COLORADO
HPTE
PARTNER. INNOVATE. ACCELERATE.

2018 Annual Report

January 15, 2019

PARTNER · INNOVATE · ACCELERATE

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Colorado General Assembly
Colorado State Capitol
200 East Colfax Avenue
Denver, CO 80203

January 15, 2019

Dear Members of Colorado's General Assembly:

This Annual Report describes the activities and accomplishments of the High Performance Transportation Enterprise (HPTE) during 2018—a busy year for the HPTE team as we worked to address some of Colorado's most pressing transportation challenges.

HPTE was created by the General Assembly in 2009 to aggressively pursue innovative ways to efficiently finance important surface transportation infrastructure projects that will improve the safety, capacity, and accessibility of the surface transportation system, can feasibly be commenced in a reasonable amount of time, will allow more efficient movement of people, goods, and information throughout the state. Over the past nine years, HPTE has worked diligently to finance and deliver Colorado's first innovative and accelerated Express Lane projects on US 36, I-25 Central, I-25 North (US 36 to 120th Avenue), and the I-70 Mountain Corridor.

Highlights for HPTE in 2018 include:

- **Breaking ground on 86 miles of Express Lanes across three major corridors:** Central 70 (Brighton Boulevard to Chambers Road), I-25 North (Johnstown to Fort Collins), and I-25 South "Gap" (Monument to Castle Rock).
- **Making headway on the Express Lanes Master Plan,** with two workshops taking place to gather stakeholder feedback and inform goals, objectives, potential corridors, and evaluation criteria. The Express Lanes Master Plan will serve as a comprehensive long-term strategic road map for the prioritization, planning, and development of future Express Lanes.

Express Lanes work for everyone. Trip reliability and travel speeds are improved, congestion and delays are better managed, and transit also benefits from Express Lanes. Accomplishments include the following:

- **HOV3+**—On average, 17 percent of all transactions in 2018 were HOV3+ across the Express Lane Network. An estimated 2.6 million free trips were taken by HOV3+ users in 2018.
- **Transit**—CDOT's regional bus service Bustang reports a 70 percent improvement in on-time arrivals, mostly gained from I-25 North Express Lanes (US 36 to 120th Avenue).
- **US 36 Express Lanes**—RTD's increased Flatiron Flyer service on the US 36 corridor has led to a threefold increase in ridership (2,000 in 2015 to 6,000 in 2018) during peak periods. US 36 sees more than 3 million annual transit bus trips, which helped reduce 46.5 million vehicle miles traveled—equal to approximately 19,337 metric tons of CO2 emissions.
- **I-70 Mountain Express Lane**—The I-70 Mountain Express Lane saw a 16 percent increase in customer use during the 2017/2018 operating period, when compared to the previous year. Overall, 9 percent of the traveling public chose to pay a toll to use the Express Lane, which relieved congestion for those that traveled the corridor for free.

From 2016 to 2017, Colorado's annual population growth rate was 1.4 percent—the eighth highest in the nation. Growth and stagnant budget realities greatly impact Colorado Department of Transportation's (CDOT) ability to maintain and expand our transportation infrastructure. The need to use innovative financing to deliver key transportation projects has never been greater. In 2019, HPTE looks forward to continuing to explore innovative finance opportunities and accelerating the delivery of projects.

We want to hear from you. We invite you to contact us with your comments, questions, and ideas by emailing us at **dot_hpte@state.co.us**, or calling 303-757-9380.

Sincerely,

David Spector, HPTE Director

Don Marostica, HPTE Board Chair

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Highlights from 2018

GROUNDBREAKING EVENTS

Central 70
Brighton Boulevard to Chambers Road

I-25 North
Johnstown to Fort Collins

I-25 South Gap
Monument to Castle Rock

EXPRESS LANE NETWORK USAGE

15.8 million vehicles

17% AVERAGE HOV USE

2.6 million total free trips by HOV3+users

PUBLIC OUTREACH AND COMMUNICATIONS

41 public meetings

3 MEDIA CAMPAIGNS

12.7 million media impressions

Education: 'When It Matters Most'

Toll rate adjustment

Safety Enforcement

3 NATIONAL PUBLIC-PRIVATE PARTNERSHIP AWARDS

HPTE Overview

COLORADO HPTE
PARTNER. INNOVATE. ACCELERATE.

COLORADO HIGH PERFORMANCE TRANSPORTATION ENTERPRISE (HPTE)

MAKING YOUR COMMUTE BETTER

Governing Legislation

The Funding Advancement for Surface Transportation and Economic Recovery Act (Part 8 of Article 4, Title 43, Colorado Revised Statutes), otherwise known as FASTER, created the Colorado High Performance Transportation Enterprise (HPTE) in 2009 as an independent, government-owned business within CDOT.

HPTE's Mission

- **Partner** with CDOT, private industry, and local communities
- **Aggressively pursue innovative financing** alternatives not otherwise available to the state
- **Quickly deliver transportation infrastructure** options that improve mobility and
- **Communicate openly** with all stakeholders.

HPTE has the legal responsibility to aggressively seek out opportunities for innovative and efficient means of financing and delivering important surface transportation infrastructure projects in the state. It has the statutory power, among others, to impose tolls and other user fees, to issue bonds, and to enter into contracts with public and private entities to facilitate Public-Private Partnerships (P3s).

HPTE is an "enterprise" for purposes of Section 20 of Article X of the State Constitution as long as it retains the authority to issue revenue bonds and receives less than 10 percent of its total revenues in grants from state and local governments. HPTE operates as a government-owned business within CDOT, but is overseen by a separate Board of Directors that includes external stakeholders from four geographic regions appointed by the Governor.

FASTER requires HPTE to issue a report of its activities for the previous year to the General Assembly by February 15, 2019, with the report posted to the HPTE website no later than January 15, 2019. This report fulfills that requirement and can be found at **www.coloradoHPTE.com.**

Rapid Population Growth and Need for Action

From 2016 to 2017, Colorado's population grew by 1.4 percent, or about 75,000 new residents per year, according to the State Demographer's Office. This number represents enough new residents to create a city the size of Loveland every year.

In 2017, Colorado's growth rate was the eighth highest in the nation. This rapid population growth puts enormous pressure on the aging transportation infrastructure. Population growth, coupled with budget realities, significantly impacts the state's ability to maintain and expand the transportation system. Finding solutions to these challenges is critical.

