October
2019

I-25 Planning and Environmental Linkages Study Executive Summary

Colorado Springs Denver South Connection

CDOT Project No. **NHPP 0252-450**
CDOT Project Code **21102**

COLORADO
Department of Transportation

What is this document about?

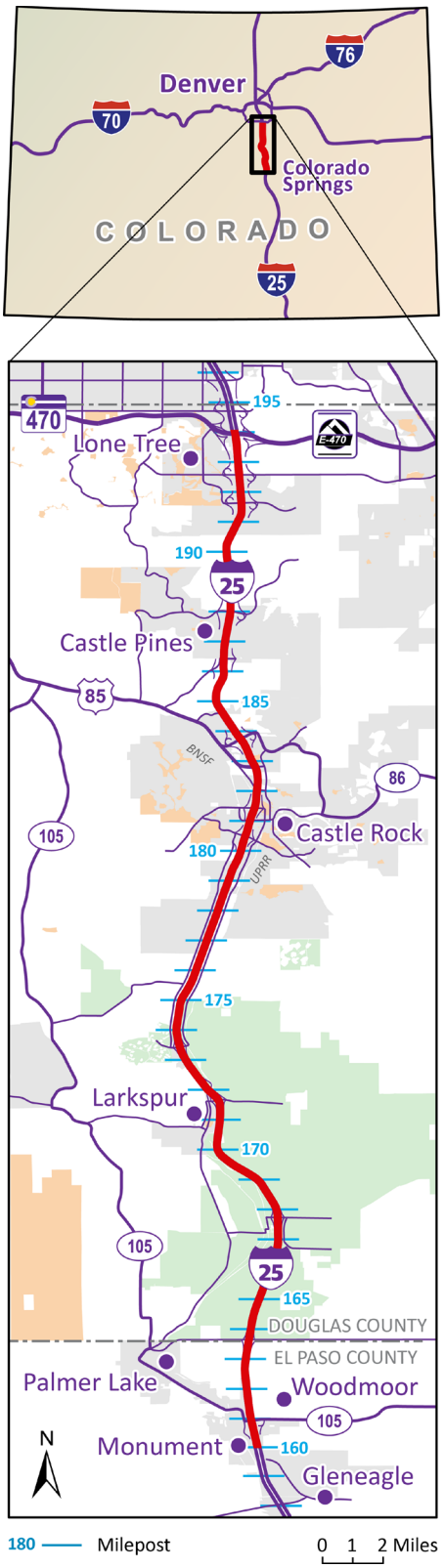
The Colorado Department of Transportation (CDOT), in cooperation with the Federal Highway Administration (FHWA), conducted a Planning and Environmental Linkages (PEL) study to establish a long-term vision and strategic plan for future transportation improvements between Colorado Springs and the Denver metropolitan area.

This PEL Study provided a framework for CDOT to engage with local corridor communities, regional travelers, and other interested stakeholders to understand their concerns and ideas for immediate and longer-term improvements. The process and outcomes support an efficient transition to National Environmental Policy Act (NEPA) processes, final design, and construction once funding is identified.

Where would the improvements occur?

Improvements are proposed to the Interstate 25 (I-25) corridor between the Town of Monument (State Highway [SH] 105) north to the C/E-470 (Colorado Highway 470/E-470) Interchange.

This stretch of I-25 provides the main travel link for residents, visitors, commuters, and military personnel between the City of Colorado Springs and the Denver metropolitan area. While approximately three-quarters of the trips on this corridor are pass-through trips, I-25 also serves as the backbone for several communities, including the towns of Monument, Larkspur, and Castle Rock, and the cities of Castle Pines and Lone Tree.

