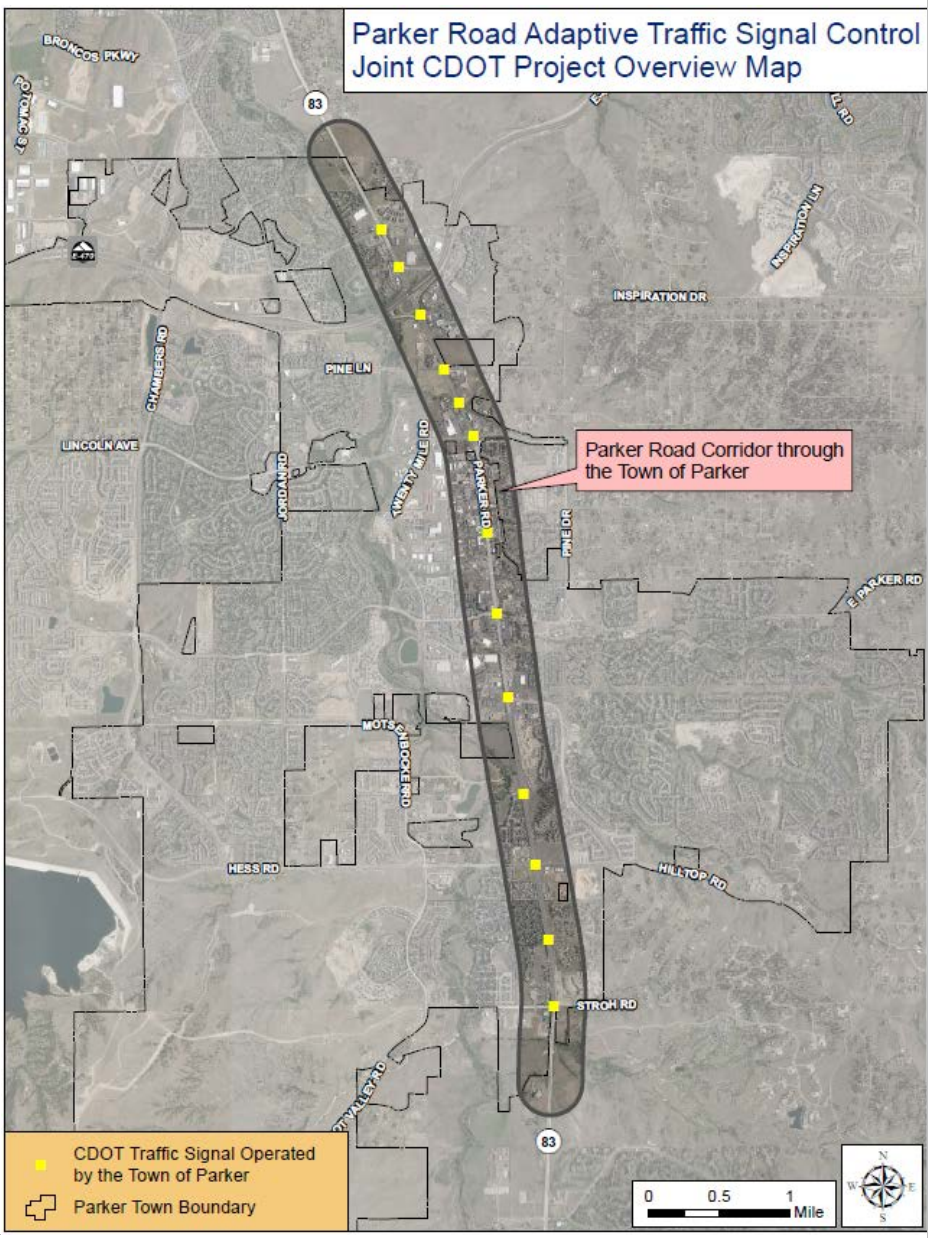
Part 1 Base Information

1. Project Title	**Parker Road Adaptive Traffic Signal System**
2. Project *Start/End* points or Geographic Area *Provide a map with submittal, as appropriate*	**Cottonwood Drive (north limit) to Stroh Road (south limit)** 
3. Project Sponsor *(entity that will construct/ complete and be financially responsible for the project)*	Town of Parker
4. Project Contact Person, Title, Phone Number, and Email	Chris Hudson, P.E., Public Works Manager, 303.805.3203, chudson@parkeronline.org
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*
☒ DRCOG 2040 Fiscally Constrained Regional Transportation Plan (2040 FCRTP)	