Colorado's highway infrastructure is severely congested and, in many areas, it is more than 50 years old and in need of repairs and maintenance. The rapid growth of Colorado's population points to even greater congestion in the decades ahead unless innovative ways to accelerate key projects are pursued.

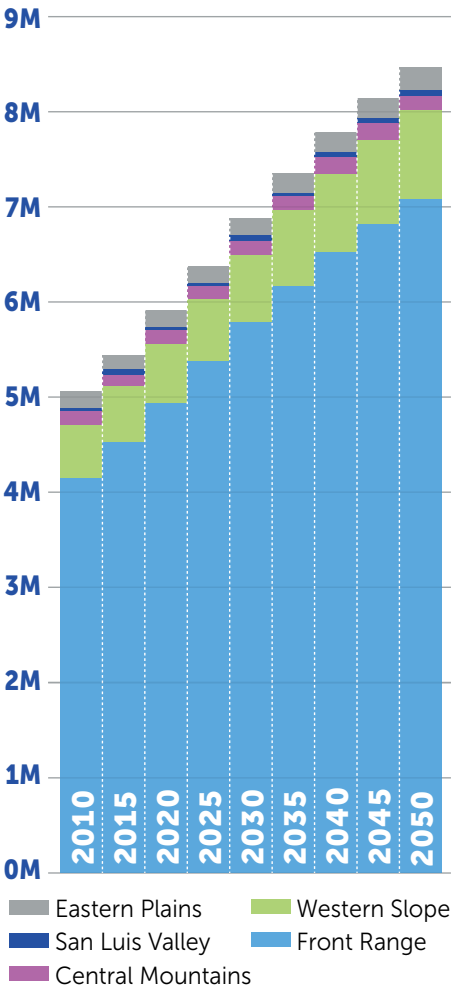
HPTE's Value

HPTE was formed to aggressively pursue innovative means of more efficiently financing important surface transportation infrastructure projects. Since the creation of the Enterprise, nine out of ten HPTE projects have used some form of innovative financing. Innovative financing enabled by HPTE, through Express Lanes, has helped deliver more than $3 billion in projects in the last five years. HPTE has:

- Helped secure $130 million in federal grant dollars,
- Directly attracted $125 million in private investment, and
- Leveraged more than $1 billion of bond proceeds and other loans to contribute to projects in the state's most congested regions.

Without the use of Express Lanes as a financing tool, the state of Colorado would have had to find an additional $1.27 billion in funds to deliver these projects. Otherwise, the projects would have been significantly delayed, scope would have been reduced substantially, or money would have been reallocated from other projects around the state to fill the funding gaps. Without the use of Express Lanes as a financing tool, HPTE and CDOT would not have been able to deliver nine projects in five years, totaling more than $3 billion in project value. Instead, without tolled Express Lanes, CDOT would have been able to deliver one, or possibly two, of the projects, with a value well under $1 billion.

COLORADO POPULATION FORECAST BY REGION 2010-2050



Source: Colorado State Demography Office

IMPORTANT CONSIDERATIONS IN PRIVATE INVESTMENT AND ALTERNATIVE FINANCING

Accelerated Timing	*Will it allow the project to start earlier, get built faster, and be completed sooner?*
Reduced Upfront Costs	*Will it significantly reduce the upfront capital required from the state?*
Expanded Scope	*Will it deliver more of the project's planned improvements and maximize value to Colorado residents?*
Innovation	*Will the project provide unique opportunities for design, construction, and operational innovation?*
Risk Transfer	*Will it permit HPTE/CDOT to shift significant project risks, such as cost overruns and revenue shortfall, to the private partner?*
Reliability	*Will the state benefit from guaranteed performance on long-term operations and maintenance?*

HPTE Governance: Board Members and Meetings

The HPTE Board of Directors consists of three members of the Transportation Commission (TC) and four members appointed by the Governor from each of the following geographic areas: (1) the planning area of the Denver Regional Council of Governments (DRCOG), (2) the planning area of the North Front Range Metropolitan Planning Organization (NFRMPO), (3) the planning area of the Pikes Peak Area Council of Governments, and (4) the I-70 Mountain Corridor area.