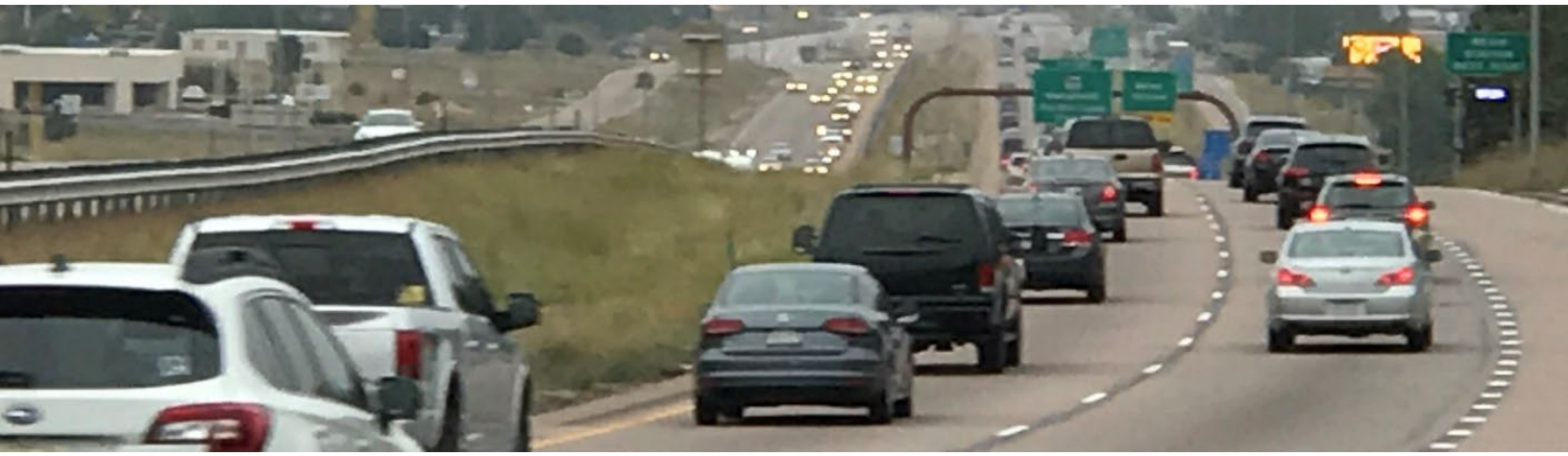


Why are the improvements needed?

Transportation improvements are needed in this corridor to:

1) enhance safety and improve incident management,
2) improve travel time reliability, and
3) improve mobility.

Dramatic population increases in the Denver and Colorado Springs areas in recent years have put an immense strain on I-25 between these two major Front Range cities.



What are the goals for transportation improvements in the corridor?

Considering and addressing three goals is essential to a successful solution to the transportation needs.

These goals were integrated into the alternatives evaluation process for this PEL Study. Alternatives were evaluated based on their ability to address transportation needs and achieve these goals.

Goal #1

Be compatible with the built and natural environment.

Goal #2

Support corridor communities' land use, development, and economic goals.

Goal #3

Integrate and leverage technological innovations and advanced transportation system management strategies.

Enhance Safety and Improve Incident Management

4,710 **crashes** occurred within the corridor between 2011 and 2015.

The primary safety issues were due to:

CONGESTION

Common Crash Types Caused by Congestion:

Sideswipes

Rear-end crashes

Highest Traffic

Rush Hour Traffic North of Castle Rock
7 a.m. to 8 a.m. and 3 p.m. to 5 p.m.

Summertime Traffic South of Castle Rock
Fridays & Saturdays

High numbers of weekend crashes

are due to high number of recreational and non-commuting drivers unfamiliar with the highway.

ROADWAY CONDITIONS

Narrow Shoulders Contribute to:

Struck Objects

1/3 of all crashes occurred in **low light** conditions

Stopping sight distances, on- and off-ramp design, and lane imbalance contribute to rear-end crashes.

785 vehicle-wildlife collisions from 2011 to 2015

=6% of all crashes

Wet/snowy conditions contribute to crashes.

INCIDENT MANAGEMENT

Incidents that Impede Traffic Flow:

Crashes

Special events

Maintenance activities

Weather

Limited alternate routes and narrow shoulders challenge emergency responders to reach incidents.

The safety assessment indicates there is a moderate to high potential to reduce crashes and improve safety along a majority of the corridor length.

Improve Travel Time Reliability

It takes

30 minutes

to travel through the corridor under unimpeded free-flow conditions.

Travel times of

120 minutes

or more periodically occur!

Travel times were

38% longer

than free-flow conditions on

256 days

during 2016.

Crashes Weather Special Events

were factors in

1/2 of the delays experienced in the corridor.

