



# Ken Caryl Avenue traffic signal retiming project: Valley Road to Platte Canyon Road/Mineral Ave

## November 2024

The Denver Regional Council of Governments (DRCOG) leads multijurisdictional partnerships to implement optimized traffic signal timing and coordination on area roadways. Optimized signal timing considers several factors, such as traffic volumes, heavy trucks, pedestrian and bicycling activity, bus stops, hills, turning movements, and time-of-day variations.

Signal timing coordination relies on a common cycle length by a series of signals. The cycle length is the total time to complete one sequence of all movements around an intersection. The start of each intersection's signal cycle is then offset from the previous intersection. The offset is generally equal to the travel time between the intersections. Signal timing coordination progresses vehicle flow at a consistent and safe travel speed. Additionally, it provides predictable gaps in traffic flow to allow cross-street movement.

Signal timing optimization reduces fuel use, saves drivers time and money, minimizes greenhouse gas and pollutant emissions, and enhances air quality. The demand and movements of all travelers passing through or crossing at intersections is considered, so that safety is enhanced for all users, including pedestrians, bicyclists and transit patrons.

## Federal Funding

DRCOG allocated \$434,000 in federal funds for equipment upgrades within Jefferson County. The equipment upgrades provide greater capability to monitor and manage the transportation network.

DRCOG engineering staff used federal funding to develop the signal timing and coordination plans in partnership with the City of Littleton, Jefferson County and CDOT.

## Project Scope



## Project Improvements

To account for variability of traveler volumes (vehicles, pedestrians and cyclists) throughout the day, three signal timing and coordination plans were implemented along the corridor based on time-of-day. Comparing data collected before and after implementation shows reduction in delay and a significant reduction in the number of stops due to signal operations.

| Time Period           | Eastbound Delay Reduction | Westbound Delay Reduction | Eastbound Reduction in Stops | Westbound Reduction in Stops |
|-----------------------|---------------------------|---------------------------|------------------------------|------------------------------|
| 6:00 - 9:00 a.m.      | 13%                       | 15%                       | 56%                          | 64%                          |
| 9:00 a.m. - 3:00 p.m. | 14%                       | 13%                       | 56%                          | 51%                          |
| 3:00 - 7:00 p.m.      | 8%                        | 19%                       | 45%                          | 59%                          |

The operations improvements resulted in the following benefits.

| Performance Measures     | Annual Reduction |
|--------------------------|------------------|
| Intersection delay       | 126,000 hours    |
| Fuel consumption         | 97,000 gallons   |
| Time and fuel costs      | \$4.2 million    |
| Greenhouse gas emissions | 900 tons         |
| Pollutant emissions      | 10 tons          |