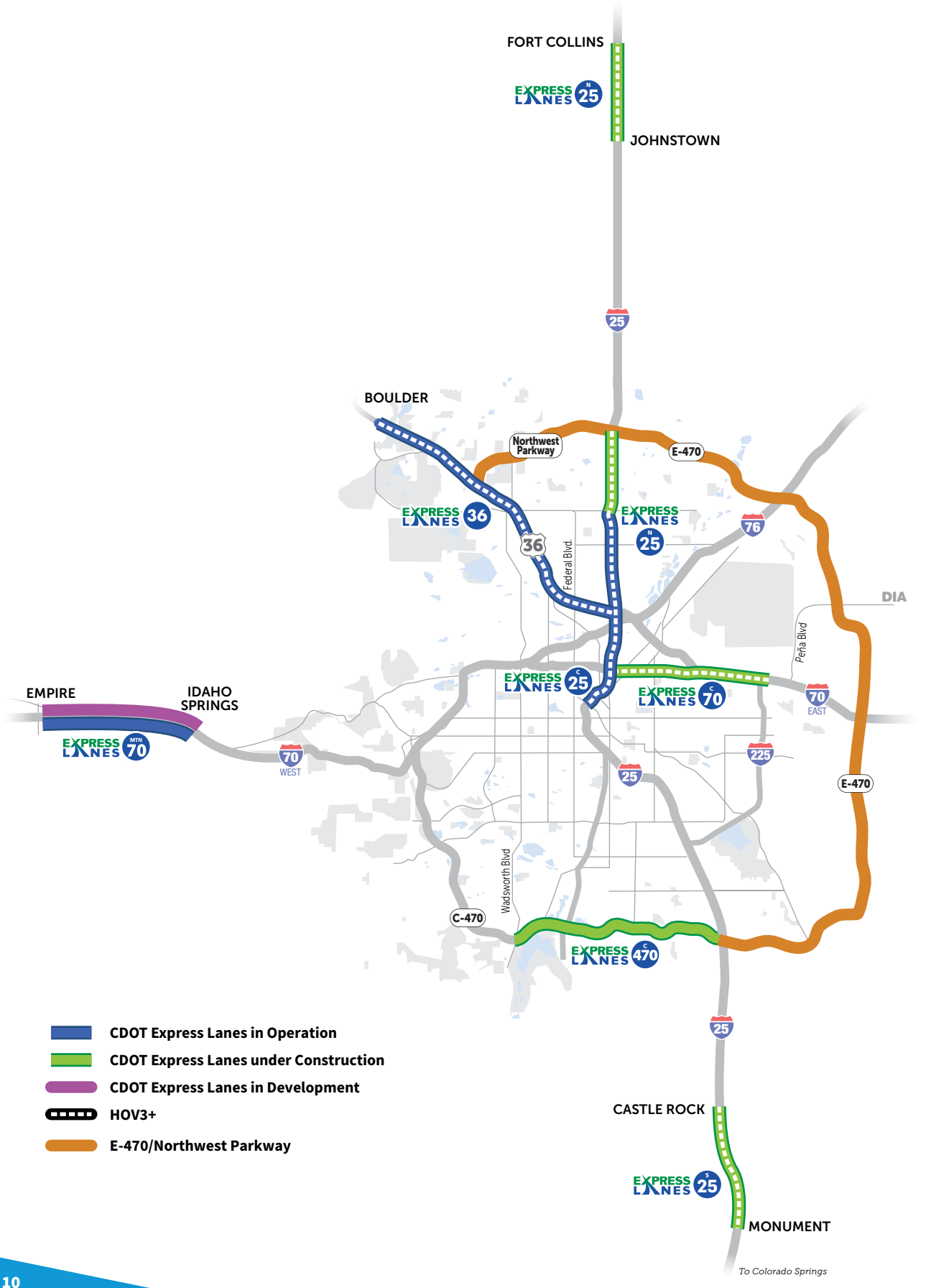
HPTE BOARD OF DIRECTORS

Board Members	Region	Term Expires
Chair: Don Marostica	NFRMPO Planning Area	10/2019
Vice Chair: Shannon Gifford	Transportation Commission	At will of the Transportation Commission
Kathy Gilliland	Transportation Commission	At will of the Transportation Commission
Margaret Bowes	I-70 Mountain Corridor	10/2019
Rocky Scott	Transportation Commission	At will of the Transportation Commission
Anastasia Khohkhryakova	DRCOG Planning Area	10/2021
Travis Easton	Pikes Peak Area COG Planning Area	10/2021

The HPTE Board of Directors generally meets at 10:00 a.m. on the third Wednesday of every month at CDOT Headquarters (2829 W. Howard Place, Denver). These meetings are open to the public under the Colorado Open Meetings law, and citizens are welcome to attend and participate. HPTE's enabling statute requires that the Board meet at least eight times per year. In 2018, the HPTE Board of Directors met 10 times. HPTE Board Meeting agendas, minutes, and documents are accessible on the HPTE website at: **www.coloradoHPTE.com**.

Express Lanes Network

Express Lanes Network Map



Express Lanes in Operation

Express Lanes are tolled lanes that run adjacent to the free general purpose lanes. Express Lanes increase roadway capacity and help manage congestion on Colorado highways by adding lanes that provide a choice to drivers.

Anyone can use Express Lanes. There are simply different ways to travel them. Users have a choice; they can ride the bus, carpool with three or more occupants, or ride a motorcycle to use the lanes for free (with the exception of the I-70 Mountain Corridor and C-470). Vehicles that do not meet the High Occupancy Vehicle (HOV) requirements can choose to pay a toll to use the lanes.

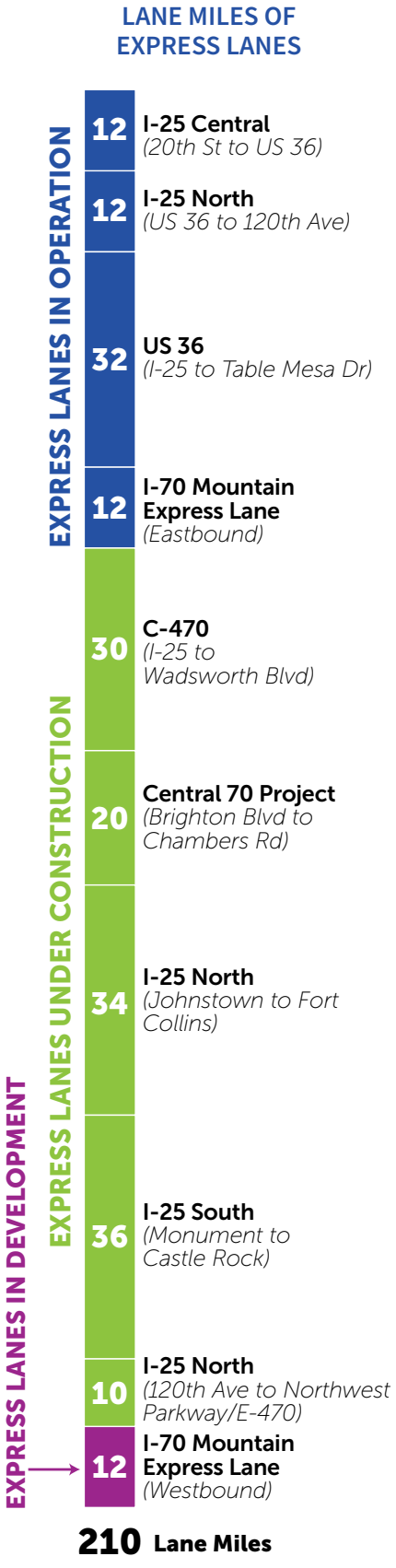
Colorado's Express Lanes work for everyone—those who choose not to pay and stay in the non-tolled general purpose lanes and Express Lanes customers. Express Lanes benefits include:

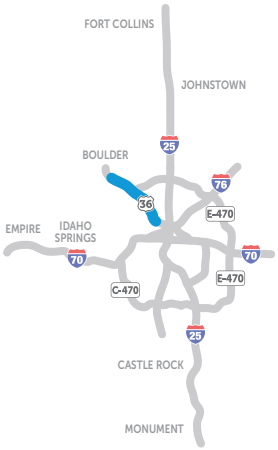
- Reduced delay on the most seriously congested corridors
- Reliable travel times
- Flexible and reliable mobility choices
- Improved travel speeds in the general purpose lanes

Since 2015, HPTE has been building its capacity for Express Lane operations and currently has 68 lane miles of Express Lanes in operation and 142 lane miles of Express Lanes under construction or in development. The figure on the right provides the lane miles of operational Express Lanes in Colorado, as well as those currently under construction or in development. For comparison, CDOT reports that it maintains 23,000 total lane miles of highway in Colorado.

