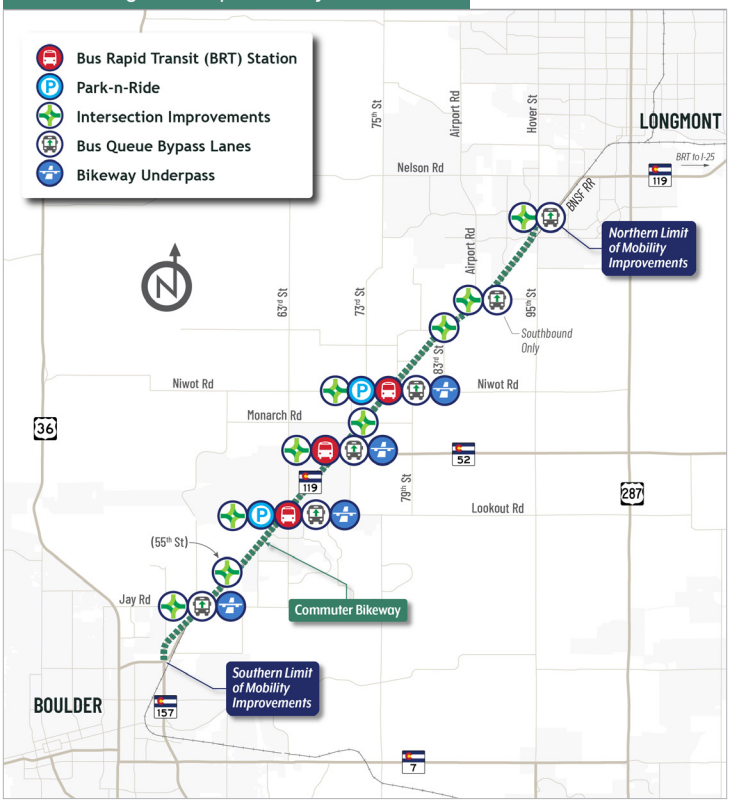
Project Overview

Colorado Highway 119 (CO 119) Diagonal Highway (the Diagonal) is the primary connection between Boulder County's two largest municipalities, the cities of Longmont and Boulder, and is the second most traveled corridor in Boulder County (the Applicant) only behind US Highway 36 (US 36). The cities of Boulder and Longmont make up 62% of the total population of Boulder County, with a combined population of over 205,000 people. Serving residents, employees, and visitors from across northern Colorado and the Denver-metropolitan area, travelers face highly unreliable travel times. One contributing factor to reliability is that CO 119 is a high crash corridor that produces more severe crashes per mile than any other road in unincorporated Boulder County.

The Diagonal is a vital regional transportation corridor supporting the economic vitality of Boulder County and the surrounding region.

CO 119 Diagonal Proposed Project Elements



Boulder County is submitting this RAISE grant in collaboration with the Colorado Department of Transportation (CDOT) and the Regional Transportation District (RTD) (the Project Sponsors) to build a multimodal corridor between the attractive jobs in Boulder and lower cost housing in Longmont, Weld, and Larimer counties. CDOT and RTD recognize the need for this corridor, are funding sponsors, and will ultimately deliver the construction when funding is secured.

The CO 119 Diagonal Highway Mobility Improvement Project (the Project), shown in the map above, will provide critical intersection safety improvements, construct the regional bikeway, and implement Bus Rapid Transit (BRT), connecting the counties of Larimer, Weld, and Boulder (Rural Communities). The planned improvements are essential to reducing severe crashes and improving and promoting equitable, affordable mobility options for people and goods traveling by car, truck, transit, bicycle, and on foot. These improvements are essential to the enhanced prosperity and sustainability of the region.

The Diagonal provides an essential link between regional activity centers, and these mobility improvements are needed to serve people traveling by all modes. The map on the following page shows relative morning peak (6-10 am) traffic volumes from Larimer and Weld counties that use the Diagonal and end their trip in central Boulder. Trips originating outside Boulder County account for 72% of total trips on the Diagonal during the morning peak. The corridor also carries approximately 201 daily bicycle trips and 2,200 transit trips, numbers that are expected to grow more than 50% over the next 20 years.

