

PTC at a glance

- FasTracks commuter rail systems have Positive Train Control (PTC) technology called I-ETMS. This is a complex GPS-and-communications-based system that reduces the risk of catastrophic train accidents.
- PTC installed on the University of Colorado A Line, the first segment of the B Line to Westminster, the G Line to Wheat Ridge and the N line to Thornton.
- The system will identify unsafe situations, such as trains moving at higher-than-permitted speeds and will warn train operators to adjust appropriately.
- RTD is first in the nation to integrate PTC technology in the construction of a new rail system.

What does PTC prevent?

- Trains moving at unsafe speeds on the rail alignment.
- Train-to-train collisions.
- Trains unsafely crossing rail switches (rail redirects).
- Unsafe train operations in the vicinity of maintenance workers who are on or near the alignment.

When does PTC act?

- Train operators will be given a signal to slow or stop the train if:
- They are traveling too fast.
- Another train is stopped on the tracks ahead.
- Maintenance crews are out working on the alignment.

When if the operators do not act?

If the operator does not respond within 8 seconds, the train will automatically slow to a stop.

Why implement PTC?

According to the Rail Safety Improvement Act, all Class I and commuter rail lines in the country have to integrate PTC into existing railroad systems by Dec. 31, 2018.



Commuter Rail vs. Light Rail

Rail



Light rail at a glance

RTD introduced light rail trains to the metro area with the opening of the D Line (also known as the Central Rail Line) on October 7, 1994.

Light rail features

- Smaller, articulating vehicles
- Designed for more frequent stops
- Passenger seating and standing capacity 162
- Designed for street operation
- 55 mph maximum operating speed

Light rail quick facts

- Dimensions: 80.4 ft. over couplers in length x 8 ft. 9.6 inches wide
- Weight: 88,000 lbs. empty
- Maximum speed: 55 mph
- Total capacity: 162 (including standees), 4 wheelchair spaces per car
- Power source: catenary supply voltage 750 Vdc
- New fleet will have 57 seats and a total passenger capacity of 120 (including standees) by the end of 2018
- C, D, E, F, H, L, R, and W

Commuter rail at a glance

- RTD introduced commuter rail trains to the metro area with the opening of the University of Colorado A Line (also known as the East Rail Line) on April 22, 2016.

Commuter rail features

- Larger, heavier solid body
- Designed for fewer stops
- Passenger seating and standing capacity 170
- Compliant for freight corridors
- Commuter rail trains travel faster speeds and longer distances. Maximum operating speed is 79 mph
- Every door has level boarding.
- Overhead storage space runs the entire length of the vehicle, with two dedicated luggage racks per vehicle.
- Each car has two bicycle/multipurpose storage racks.

Commuter rail quick facts

- Dimensions: 85 ft. long
- Weight: 70 tons (empty)
- Maximum speed: 79 mph
- Total capacity: 170 (including standees), 2 wheelchair spaces per car
- Power source: 25,000 volts AC on an overhead electrical system

Commuter rail lines

- University of Colorado A Line, B, and future G and N

Commuter Rail Maintenance Facility at a glance

- The Commuter Rail Maintenance Facility (CRMF) is located at 5151 Fox St. in Denver's Globeville neighborhood.
- The facility is used to maintain, clean and store the vehicles that serve the University of Colorado A Line to Denver International Airport, the G Line to Wheat Ridge, the first segment of the B Line to Westminster and the N Line to Thornton.
- Approximately 220 operators, mechanics and other staff are housed in the 230,000-square-foot facility.
- The CRMF can service up to 80 electric rail cars and is equipped with state-of-the-art training and conference rooms, staff break room and lockers.
- The facility's Operations Control Center (OCC) acts as the brain of the commuter rail network with train dispatch, public announcement and security systems, positive train control and the radio communication systems that keep everyone connected.
- Opened 2016

Sustainability

- The facility received a Leadership in Energy and Environmental Design (LEED) Gold Certification, which demonstrates environmental stewardship and social responsibility.
- Sustainable features of the CRMF include:
 - Efficient mechanics and lights for a 32 percent energy savings
 - Water-efficient plumbing fixtures for a 39 percent reduction in water usage
 - Radiant floor heating served by an 89 percent efficient water boiler
 - Specially designed windows that prevent thermal transfer



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Eagle P3 at a glance

- Eagle P3 is part of RTD's 2004 voter-approved FasTracks plan to expand transit across the Denver metro region.
- The \$2.2 billion project is comprised of the University of Colorado A Line, G Line and the first segment of the B Line to Westminster, procurement of 56 commuter rail cars and a commuter rail maintenance facility.
- P3, or public-private partnership, is an innovative financing and delivery method in which a public entity partners with the private sector. The private team invests its own money and assumes much of the risk on the project. That allows the public entity to spread out large upfront costs while preserving public cash for early construction.
- Funding for Eagle P3 comes from federal grants and loans, RTD sales taxes and the contractor's financial contribution. The project received a \$1.03 billion Full Funding Grant Agreement from the Federal Transit Administration.
- RTD entered into a 34-year agreement with Denver Transit Partners (DTP) under which it will pay DTP to operate and maintain the system; DTP repays its private financing from that amount, much like home mortgages are repaid.

Project overview

- **University of Colorado A Line** a 23-mile electric commuter rail corridor between Denver's Union Station and Denver International Airport that passes through east Denver and Aurora, and includes stations at 38th•Blake, 40th•Colorado, Central Park, Peoria, 40th Ave & Airport Blvd•Gateway Park, 61st•Peña and Denver Airport.
- **G Line** a 11.2-mile electric commuter rail corridor between Union Station and Ward Road in Wheat Ridge that will pass through northwest Denver, Adams County and Arvada, and include stations at 41st•Fox, Pecos Junction, Clear Creek•Federal, 60th & Sheridan•Arvada Gold Strike, Olde Town Arvada, Arvada Ridge and Wheat Ridge•Ward.
- **B Line** a 6.2-mile first segment running between Union Station and Westminster Station near 71st Avenue and Lowell Boulevard.
- **Commuter rail maintenance facility (CRMF)** located at 5151 Fox St., where vehicles serving the four FasTracks commuter rail lines are repaired, cleaned and stored.

Project funding

\$2.2 billion, including \$1.03 billion in federal funds and \$450 million in private financing.

EP3 project milestones

2009	RTD released Request for Proposals.
2010	Final proposals received; RTD Board of Directors selects Denver Transit Partners as P3 team; Phase I Notice to Proceed issued.
2011	\$1.03 billion federal grant awarded; Phase II Notice to Proceed issued.
2016	University of Colorado A Line opened on April 22, 2016.
2016	B Line opened on July 25, 2016.
TBD	G Line opening date to be determined.