Improve Mobility

I-25

- is Colorado's only north-south interstate.
- is the primary corridor between Denver and Colorado Springs.
- connects the most populous areas in the state.

Traffic volumes
are anticipated to increase

50% by 2040

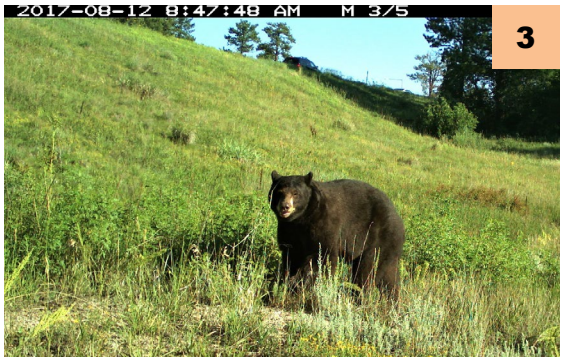
Physical Characteristics that Affect Congestion:

- Poor interchange geometrics (short exit ramps, tight curves)
- Poor lane balance at and between interchanges, which increases lane changes
- Port-of-Entry stations located on hills
- Uphill sections where commercial trucks and RVs cannot maintain speed

Existing transit service
is very limited and not anticipated to meet future demand given population projections.

Travelers in the corridor face a variety of **issues**, from congestion to crashes, roadway conditions, weather, wildlife, and travel delay.

1, 2: Accidents and bad weather can close this section of highway altogether or cause extensive backups. **3:** I-25 bisects an interconnected system of high-quality wildlife habitat. **4:** Incidents that substantially delay travel through the corridor occur regularly. **5:** Existing infrastructure is inadequate to handle today's needs.



What did the study consider?

A broad set of initial improvement concepts were identified by the project team based on corridor data, public input, and coordination with the technical experts.

These concepts included various I-25 lane configurations, other physical improvements to the interstate, viability of alternate route improvements to solve I-25 needs, multimodal elements, and operational improvements. These actions were categorized as Core Concepts and Supplemental Elements.

Core Concepts

Standalone improvements that directly meet the PEL Study's Purpose and Need.

Supplemental Elements

Additional improvements that do not meet the Purpose and Need on their own, but improve the Core Concepts.

Three levels of evaluation were implemented to explore the initial concepts and ultimately develop recommendations. Each of these levels informed those that followed. Through each level of evaluation, the project team met with project advisors to discuss and solicit feedback on the process, evaluation criteria, and results.

Level 1 Evaluation

Determine which of the initial core concepts could solve one or more of the project needs.

Level 2 Evaluation

Evaluate how well the concepts address the needs, and identify issues and conflicts to be evaluated further.

Level 3 Evaluation

Identify concept(s) that provide the most safety, mobility, and travel time benefits considering impacts to resources and compatibility with community goals.

What was outside the scope of this study?

This PEL Study focused on the needs and goals along I-25 between SH 105 and C/E-470, and developed recommendations for improvements that would address those needs and achieve the goals.

The PEL Study team recognized that widening I-25 will affect existing infrastructure along the interstate and disrupt local transportation networks, and that planned projects in and adjacent to the Study Area could influence the phasing of the I-25 mainline recommendation. However, the PEL Study did not:

analyze the type of interchanges required to replace existing ones and design them to tie into I-25 and connecting roads.

determine the type of potential NEPA class of actions required for future projects.

identify funding for future projects.

integrate rail into the conceptual interstate design.

Who was involved in this process?

The PEL Study engaged regional and local community leaders, residents, businesses, organizations, and interested members of the public.

The goal was to understand transportation and other needs and priorities along the I-25 corridor, and build support for the type and phasing of improvements to implement. A small sample of the concerns received include:

Express Lanes met the purpose and needs better than other alternatives, particularly related to reliability. Express Lanes also support additional travel options, such as transit and carpooling.

Compared to the No Action Alternative, which includes no additional improvements above and beyond those already programmed in the corridor, the recommended lane configuration will reduce travel times in peak periods by 16 to 34 minutes.

The I-25 South Gap Project adds new wildlife underpasses and fencing. The PEL Study recommends a wildlife under or overpass at MP 166.3 and consideration for wildlife improvements in conjunction with the implementation of recommended projects.