6. What planning document(s) identifies this project?	☐ Local plan:	
	☐ Other(s):	
	Provide link to document/s and referenced page number if possible, or provide documentation with submittal	

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

- ☐ Rapid Transit Capacity (2040 FCRTP)
- ☐ Transit Other:
- ☐ Bicycle Facility
- ☐ Pedestrian Facility
- ☒ Safety Improvements
- ☐ Roadway Capacity or Managed Lanes (2040 FCRTP)
- ☒ Roadway Operational

Grade Separation

- ☐ Roadway
- ☐ Railway
- ☐ Bicycle
- ☐ Pedestrian

- ☐ Roadway Pavement Reconstruction/Rehab
- ☐ Bridge Replace/Reconstruct/Rehab
- ☐ Study
- ☐ Design
- ☐ Transportation Technology Components
- ☐ Other:

8. **Problem Statement** What specific Metro Vision-related subregional problem/issue will the transportation project address?

Parker Road (State Highway 83), a Major Regional Arterial, extends from El Paso County on the south to central Denver on the north, serving as a key north-south connection through Douglas County, Parker, Arapahoe County, Castle Rock, Foxfield, Aurora, and Denver plus a connection to western Elbert County. The Town of Parker's in-progress Parker Road Corridor Plan forecasts an increase in daily traffic on Parker Road north of Lincoln Avenue from 59,000 vehicles per day currently to 83,000 in 2040. Recognizing existing and growing congestion on Parker Road, the MetroVision plan shows additional lanes on Parker Road between E-470 and Hilltop Road as an unfunded Vision project. The Parker Road Corridor Plan is expected to include recommendations to consider a Parker Road grade-separated interchange at Lincoln Avenue and major intersection reconfigurations at Mainstreet and Hilltop Road.

Due to these considerations, optimization of the current traffic signal operations and timing is paramount to moving this planned traffic increase. Adaptive signal control is a step in the right direction to address this. Ultimately the roadway capacity will be limited by the physical lane configuration (additional lanes are projected to be needed in the MetroVision plan) but optimization of the timing can improve the situation when the roadway is not at traffic saturation.

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

Installation of an adaptive traffic signal control system for the current thirteen (13) traffic signals on Parker Road (State Highway 83) between Cottonwood Drive (north limit) and Stroh Road (south limit). Work includes advanced traffic signal controllers, new master controller and advanced detection equipment to improve the traffic signal coordination and in-turn the traffic flow on the roadway.

10. What is the status of the proposed project?

The Town of Parker currently maintains the thirteen (13) traffic signals on Parker Road (State Highway 83) for the Colorado Department of Transportation (CDOT) via a contract arrangement. The Town is moving forward with

implementation of a responsive traffic signal system on Parker Road utilizing existing equipment in 2019 utilizing Town funding. If funding is secured through this process, the Town would advance to designing an adaptive signal control system for Parker Road which is the next logical step beyond the responsive system.

11. Would a smaller DRCOG-allocated 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

1. Total Project Cost		**$2,000,000**
2. Total amount of DRCOG Subregional Share Funding Request	**$1,000,000**	**50% of total project cost**
3. Outside Funding Partners ***(other than DRCOG Subregional Share funds)*** List each funding partner and contribution amount.	**$$ Contribution Amount**	**% of Contribution to Overall Total Project Cost**
Applicant/Town of Parker Contribution	$1,000,000	50%
Total amount of funding provided by other funding partners *(private, local, state, Regional, or federal)*	**$1,000,000**	

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 2019.*

	FY 2020	FY 2021	FY 2022	FY 2023	Total
Federal Funds	$0	$0	$1,000,000	$0	**$1,000,000**
State Funds	$0	$0	$ 0	$ 0	**$0**
Local Funds	$0	$0	$1,000,000	$0	**$0**
Total Funding	$0	$0	$2,000,000	$0	**$2,000,000**
4. Phase to be Initiated *Choose from Design, ENV, ROW, CON, Study, Service, Equip. Purchase, Other*			**CON**		

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. Subregional significance of proposed project