As the operator of the Express Lane Network, HPTE oversees operations, maintenance, and performance. A team of traffic operations managers and technicians, maintenance crews, and data analysts partner with HPTE to improve mobility in congested corridors. Tasks include, but are not limited to, developing traffic and revenue analyses, monitoring Express Lane traffic, working with ExpressToll to waive and/or void tolls, and coordinating with CDOT on maintenance issues.

HPTE operates and maintains the I-70 Mountain Express Lane (eastbound), as well as the Express Lanes on I-25 North. Plenary Roads Denver (PRD) operates and maintains US 36 and I-25 Central Express Lanes and HPTE provides oversight of those activities.





EXPRESS LANE SPEED AVERAGED

13 mph faster than general purpose lanes

Up to **16% of vehicles** are using Express Lanes during peak periods (morning/afternoon)

The more than **3 million** annual transit bus trips between 2015 and 2018 have resulted in a reduction of **46.5 million** vehicle miles traveled, or approximately 19,337 metric tons of CO_2 emissions

US 36 Express Lanes—Pecos Street to Table Mesa Drive: *Weekday Commute Times Improved*

The US 36 Express Lanes project, which spans 32 miles to connect Boulder and Denver, was HPTE's first P3 project. It is a model of regional cooperation for other major corridors. The US 36/I-25 Express Lanes opened the first phase (Pecos Street to Interlocken Loop) in 2015, and then the second phase (Interlocken Loop to Table Mesa Drive) in 2016. The $497 million project was funded by multiple sources and includes a Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan ($114 million) secured through HPTE. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

PRD operates, maintains, and collects the tolls on US 36, while HPTE owns the road and provides oversight management of the Concession Agreement with PRD. The Express Lane is free for carpoolers with at least three individuals per vehicle, and for motorcycles. Other drivers can use the lane if they pay a toll that varies depending on the time of day. Express buses, such as RTD's Flatiron Flyer service, also have access to the Express Lanes free of charge.

I-25 Central Express Lanes—20th Street to US 36:
Better Trip Reliability

The I-25 Central Express Lanes, which opened for tolling in 2006, is a 6-mile, two-lane, reversible facility between US 36 and 20th Street in downtown Denver. The $217 million project included funding from federal ($127 million), Regional Transportation District ($54 million), CDOT ($14 million), and City and County of Denver ($22 million) sources. PRD began operating, maintaining, and collecting the tolls in 2014. HPTE provides oversight management of the Concession Agreement with PRD.

The Express Lanes are reversible and barrier-separated from the general purpose lanes. Vehicles move with rush hour traffic: southbound in the morning and northbound in the evening. A Traffic Management System—which includes changeable signs, traffic gates, and closed-circuit television—provides a safety feature to the barrier-separated lanes. Depending on the time of day, the I-25 Central Express Lanes in downtown Denver can connect to both the I-25 North Express Lanes (US 36 to 120th Avenue) and the US 36 Express Lanes.

EXPRESS LANE SPEED AVERAGED

11 mph
faster than
general purpose lanes

More than
3 million
vehicles used
I-25 Central
Express Lanes in 2018

EXPRESS LANE SPEED AVERAGED

11 mph faster than general purpose lanes

Up to **20% of vehicles** use Express Lanes during peak periods

I-25 North Express Lanes—US 36 to 120th Avenue: *Successful Performance on a Congested Commuter Route*

The I-25 North Express Lanes were extended from US 36 to 120th Avenue and opened for tolling on July 12, 2016. The 12 miles of Express Lanes operate 24/7 with one Express Lane in each direction. The respective northbound and southbound Express Lanes were designed to fit within the existing highway footprint. During the morning peak period, the southbound Express Lane provides a direct connection with I-25 Central Express Lanes into downtown Denver. The $64.8 million project was funded in part by a $15 million TIGER II grant and other state, federal, and local sources. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

Since opening, the I-25 North Express Lanes have been performing well, providing reliable commuter trips and reduced travel times for all vehicles. August 2018 saw the highest number of transactions in one month, with about 1.2 million toll and HOV transactions. Corridor speeds and travel times have improved, and previously congestion-prone areas function more smoothly.

I-70 Mountain Express Lane (Eastbound)—Empire to Veterans Memorial Tunnels:

Reduced Congestion, Improved Speeds for All Lanes

The I-70 Mountain Express Lane is 12 miles long, running eastbound from Empire Junction through the Veterans Memorial Tunnel. It opened for tolling in December 2015 and is a Hard Shoulder Running concept whereby the inside shoulder breakdown lane is used as a single-lane Express Lane to provide additional capacity in the corridor during peak demand travel times. The majority of the $72 million project was funded by CDOT, with a $23 million shortfall in project funding filled through a commercial loan procured by HPTE. The loan is repaid through toll revenue. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

The Express Lane has been open for three years, delivering trip reliability and improved travel times to travelers returning to the metro area from the mountains. Before the Express Lane, travel on the Clear Creek County frontage road from US 40 to Idaho Springs would collapse, as many vehicles sought alternative routes when the I-70 mainline slowed. Since opening the Mountain Express Lane, the local quality of life has improved as residents are now able to move more freely about their neighborhoods and business areas.

The I-70 Mountain corridor saw a 5 percent increase in vehicle volume—3.04 million vehicles during the 2017-2018 operations period (November 1 to October 31), compared to 2.89 million vehicles during the same period in 2016-2017. The I-70 Mountain Express Lane saw an increase in customer use: 263,700 vehicles compared to 227,100 vehicles the year prior, an almost 16 percent increase in Express Lane use. Overall, almost 9 percent of the traveling public chose to pay a toll to use the Express Lane when it was open during peak periods, reducing congestion for the remaining 91 percent of the traveling public that traveled the corridor for free.

EXPRESS LANE SPEED AVERAGED

8 mph faster than general purpose lanes

Express Lane usage **increased by 16%,** compared to the prior year

Express Lanes Under Construction

There are five Express Lane projects currently under construction and one in development, totaling 142 miles. Express Lane projects under construction include:

Central 70 Project—Brighton Boulevard to Chambers Road:

Largest Transportation Project in state of Colorado History Breaks Ground

Following a 14-year environmental review process, Federal Highway Administration (FHWA) granted its approval of the Central 70 project through issuance of its Record of Decision on January 19, 2017. HPTE led a rigorous procurement process for a P3 delivery. Kiewit Meridiam Partners (KMP) was selected to be the Central 70 project developer to undertake the largest transportation infrastructure development project in the state of Colorado. Construction began on this $1.3 billion project in August 2018.

