulletins_manuals).

Should you have any questions regarding this concurrence, or if your agency would like to schedule time to meet with a member of the CDOT Specialty Unit, please contact Karen Schneiders at (970) 350-2172.

Sincerely,

Johnny Olson, P.E.  
Region 4 Transportation Director

JWO:KAS:mbc  
cc: Todd Cottrell, DRCOG  
Long Nguyen  
Katrina Kloberdanz  
Kateyn Triggs  
Karen Schneiders