The I-25 South Gap Project adds a truck climbing lane. The PEL recommends relocating the Port of Entry and chain up stations to improve truck operations.

Extending the I-25 South Gap Project Express Lanes will allow Bustang to travel more reliably through the corridor. Longer-term recommendations include additional Bustang stops or service frequency. The study also supports ongoing efforts to advance passenger rail.

Five sets of public meetings were held in Douglas and El Paso counties to provide people an opportunity to submit questions and suggestions. Approximately 800 people attended one or more of the PEL meetings.

These public meetings were augmented by key stakeholder interviews and focus groups, several small group community meetings and presentations, telephone town halls, and project updates delivered via traditional and social media.

In addition, the following three groups held regular meetings to advise on the PEL Study progress, findings, and recommendations.

TWG

The Technical Working Group (TWG) provided technical input and guidance, and was comprised of corridor jurisdictional representatives from public works and open space staffs, key CDOT technical staff, and consultant technical experts.

RAG

The Resource Agency Group (RAG) included representatives of state and federal resource and regulatory agencies who provided input and guidance specific to their agency's jurisdiction.

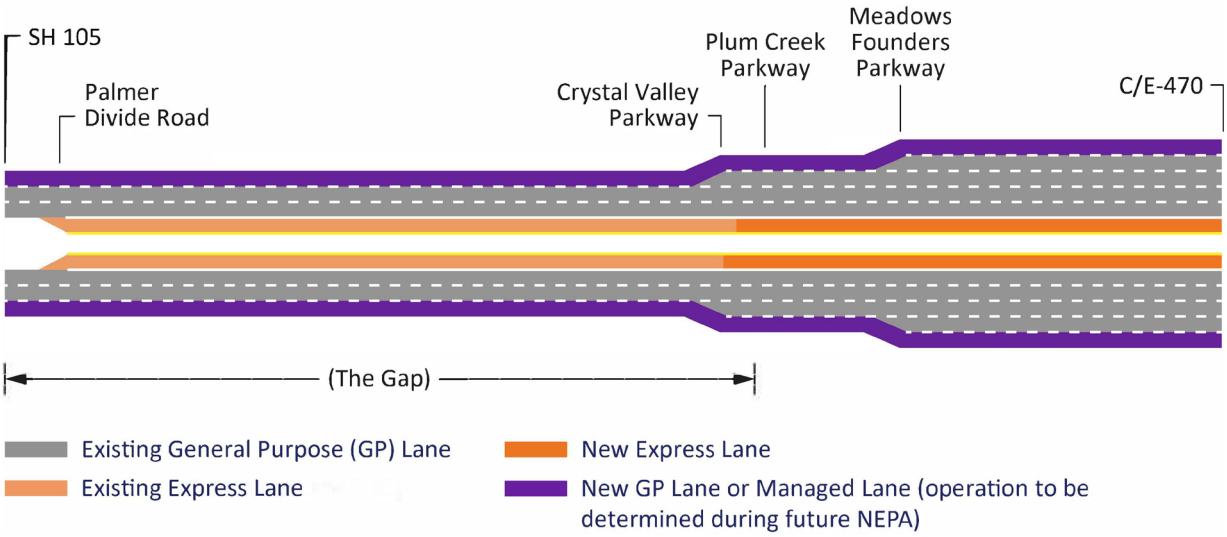
SC

The Steering Committee (SC) was a group of elected officials and executive leadership from local, state, and federal agencies who helped identify priorities and funding opportunities, and advocate for agency interests while working to advance projects and coordinate public involvement and messaging.

What did the study **recommend**?

The PEL recommended 2 phases. Initial, **extending the Express Lanes** between Monument and Castle Rock north to the C/E-470 interchange and subsequent addition of an **additional travel lane** the entire length of the corridor between SH 105 and C/E-470.

Core Concept: I-25 Mainline Recommendation



Mainline Recommendation:

between $1.4 and $1.8 billion*

** estimates are based on 2018 costs.*

Benefits

Enhance interstate safety through **improved traffic flow** and roadway geometrics

Reduce peak travel times by **16 to 34 minutes** in general purpose (GP) lanes and **16 to 19 minutes** in Express Lanes

Provide long-term travel time reliability with **continuous Express Lanes**

Provide faster, more reliable **Bustang service** in the corridor through use of Express Lanes

Improve viability for emerging technologies as additional travel lane(s) can be dedicated for **variable use** (autonomous vehicle lanes, general purpose lanes, or express lanes).