WEIGHT **40%**

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

1. Why is this project important to your subregion?

Traffic volumes on Parker Road (State Highway 83) south of E-470 have increased steadily over many years and congestion and delays are growing. With significant growth continuing throughout Parker and Douglas County plus Castle Rock, as well as in Elbert and El Paso counties, traffic volumes on Parker Road are forecast to grow by approximatley 40 percent by 2040. Grade-separated interchanges or major intersection reconfigurations are anticipated to be needed in the longer range at the busiest Parker Road intersections, including Lincoln Avenue, Mainstreet, and Hilltop Road but those improvements are likely to take many years to complete all the necessary planning, environmental, right-of-way, design and financing challenges.

This operational improvements such as the proposed adaptive traffic signal control system can provide relief to congestion and improve the ability to maintain traffic flow on Parker Road in response to accidents and incidents.

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

In addition to being the north-south spine for the Town of Parker, Parker Road (SH 83) provides a key regional route for Franktown and other parts of Douglas County including Castle Rock.

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

Parker Road (State Highway 83) is a key regional connector between Elbert County and El Paso County on the south and Arapahoe County, Foxfield, Aurora, and Denver on the north.

It is important to note that Arapahoe County, Aurora, and CDOT have been working together to implement major upgrades to Parker Road to the north, including major interchange improvements at I-225, grade-separated interchanges now in place at Hampden Avenue and Arapahoe Road, and major at-grade intersection improvements planned at Quincy Avenue. These upgrades have and will increase the capacity of the Parker Road corridor north of the Town of Parker allowing growing travel demand to reach and place additional pressure on the Town's section of the regional corridor.

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

Congestion Relief: The improvements are anticipated to reduce daily person hours of delay by optimizing the traffic signal timing on Parker Road to reflect the actual traffic conditions. The system currently utilizes fixed timing plans that do not adapt to changes in traffic.

Safety: Improves safety by reducing congestion.

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 project will help maintain the functionality of one of the primary regional connector roadways for the Town of Parker. It will support the continued residential and employment base for the Town and surrounding parts of Douglas and Elbert counties.

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

The project will help by improving travel times and reliability for RTD Route 483 and Route P.

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

None at this time. There has been past discussions with Douglas County staff about extending the southern project limit further to the south to include the Parker Road traffic signals in unincorporated Douglas County to the Bayou Gulch intersection (Pinery area traffic signals).

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).**

This project will provide better accessibility to many of the health service facilities located within a mile of the project including the Parker Adventist Hospital on the northern limit of the project.

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

This project is another opportunity for Parker to improve the transportation network. Proposed efficiency improvements to Parker Road (SH83) will directly benefit the motorists and operations along this roadway segment. In addition to vehicular benefits discussed above, the project will improve connectivity for other modes by improving travel times and reliability for RTD Route 483 throughout the project corridor and RTD Route P. The project would also improve access to the Nine Mile Transit Station and the R and H light rail lines and access to the Parker, Pinery and Lincoln/Jordan Park-n-Rides.

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

Safety is the top priority when evaluating and planning improvements for a transportation network. By having a traffic signal sytem in place on Parker Road that can adapt to changes in traffic, less delays are anticipated which will result in increased safety.

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

WEIGHT **15%**

*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*

These proposed operational improvements to Parker Road directly support growth in the Town of Parker and surrounding areas including Douglas County and Elbert County.

	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*

N/A.

	MV objective 4	**Improve or expand the region's multimodal transportation system, services, and connections**.

3. Will this project help increase mobility choices within and beyond your subregion for people, goods, or services? ☒ Yes ☐ No

Describe, *including supporting quantitative analysis*

As previously described, the project will improve predictibility of RTD service in the area.

	MV objective 6a	**Improve air quality and reduce greenhouse gas emissions**.

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*

Reduced congestion by optimizing the traffic signal timing can be expected to in greenhouses gases and pollutants but reductions have not been quantified.

	MV objective 7b	**Connect people to natural resource or recreational areas**.

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*

N/A.

	MV objective 10	**Increase access to amenities that support healthy, active choices.**

6. Will this project expand opportunities for residents to lead healthy and active lifestyles? ☐ Yes ☒ No

Describe, *including supporting quantitative analysis*

N/A.

	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*

As previously described, the project will improve predictibility of RTD service in the area.