Project History

Traffic growth, congestion, and increase in the number and severity of traffic crashes have led to safety and equity concerns and the need for a better design approach to the Diagonal. This project results from several studies that helped to identify, clarify, and inform next steps. The 2014 Northwest Area Mobility Study (NAMS) qualified the Diagonal as a priority BRT corridor, as did the 2020 Boulder County Transportation Master Plan. The 2018 Southwest Longmont Operations Study independently identified the Hover Street intersection as one of the top intersection/project/improvement priorities in Longmont. The 2019 SH 119 BRT Planning and Environmental Linkage (PEL) Study narrowed in on critical improvement components. The PEL identified the CO

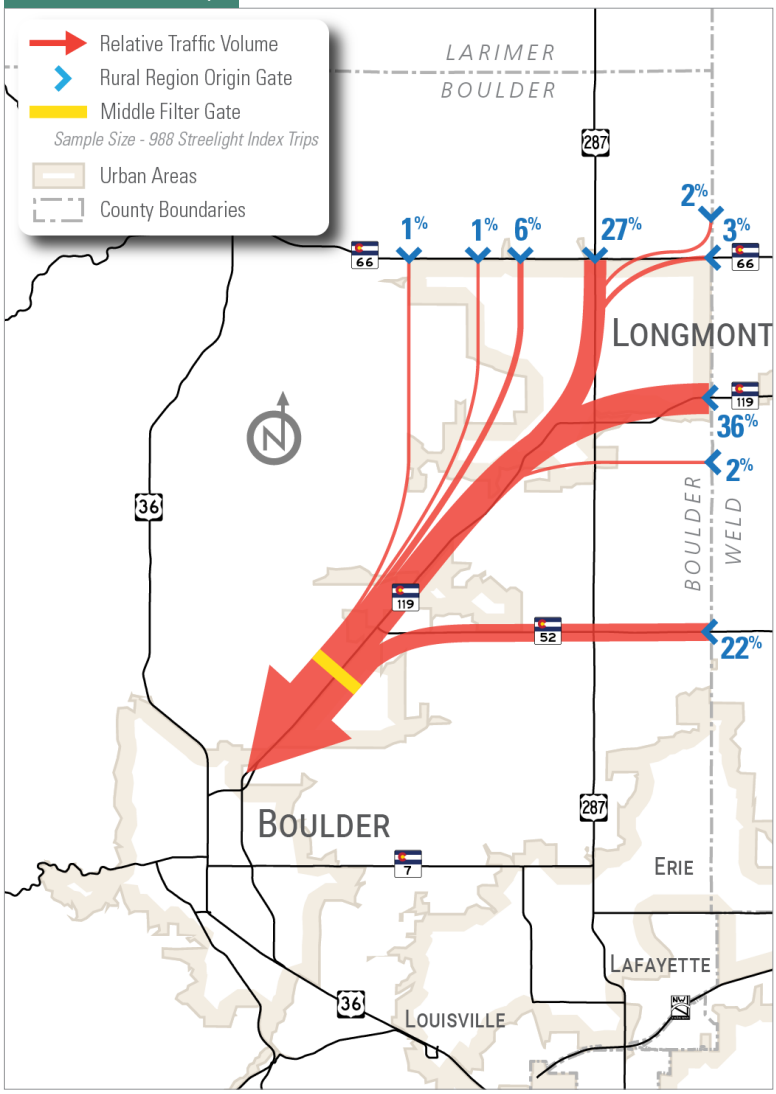
52 intersection as the most critical in terms of congestion and safety, the Hover Street intersection as its second most critical, and the need for a separated bikeway corridor. CDOT's 2019 SH 119 Bicycle and Pedestrian Connectivity Study recommended a bikeway in the median spanning the entire Diagonal to create more sustainable and equitable access for bicyclists to downtown Boulder, Longmont, and BRT stations. The Diagonal is prominently featured in the Denver Regional Council of Governments (DRCOG) 2020 Regional Multimodal Freight Plan as critical facilities needing improvements to ensure optimal and safe regional freight movement.

The Diagonal grant application scope is valued at $155M, with $130M in secured funding and $25M requested in RAISE grant funding.

The project identified in the 2014 NAMS was estimated at $300M. This project team has since incorporated the components into this high value project for $155M.

Preliminary design for the Diagonal is in progress and final design and construction phases are ready to be initiated as soon as funding is secured. CDOT's Project Delivery Selection Matrix has been used to determine the most appropriate delivery method (see ***Innovation*** in ***Merit Criteria***) and identified CM/GC as that method.

Critical Connectivity



In 2021, the Traffic Alternatives Analysis Study expanded on the 2014 NAMS and 2019 PEL studies and identified the projected congestion patterns along the Diagonal; critical intersection improvements needed at CO 52, Airport Road, and Hover Street; need for a split intersection at CO 52; and benefits of queue bypass lanes for transit travel time reliability.

A First & Final Mile Study was conducted in 2021 to recommend bicycle and pedestrian connections, wayfinding, transportation demand management, shared parking, and microtransit solutions in and around the Diagonal that can fill the gaps between home to transit and transit to destination.

Previously Completed Components

As of this grant submittal, preliminary design is complete and final design is in progress.