The financing includes a $416 million TIFIA loan from the U.S. Department of Transportation and $114 million of Private Activity Bonds. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

$1.3 billion
project—includes $416 million TIFIA loan and $114 million Private Activity Bonds

Supported by contracts backed by investment-grade credit ratings, the bonds were sold at a competitively low interest rate that generated savings for CDOT. Construction will take approximately four years to complete. In addition to starting construction, the KMP team also initiated maintenance of the 10-mile corridor in the fall of 2018. KMP will continue to operate and maintain the Central 70 project for 30 years after construction is complete. HPTE will collect the toll revenue from the Express Lanes and provide oversight management of the Project Agreement with KMP.

20 miles
of Express Lanes

Ongoing transparency in public outreach and involvement is critical to the success of the Central 70 Project. Since 2004, the project team has held hundreds of meetings with project stakeholders. As construction began, the project participated in several initiatives aimed at recruiting and supporting a diverse local workforce. For example, the project is a partner of WORKNOW, a local job recruitment, advancement, and support platform for families living in neighborhoods directly affected by community construction projects like Central 70. So far, 168 people living in the local community have been hired to help with construction. This program helps meet the project's goals for job training and local hiring, and it also helps ensure the economic benefits of this large investment are realized by local communities impacted by the construction.

Anticipated completion:
2022

HPTE, through a partnership with Northeast Transportation Connections (NETC), is assisting with mitigating the impact the construction is having on the surrounding community by providing Transportation Demand Management (TDM) services for residents, businesses, and commuters to reduce travel demand along the I-70 corridor and encourage other modes of travel. Services being provided include incentivizing transit use, promoting car and vanpool use through local employers, and implementing a locally based shuttle service for residents. NETC also offers free shuttles to the grocery store, shuttles to free days at the zoo and museum for children, and free monthly RTD passes for those who qualify.

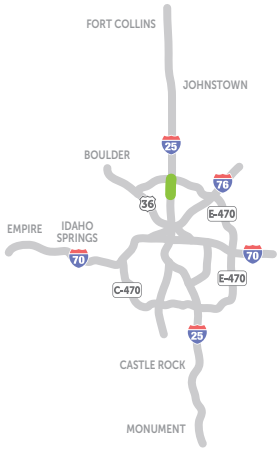
I-25 North Express Lanes—
120th Avenue to Northwest Parkway/E-470

Connections and Choice for North Denver, Thornton, Northglenn

Continuing the success of I-25 North/US 36 to 120th Avenue, CDOT is building five miles of Express Lanes from 120th Avenue to Northwest Parkway/E-470 in both directions. This project will provide increased safety, capacity, and user choice to a rapidly developing region—one of the most congested stretches of highway in the Denver metro area, serving an average traffic volume of 174,000 vehicles per day. The Final Environmental Impact Statement (FEIS) for this project identified Express Lanes as a preferred alternative for this corridor. Providing reliable travel times for regional bus service is a key objective for the project.

The majority of the $97.5 million project cost is funded by CDOT, with a $22 million shortfall in funding resources provided by a commercial loan secured by HPTE. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

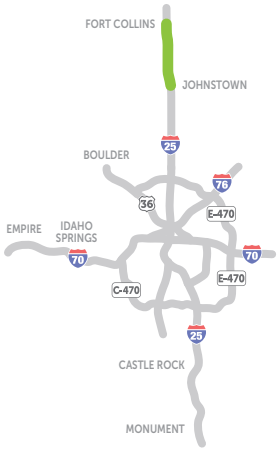
The I-25 North Express Lanes Project from 120th Avenue to Northwest Parkway/E-470 is scheduled to open in 2020.



$97.5 million
project—includes $22 million commercial loan secured by HPTE

10 miles
of Express Lanes

Anticipated completion:
2020



$341 million
project—HPTE expects to finance $50 million

34 miles
of Express Lanes

Anticipated completion:
2022

I-25 North Express Lanes—Johnstown to Fort Collins: *Construction Begins*

Northern Colorado is one of the fastest-growing areas in the state. I-25 between Denver and Fort Collins has experienced a steady degradation of reliable travel times as more traffic squeezes onto an interstate that has not seen significant structural or service improvements since 1965. As regular commuter traffic increases, regional bus service is also becoming increasingly important.

The $341 million project broke ground in September 2018. Project funding came from a combination of federal, state, and local money from communities and counties served by this corridor. HPTE expects to finance approximately $50 million of the total project. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

The project will:

- Increase highway capacity by adding an Express Lane in each direction
- Replace some aging bridges and widen others
- Include a Bus Rapid Transit (BRT) platform located in the median of I-25 near Kendall Parkway, which will provide a direct pedestrian connection to a new Park-n-Ride facility at the Centerra Shopping Complex
- Create new pedestrian and bicycle access under I-25 at Kendall Parkway
- Connect the Cache la Poudre River Regional Trail under I-25 and network to 100 miles of trails, which also serve as a wildlife corridor

The contractor for the project is Kraemer/Interstate Highway Construction and the project is scheduled to be completed in 2022.

I-25 South—Monument to Castle Rock:
Solutions to Improve the "Gap"

The 18-mile stretch of I-25 between Monument and Castle Rock is known as the "Gap" because it narrows to two lanes in each direction, constricting traffic between the southern and northern sections of the highway that have been improved to three lanes in each direction. I-25 South from Denver to Colorado Springs is one of the most critical highway corridors in Colorado's transportation network.

The majority of the $382 million project cost is funded by CDOT and includes a $65 million Infrastructure for Rebuilding America (INFRA) grant. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

The Gap remains essentially unchanged since its original construction and it has not kept pace with modern travel demands, creating volatile traffic conditions. The two-lane configuration in each direction—in combination with tight horizontal curves, long climbing grades, and narrow shoulders—creates limited options for drivers to maneuver around slow vehicles, crashes, or other obstacles, especially when traffic volumes are high. As a result, this corridor experiences regular congestion and traffic incidents, which often propagate throughout the corridor and lead to serious queuing problems. If a crash, weather event, or other emergency forces the closure of I-25 mainline lanes, drivers can be stuck for hours, and emergency vehicles and snow plows are offered limited space for staging and response.