Reduce regional vehicle hours traveled (VHT) between **2.2 to 2.8 percent**

What else was recommended?

Various supplemental elements were identified to provide improved performance to the project corridor as standalone projects or in combination with the I-25 mainline improvements.

Supplemental Elements

The supplemental elements, combined with the I-25 mainline recommendation, will improve the performance of I-25 and represent opportunities to combine local efforts with CDOT's efforts.

Further analyze interchange improvements timed with I-25 mainline improvements, potential for Express Lane direct connects at I-25 and US 85, and I-25 and C/E-470

Maintain existing auxiliary lanes and evaluate need for additional auxiliary lanes.

Coordinate with local jurisdictions regarding anticipated impacts to frontage roads.

Expand Bustang service and facilities.

Add a transit station in Castle Rock area.

Add passenger rail along I-25.

Consider future climbing lanes.

Relocate north- and southbound Port-of-Entry.

Relocate and update chain-up stations.

Construct a wildlife under or overpass at MP 166.3.

Evaluate upsizing culverts and constructing new underpasses.

Conduct further wildlife evaluations between Castle Rock and C/E-470.

Consider opportunities to accommodate the Colorado Front Range Trail crossing.

Consider structures over I-25 or larger culverts under I-25 to accommodate regional trails.

Consider new trail underpass at Spring Gulch in Castle Pines.

Consider upgrades of existing technologies.

Evaluate additional technologies that may be applicable as standalone projects or elements of future projects.

What environmental resources were considered?

The environmental resources studied were identified based on Study Area characteristics and additional regulatory requirements, as well as those typically of public concern, like traffic noise.

Key environmental resources that influence the mainline recommendation and have the highest potential to influence future decisions making for recommended transportation improvements include the following:

Wetlands

East Plum Creek and Carpenter Creek cross and flow parallel to I-25 between MP 167 and 182. Impacts to these creeks and their associated wetlands are likely. Localized impacts are expected where other streams and wetlands cross I-25.

Floodplains

Floodplain impacts are likely to occur along East Plum Creek between Upper Lake Gulch Road and Tomah Road and downtown Castle Rock. Minor impacts are expected where streams cross I-25 between Hess Road and Lincoln Avenue, and at Surrey Ridge/Happy Canyon.

Historic

Known historic resources could be impacted including railroad right-of-way, historic properties in downtown Castle Rock, and the Arapahoe Canal.

Right-of-Way

Existing CDOT I-25 right-of-way between Monument and the southern part of Castle Rock and through the Lone Tree area would be sufficient in most locations. More substantial right-of-way impacts are anticipated in Castle Rock and Castle Pines.

Recreation

Impacts are expected to four existing trails and three planned trails.

Conservation Easements

Impacts are expected to five conservation easements on both sides of I-25 between MP 163 and MP 187.

Noise-sensitive Land Uses

Noise impacts could occur to hotels and residences along I-25 in Monument, Castle Rock, Castle Pines and Lone Tree; rural residences south of Plum Creek Parkway; and parks, outdoor recreational facilities, churches, and schools.

Visual

High value is placed on views of the mountains, unique rock formations, and open space. Aesthetic guidelines developed for the corridor as part of the I-25 South Gap Project will be applicable for future projects.

Transportation Infrastructure

Widening along I-25 would require reconstruction and realignment of existing infrastructure, including adjacent frontage roads, parallel local roads, bridges over I-25, and railroads.

How could this be **built**?

A phasing strategy was developed to guide project development and provide a framework for long-term implementation as funding becomes available.

Initial Phase

Extension of the I-25 South Gap Project Express Lane north to C/E-470. This extension:

- Creates continuity throughout the corridor.
- Maximizes effectiveness of the Express Lanes.
- Allows for a potential direct connect to the C/E -470 managed lanes.