MV objective 14	**Improve the region's competitive position**.

8. Will this project help support and contribute to the growth of the subregion's economic health and vitality? ☒ Yes ☐ No

Describe, *including supporting quantitative analysis*

The Parker Road (State Highway 83) corridor in question is an important economic area for the Douglas County subregion. Optimization of the traffic signals timing on this important corridor is imperative to this continued economic vitality.

D. Project Leveraging

WEIGHT 15%

9.	What percent of outside funding sources (non-DRCOG-allocated Subregional Share funding) does this project have?	50%	60%+ outside funding sources .....High 30-59% .....Medium 29% 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	31826	17784	**49610**
2040	35326	22656	**57982**

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)* *Provide supporting documentation as part of application submittal*	0	0
4. Enter number of the additional transit boardings (from #3 above) that were previously using a different transit route. (Example: **{#3 X 25%}** *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: **{#3 X 25%}** *or other percent, if justified)*	0	0
6. = Number of SOV one-way trips reduced per day (#3 – #4 – #5)	**0**	**0**
7. Enter the value of **{#6 x 9 miles}**. (= **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)*	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:

Please note that the population data in Part 3.A. are different than the data in Part 3.B., Part 3.C, and Part 3.D. Part 3.A. data is taken from the closest RTD bus stop to the project. Part 3.B., Part 3.C., and Part 3.D. data are calculated based on the overall project geography and are the most representative data.

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	31826	17784	**49610**

2040	35326	22656	**57982**

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: **{#3 X 50%}** *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: **{#5 X 30%}** *(or other percent, if justified)*	0	**0**
7. = Number of SOV trips reduced per day (#5 - #6)	0	0
8. Enter the value of **{#7 x 2 miles}**. (= 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:

Values will be distinctly greater for weekends because this connection will open up a new, major recreational resource for cyclists. It will form the backbone of a 100-mile, hard-surfaced route that surrounds the Denver Metro Area. While we anticipate that there will be 30,000 weekday one-way bicycle trips annually, the number of weekend one-way annual trips could be an additional 15,000-20,000 one way trips. These numbers are estimated and justifiable based on trail counter information that Arapahoe County Open Spaces has collected from the 17 Mile House Farm Park and nearby Cherry Creek Regional Trail.

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	31826	17784	**49610**
2040	35326	22656	**57982**

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: **{#3 X 50%}** *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: **{#5 X 30%}** *or other percent, if justified)*	0	0
7. = Number of SOV trips reduced per day (#5 - #6)	0	0
12. Enter the value of **{#7 x .4 miles}**. (**= the VMT reduced per day**) *(Values other than .4 miles must be justified by sponsor)*	0	0
8. = Number of pounds GHG emissions reduced (#8 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:		

D. Vulnerable Populations

	Vulnerable Populations	Population within 1 mile
Use Current Census Data	**1.** Persons over age 65	2157
	2. Minority persons	2475
	3. Low-Income households	669
	4. Linguistically-challenged persons	230
	5. Individuals with disabilities	0
	6. Households without a motor vehicle	180
	7. Children ages 6-17	5030
	8. Health service facilities served by project	18

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	0
2. 2040 ADT estimate	0
3. Current weekday vehicle hours of delay (VHD) (before project)	0

Travel Delay Calculations	Year of Opening
4. Enter calculated future weekday VHD (after project)	0
5. Enter value of **{#3 - #4} =** Reduced VHD	0
6. Enter value of **{#5 X 1.4}** = **Reduced person hours of delay** *(Value higher than 1.4 due to high transit ridership must be justified by sponsor)*	0

7. **After project peak hour congested average travel time reduction** per vehicle (includes persons, transit passengers, freight, and service equipment carried by vehicles). *If applicable, denote unique travel time reduction for certain types of vehicles*	0

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 *(most recent **5-year** period of data)*		Sponsor must use industry accepted crash reduction factors (CRF) or accident modification factor (AMF) practices *(e.g., NCHRP Project 17-25, NCHRP Report 617, or DiExSys methodology).*
Fatal crashes	0	
Serious Injury crashes	0	
Other Injury crashes	0	
Property Damage Only crashes	0	
2. Estimated reduction in crashes applicable to the project scope *(per the five-year period used above)*		
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:	