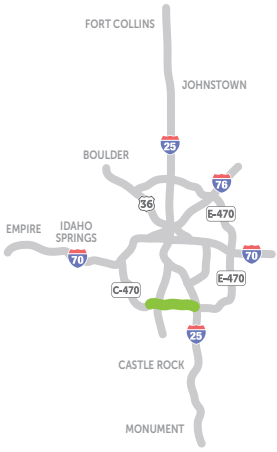
As part of the project, which includes the construction of a tolled Express Lane in each direction from Monument to Castle Rock, HPTE conducted a traffic and revenue study on the corridor. Highlights of the study include:

- There will be substantial growth in both Douglas County and El Paso County over the next 25 years. Both counties are forecasted to experience a 48 percent increase in population from 2015 to 2040. As a result, traffic will continue to increase not only along the Gap but along the entire I-25 corridor from C-470 to Colorado Springs.
- The Express Lanes will provide travel time reliability for users of both the general purpose lanes and Express Lanes.
- The Stated Preference Survey showed that a majority of the respondents support the project and have a very similar value of time to users of both the C-470 Express Lanes project and other Express Lane corridors in the metro area.

$382 million
project—includes $65 million INFRA grant

36 miles
of Express Lanes

Anticipated completion:
2022



$276 million
project—HPTE provided $161.7 million in revenue bonds and secured $106.9 million in TIFIA loan

30 miles
of Express Lanes

Anticipated completion:
2019

C-470 Express Lanes—I-25 to Wadsworth Boulevard:
Construction Advances on Busy Commuter Route

The C-470 Express Lanes project, which broke ground in 2016, is located between I-25 and Wadsworth Boulevard. The project includes reconstruction of existing pavement, adding auxiliary lanes, improving on- and off-ramps, and constructing new Express Lanes both westbound and eastbound, totaling 30 miles. The Express Lanes will open for tolling in 2019.

Peak-hour congestion has long been a problem for frequent commuters on C-470. Over 100,000 motorists currently use this segment of C-470 each day, with volumes projected to increase 40 percent by 2035.

Express Lanes in each direction, new auxiliary lanes, and enhanced geometrics and safety improvements will offer substantial travel time savings during peak periods now and for the future growth to come.

Total project cost is $276 million, shared between federal, state, and local sources. HPTE provided $161.7 million in revenue bonds and secured a $106.9 million federal TIFIA loan to support the project. The financing will be paid from and secured by gross toll revenues generated by the project. See Appendix A: Summary of Express Lane Projects for full financial breakdown.

The C-470 Express Lanes project is a Design-Build delivery. In 2018, the construction team on the C-470 Express Lanes project met many major milestones, including:

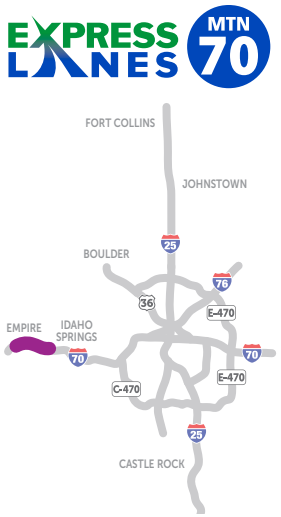
- Bridge work at University Boulevard, Broadway, Big Dry Creek, Acres Green Drive, Erickson Boulevard, and Yosemite Street was completed;
- Work on the Highline Canal Trail, Willow Creek Trail widening and lengthening, and new pavement and guardrail on the Mary Carter Greenway Trail was completed;
- Ramps in the eastbound direction: Lucent Boulevard on- and off-ramps, University Boulevard on-ramp, Broadway on-ramp, and Quebec Street on-ramp were all completed; and
- Installation of backbone conduit for Intelligent Transportation Systems (ITS)—the electronics for ramp metering and Express Lanes tolling—is 95 percent complete.

Express Lanes in Development

I-70 Mountain Express Lane (westbound) Project:
Increasing Capacity for the Mountain Corridor

Building on the success of the I-70 Mountain Express Lane (eastbound), the $80 million I-70 Mountain Express Lane (westbound) project includes a $25 million INFRA grant. See Appendix A:
Summary of Express Lane Projects for full financial breakdown.

The project will add an approximate 12-mile tolled Express Lane on westbound I-70 between the Veterans Memorial Tunnels and the US 40/I-70 interchange. The general purpose lanes and shoulder of westbound I-70 are to be resurfaced and widened in select locations to accommodate a travel lane on the shoulder during peak travel periods. The westbound Mountain Express Lane will maximize the use of the existing alignment and infrastructure in order to minimize any new impacts within the study area. The 11-foot shoulder lane will open for use only during peak periods, and will otherwise serve as the shoulder of the interstate. Construction is expected to commence in summer 2019, continuing through winter 2020, and opening to traffic in the winter of 2020/2021.



$80 million
project—includes $25 million INFRA grant

12 miles
of Express Lanes

Anticipated completion:
2021

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Summary of Additional 2018 Activities

Strategic Planning: Express Lane Master Plan

Currently, there are 68 miles of Express Lanes in operation, with an additional 142 miles becoming operational by 2022. As Colorado continues to grow and develop, the proven success of Express Lanes and the use of toll revenue-backed project financing, which supports accelerated transportation infrastructure development, has created a need to develop a statewide strategic Express Lane Master Plan (ELMP) to proactively prepare for Colorado's future needs.

The ELMP will serve as a comprehensive, long-term, strategic road map for the prioritization, planning, and development of future Express Lane projects to deliver the overall statewide program most efficiently based on key considerations highlighted in the diagram below.

The goal of the ELMP is to:

- Identify and prioritize which corridors have the potential to benefit from Express Lanes in the future;
- Identify potential revenue-generating capacity of those corridors;
- Identify whether the corridor could benefit from emerging technologies, i.e., Connected and Autonomous Vehicle (CAV) infrastructure; and
- Identify if HOV travel should be a component on the corridor.

Two workshops—designed to gather stakeholder feedback and inform goals, objectives, potential corridors, and evaluation criteria—took place in August and December 2018.

The ELMP is due to be completed by Fall 2019.

EXPRESS LANE MASTER PLAN KEY CONSIDERATIONS

Communications and Public Outreach

Focus Groups and Feedback

In February 2018, HPTE hosted four focus groups in the Denver metro area. The participants were selected based on different Express Lanes usage, geographic locations, gender, age, occupation, and level of education.

Focus group participants discussed how some people are confused about the best way to use the Express Lanes and the rules and tools needed for them. Conversely, people who have Express Lanes in their area and use them regularly are quicker to understand and articulate their benefits. In addition, people understand the value of Express Lanes when it benefits them directly and see the benefit in situations when they need to save time.