Data Gathering & Analysis	Design	Other project stakeholder investments that complement the Diagonal improvements
Survey, preliminary Subsurface Utility Engineering (SUE); environmental data; Traffic Study	Field Inspection Review (FIR) design; BRT station area planning; phased scenario development; alternative delivery method selection; geotechnical investigation; Boulder County Local Land Use Review and Permit	28th Street Bus Access/Transit lane between Iris Street and Canyon Boulevard design; Coffman Street dedicated BRT lanes design

Transportation Challenges and Solutions

If this project receives funding, there are known problems that can be avoided:

1. Increased delay by 150% for SOVs and 72% for transit riders by 2045 (Traffic Alternatives Analysis Study)
2. Harmful greenhouse gas (GHG) emissions and other pollutants, including 24,153 metric tons of CO2 and 31.9 metric tons of NOx, as outlined in the ***Benefit Cost Analysis***
3. Less reliable and accessible travel options for the community outside the use of private automobiles

Innovative Solution: Implementation of a BRT system (figure below) to connect two Rural Communities and regional job centers on a 10-mile stretch of divided highway with signalized intersections. **This design provides:**

Park-n-Rides built in the median of a divided highway

A BRT system on a high speed divided highway where queue bypass lanes are used to access the platforms in the median, have ample time to speed up in their own bus lane, and safely maneuver back to the high-speed general-purpose lanes

Safe access and accommodation for all modes of transportation

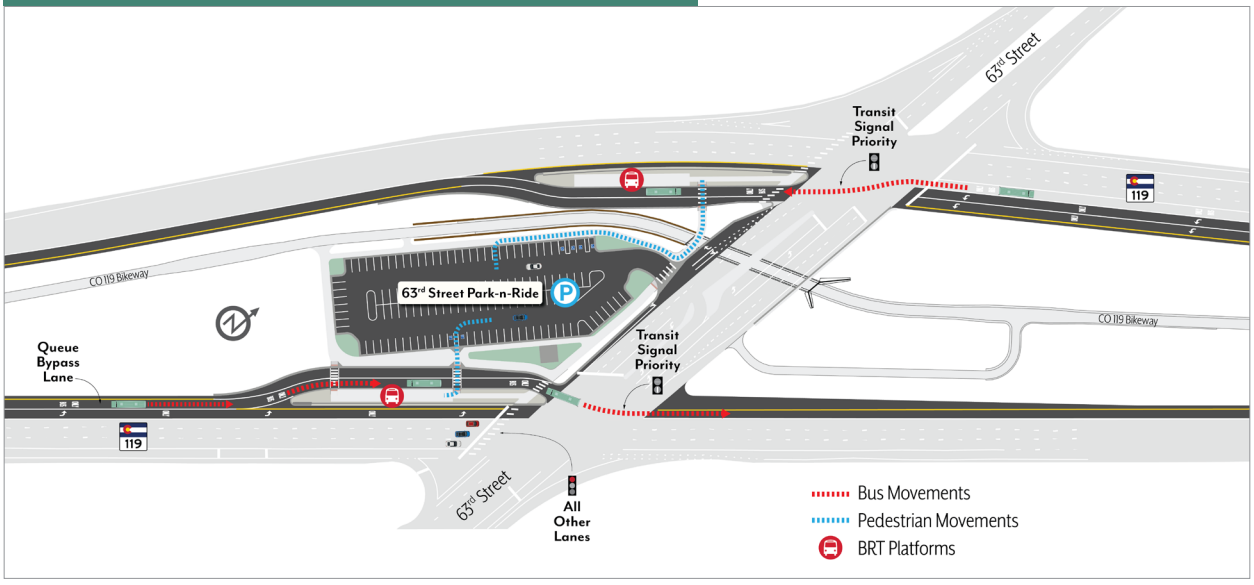
Transit Signal Priority (TSP) implementation

Resourceful design using a series of queue bypass lanes at signalized intersections in its current configuration, yet allowing easy retrofitting for a future toll/managed lanes facility

A BRT system designed to provide transit customers with a rubber-tired light rail experience with high quality stations, passenger amenities, and high frequency transit service. The CO 119 BRT system will complement future passenger rail service planned to connect from Longmont, Boulder, and downtown Denver

A commuter bikeway designed to be safe, direct, comfortable, and appealing to users of all ages and abilities and maintained for use year-round. E-bikes will be allowed

Innovative Queue Bypass Lanes and Example Station Configuration



A key corridor connecting people to jobs, the Diagonal has long been known for its congested conditions; precarious, hairpin-like turn movements at the skewed intersections; and poor access to existing transit, as well as deficient pedestrian and bicycle connectivity. Total traffic volume will increase 25% (from 45,000 Annual Average Daily Traffic [AADT] to 56,000 AADT) by 2040.