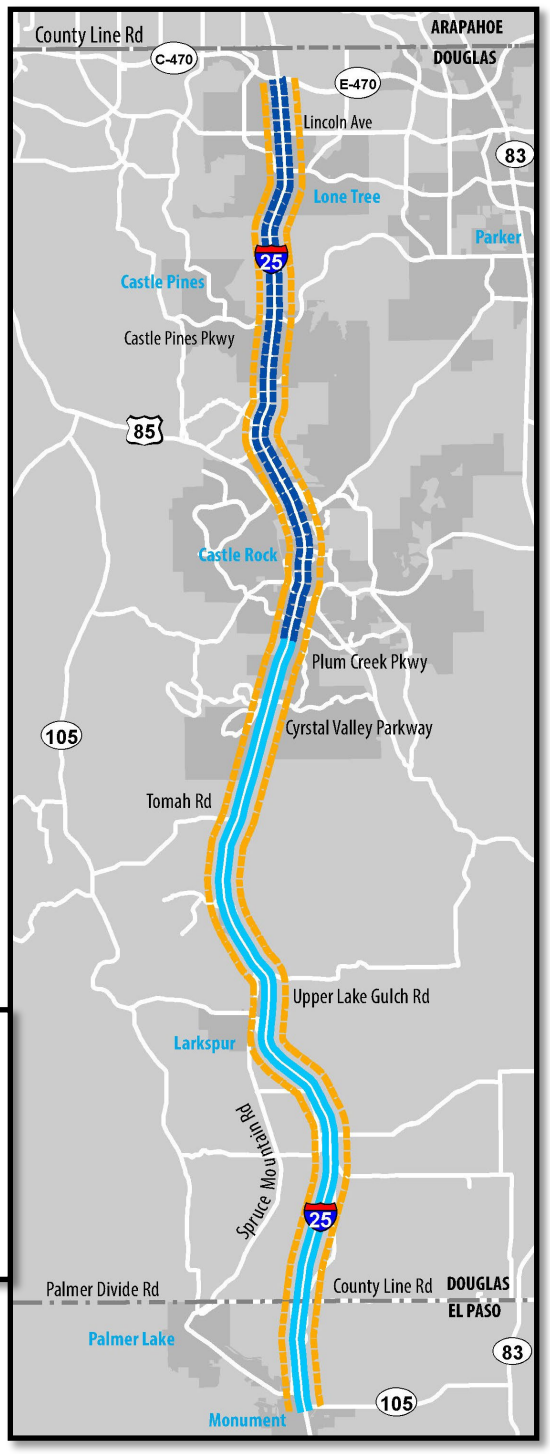
Estimated cost between $900 million and $1.2 billion*

** estimates are based on 2018*

Subsequent Phase(s)

Add an additional travel lane in each direction the length of the corridor.[1] The additional travel lane will:

- generate substantial travel time benefits for general purpose lanes and reduce regional vehicle hours traveled.
- improve mobility, safety and incident management by allowing better maneuverability to pass slower vehicles and avoid incidents.



[1] Existing climbing lanes, southbound (between MP 166.9 and MP 162.0) and northbound (between MP 162.0 and 163.4) would serve as a portion of the additional travel lane.

What happens next?

The PEL Study addressed the major needs and goals identified for the corridor. The PEL Study and associated planning products can be used in future NEPA studies to advance projects along the I-25 corridor in the Study Area.

Future studies and projects can build on the existing conditions information, public and stakeholder outreach, transportation analysis, and recommendations contained in this PEL Study.

The following list identifies remaining issues and ongoing efforts that were not covered in the PEL Study:

- CDOT's High Performance Transportation Enterprise is developing a Traffic and Revenue Study to evaluate the feasibility of tolling the corridor using the lane configuration and connections recommended in this PEL Study.
- Determine operations of the recommended travel lane in each direction from SH 105 to C/E-470.
- Evaluate operational needs north of the C/E-470 limits.
- Determine the feasibility of implementing peak period shoulder lanes (PPSLs) as an interim solution to extending the Express Lanes.
- Evaluate options for a transit station location in the Castle Rock area.
- Coordinate with the Southwest Chief & Front Range Passenger Rail Commission on implementation of interstate improvements pending the recommended alignment and service plan for the Front Range Passenger Rail.
- Continue coordination with Local Governments and Agencies as future development and projects occur along the corridor.