This conclusion was also reflected in recent surveys, as well as in comments submitted to CDOT in response to proposed Express Lanes projects. This suggests that Express Lanes face skepticism or criticism from numerous Coloradans, particularly those who are not already familiar with Express Lanes. However, as was emphasized in the focus groups, results are different in areas with existing Express Lanes or where Express Lanes are under consideration and there has been extensive public outreach and education.

For example, as part of the I-25 South Express Lanes project development, more than 3,500 people living across 45 zip codes in the corridor between Castle Rock and Monument were surveyed following extensive outreach and education about Express Lanes. The survey—conducted through direct mail, email, and a project website—had more than 2,700 respondents. The key outcome of the survey showed that a majority of residents in El Paso and Douglas counties support Express Lanes. Respondents who supported the project believe Express Lanes will reduce congestion and result in faster travel times.

When considering all respondents' attitudes toward tolling, fully three-quarters said they would use an Express Lane if the tolls are reasonable and they will save time. Also, nearly 60 percent responded positively to using an Express Lane if it guarantees a reliable travel time.

4
focus groups in the Denver metro area

3 out of 4
respondents would use an Express Lane if the tolls are reasonable and save time.

60%
responded positively to using an Express Lane if it guarantees a reliable travel time.

Express Lanes Campaigns: When It Matters Most

Based on these findings, HPTE embarked on a campaign to educate the public about Express Lanes to highlight their benefits.

The "When It Matters Most" campaign launched in mid-September and ended in late-October 2018. The campaign focused on specific benefits of Express Lanes and encouraged people to try the US 36 and I-25 Express Lanes. It highlighted that Express Lanes are always a choice that provides trip reliability when you really need it. The campaign scenarios were chosen to make the story relatable and showcase the approximate time savings and affordability of Express Lanes to get people to try the Express Lanes. The results of the campaign are highlighted in the diagram below.

"When it Matters Most" Campaign Results

8.6 MILLION TOTAL IMPRESSIONS

41%* increase in website traffic compared to previous year

I-25 North Express Lane Usage increased by an average of **12%***

When September/October data from 2018 was compared with data from the same months in 2017.

Toll Adjustment Process

Annual Toll Adjustment

The HPTE Board of Directors reviews the need for toll rate adjustments annually for all operational corridors.

US 36 and I-25 Central Express Lanes

PRD, the organization that operates and maintains the US 36 and I-25 Central Express Lanes, proposed a toll rate adjustment, per the terms of the US 36 Concession Agreement, to manage congestion and ensure reliable travel times. The 2018 adjustment is part of the transition to dynamic pricing on these Express Lanes. On average, rates went up about 4 percent, mostly during peak travel periods. These adjustments allow PRD to better manage traffic flow in the US 36 and I-25 Central Express Lanes during the transition to dynamic pricing and to calibrate the traffic to provide a more indicative baseline for dynamic Express Lane pricing and implementation. The HPTE Board of Directors approved the move to dynamic pricing adjustments in June and an adjustment to rates during the September Board of Directors meeting.

Each phase of the transition to dynamic pricing includes a public outreach component, including messages on variable message signs in advance of the adjustment, media and social media outreach, and updates provided to community organizations and elected officials.

I-25 North Express Lanes (US 36 to 120th Avenue)

Toll rates were adjusted on the I-25 North Express Lanes (US 36 to 120th Avenue) for the first time since the corridor opened in 2016. A 5.8 percent increase in Automated Vehicle Identification (AVI) and License Plate Tolls (LPT) went into effect on July 1, 2018. A three-fold analysis (traffic demand management, costs of operations/maintenance, and inflation) was undertaken to analyze the potential need for a toll rate adjustment. The HPTE Board of Directors approved the toll rate adjustment during the June Board of Directors meeting.

I-70 Mountain Express Lane (Eastbound)

The Mountain Express Lane uses dynamic pricing, which continually adjusts the toll rate based on traffic conditions to maintain free-flowing traffic. Under this system, prices increase when the toll lane is relatively full and decrease when the toll lane is less full. Toll rates ranged from $4 to $7 per trip in 2017/2018.

Oversight of Tolling and Concession Agreements

HPTE's authorizing statute requires Intra Agency Agreements (IAAs) for each Express Lane project and HPTE is mandated to oversee and manage operational agreements with its public and private-sector partners. In 2017, HPTE and CDOT established a template for their IAAs. The agreements between HPTE and CDOT and/or other agencies document the substantive terms of how HPTE and CDOT work together and allocate rights and responsibilities on shared projects.

IAAs can include provisions for administrative payment procedures, commercial loan terms (if any), processes for requesting a back-up loan (if any), terms governing delays in project completion (if a commercial loan dictates when revenue collection begins), terms governing shared operations, and allocation of operations and maintenance costs. The terms of each IAA address the unique needs and circumstances of each project. IAAs are currently in place for the I-70 Mountain Express Lane, C-470, Central 70, I-25 North Express Lanes from US 36 to 120th Avenue, and from 120th Avenue to Northwest Parkway/E-470.

Large P3 projects are governed by concession agreements or project agreements, which require considerable detailed oversight by HPTE. The documents contain the contract provisions, standards of service, and other agreements to which each agency will be held. They include multiple schedules that describe agreements ranging from financial agreements to maintenance, construction, and performance requirements. HPTE provides oversight of the Concession Agreement with PRD on US 36 and the Project Agreement with KMP on Central 70.

Improvements to Safety and Enforcement

Colorado State Patrol performs

3,200 hours

of annual safety enforcement along the US 36 and I-25 corridors

Express Lanes require enhanced operations and resources to ensure that toll-paying customers, qualifying HOV vehicles, and transit vehicles are provided with a reliable trip compared to adjacent general purpose lanes. Additional resources, monitoring, and incident response training has led to increased safety conditions along existing Express Lane corridors in both the Express Lanes and general purpose lanes.

Both the US 36 and I-25 Central (20th Street to US 36) corridors include dedicated operations and monitoring staff employed by PRD, who monitor corridor conditions during peak periods to ensure lanes are functioning properly and safely. Dedicated monitoring helps quickly detect incidents when they occur, facilitate coordination with the Colorado Transportation Management Center, and communicate real-time conditions to emergency response teams en route to the scene.