The planned improvements are anticipated to eliminate 711 crashes and will have an economic benefit of $85.3M in crash reductions over the 20-year life cycle of the Project.

Broader Context of Other Infrastructure Investments

There is broad collaboration and partnership among many stakeholders for the Diagonal project (***Project History; Partnership and Collaboration; Letters of Support***) and the shared goal is to deliver a corridor that provides mobility, safety, bicycle, pedestrian, and BRT services for the northwest Denver-metro area and Northern Colorado.

Collectively, the Diagonal project components create a more reliable and equitable regional transportation system by incorporating safe, efficient vehicular travel choices, with enhanced transit and bicycling infrastructure.

This map shows how regional partners are already transforming this corridor with planned and completed improvements.

CO 119 Diagonal

Bikeway in the median spanning the entire Diagonal

Boulder

28th St & Iris Ave improvements; 28th St & Canyon Blvd improvements; Iris Ave - 28th St to Foothills Pkwy Business Access and Transit Lanes; 28th St - Canyon Blvd to Iris Ave Business Access and Transit Lanes; Streetside BRT stops

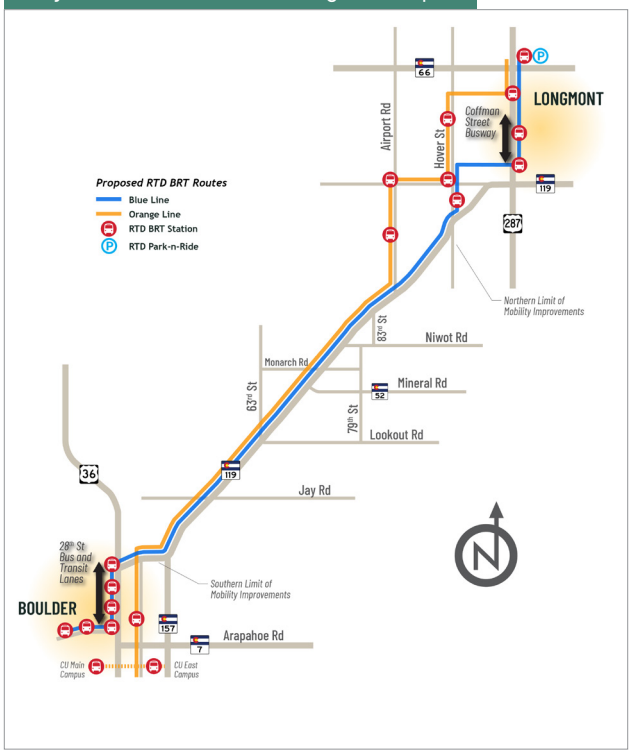
Longmont

Coffman St dedicated BRT lanes; 1st & Main Mobility Hub; Boston Ave Extension crossing at the BNSF Railway; Business Access and Transit Lanes between Nelson Rd & South Pratt Pkwy; Hover St & Nelson Rd active mode improvements; Streetside BRT stops

RTD

Main St & Park Ridge Ave Park-n-Ride facility

Projects Outside the CO 119 Diagonal Scope



Statement of Work

The major components of the Diagonal for consideration of RAISE funds include:

- **Park-n-Ride** facilities at 63rd Street and Niwot Road
- **BRT stations** at 63rd Street, CO 52, and Niwot Road
- Innovative design of inside **BRT lanes**
- **Queue bypass lanes** and **TSP** at signalized intersections
- **Signalized intersection improvements** at Jay Road, 63rd Street, CO 52, Niwot Road, Airport Road, and Hover Street
- **Unsignalized intersection improvements** at 55th Street, Monarch Road, 83rd Street, and Fordham Street
- Construction of the **full bikeway** between Boulder and Longmont, including **four bikeway underpasses**
- Upgrading **traffic signal poles** at all intersections
- Modification to a **split intersection configuration** at CO 52 to increase intersection operations/reduce congestion of the largest bottleneck in the Diagonal and accommodate BRT and separated bikeway needs
- **Reconfiguring lanes** at the Airport Road intersection to achieve vehicular, transit, bicycle and pedestrian operational and safety benefits
- **Tunnel for through traffic** at Hover Street with a grade-separated bicycle/pedestrian facility to run parallel to the vehicle tunnel.
- **Intelligent Transportation Systems** (ITS) technologies including variable messaging and more to be used within the tunnel (see ***Innovation*** in ***Merit Criteria***)
- Improving **pedestrian safety** and **access** with **signing, striping**, and **lighting** at all crossings
- Implementation of **safety recommendations** throughout the Diagonal