Toll and Traffic Enforcement

The Colorado State Patrol (CSP) entered into an agreement with PRD to provide a total of 3,200 hours of annual safety enforcement along the US 36 and I-25 Express Lane corridors. Additional CSP presence on both corridors has helped reduce unsafe driving and increased the efficiency of both the Express Lanes and the general purpose lanes. As a result, the dedicated safety enforcement on US 36 led to an 8 percent reduction in corridor crashes compared to the previous three-year average.

From July 2017 through June 2018, CSP took enforcement action on approximately 4,300 drivers. The leading unsafe driving action was speeding, which accounted for more than 60 percent of the tickets issued. Tickets were also issued for illegally entering and exiting the Express Lane by crossing the solid white lane lines and for drivers who failed to pay the toll. There were also 14 drivers arrested for driving under the influence of alcohol on the toll corridors. Citations for safety and toll violations result in fines ranging from $150 to as much as $1,000.

Building HPTE Technical Capacity

HPTE Technical Staff

HPTE is becoming more than a financing entity as Express Lane projects are implemented. In response to its expanding capacity, HPTE added a Major Projects Manager position and a Tolling Operations Manager. Since starting in 2018, the Major Projects Manager has:

- Increased internal technical capability instrumental to project delivery and Express Lanes operations. This position manages CDOT staff, concessionaires and their subcontractors, and HPTE's consultants during the construction and operations phases of projects, acting as a technical expert and liaison to CDOT regional staff and HPTE's private partners;
- Successfully implemented an Express Lane Traffic Enforcement Program on I-25 North and the I-70 Mountain Express Lane (eastbound) in cooperation with the CSP;
- Worked with CDOT Region 1 Traffic on design and installation of a wrong way vehicle detection system on the 70th Ave. ramp to the I-25 Express Lane;
- Partnered with the C-470 construction team and E-470 on a fiber optic intergovernmental agreement for completion of a fiber optic cable splice at the County Line Node;
- Worked with the HPTE Budget and Special Projects Manager on developing an estimate for long term capital maintenance of HPTE assets; and
- Facilitated installation of additional safety barrier.

In 2018, the Tolling Operations Manager has:

- Represented HPTE at Express Lanes projects meetings, including the I-25 South Gap project and I-25 North; reviewed Environmental Assessment documents, provided guidance on tolling strategies on projects and attended public hearings;
- Worked with the State Attorney General's Office, CDOT Procurement, FHWA and the E-470 Public Highway Authority to reach a 3-year extension on the E-470 Tolling Services Agreement until June 2023;
- Represented HPTE at the Transportation Research Board Mid-Year Conference in September and at the International Bridge Tunnel Turnpike Association Annual Conference in October;
- Worked with tolling concessionaire PRD and the Governor's Office of Information Technology during the February 2018 cyberattack to ensure that tolling operations were restored quickly to minimize the compensation event amount due to PRD;
- Worked with FHWA, the Colorado State Procurement Office, the CDOT Procurement Office and E-470 to enter into an industry-first joint procurement with the E-470 Public Highway Collection System. As a result of this adjustment, HPTE saved $750K-$1 million and was able to expedite the procurement process by more than a year. HPTE expects to have the new vendor under contract and ready to install the new toll collection equipment with dynamic tolling capabilities in Express Lane projects by 2023.

Budget and Finance

In recognition of the specialized nature of the expertise and services HPTE provides to CDOT, and because of HPTE's enterprise status, CDOT pays HPTE through a Fee-for-Service IAA. In March 2018, HPTE and CDOT entered into a fiscal year (FY) 2018-19 Fee-for-Service IAA. The IAA includes a Scope of Work (SOW) and Fee-for-Service request that covers July 1, 2018, to June 30, 2019.

This IAA documents the terms of the overall business relationship between CDOT and HPTE. It includes the scope of work CDOT wishes HPTE to provide in FY 2018-19, the value being compensated for key areas of work and the process by which HPTE charges CDOT for the fair market value of the services. The value of services provided corresponds with the HPTE Fee-for-Service Budget that the Transportation Commission approved in March 2018. This annual process ensures that HPTE can complete work on behalf of CDOT within its currently approved budget for the current fiscal year.

In September 2018, HPTE started the budget planning process for the upcoming FY 2019-20, including the development of an annual work plan. The FY 2019-20 budget will be finalized and approved in March 2019.

Special Projects: Opportunities for Creative Financing and Revenue Generation

HPTE has moved into a period of accelerated growth as it manages a growing Express Lanes network and continues to explore and deliver P3 projects. As part of this phase of growth, HPTE is exploring new opportunities for creative financing for infrastructure, including exploring how multiple jurisdictions could come together to form special districts to fund critical transportation projects. In addition, HPTE is advancing the following:

- **Federal Boulevard & Colfax Avenue:** HPTE is partnering with CDOT, the City and County of Denver, and the West Colfax Business Improvement District to explore possible reconfiguration and development options for the Federal Boulevard and Colfax Avenue cloverleaf interchange. This effort is being spearheaded in parallel with the Stadium District Master Planning process being led by the City.
- **Parking Analysis:** HPTE is partnering with the CDOT Division of Transit and Rail on a study of existing CDOT-owned Park-n-Ride facilities. In addition to daily commuters and carpoolers, these facilities are used by the CDOT-operated Bustang regional bus service. HPTE is exploring innovative ways to produce operational efficiencies for buses and Park-n-Ride users.
- **RoadX Collaboration**: RoadX is currently working on a number of projects, including partnerships with Hyperloop One, that will require the combined efforts of RoadX and HPTE to move these innovative technologies forward.
- **Digital Billboards:** HPTE is working to implement a revenue-sharing opportunity based on billboard advertising sales. The partnership also makes a portion of all advertising time available for safety and emergency messages or other state of Colorado messaging.

Industry and Technical Training

Every year, HPTE invests hundreds of staff hours for industry and technical training, including FHWA peer exchanges, industry conferences, and seminars. The 2015 Legislative Audit of the US 36 project directed HPTE to identify staff training needs and ensure that adequate resources are allocated to provide ongoing training, including project management training.

In 2018, HPTE staff participated in more than 20 industry events, trainings, and conferences. Highlights include staff participation in P3 specific trainings sponsored by the FHWA, seminars conducted by the Transportation Research Board (TRB) and the Build America Transportation Investment Center (BATIC) Institute. Staff also participated in the American Association of State Highway and Transportation Officials (AASHTO) conferences, UK Infrastructure and Projects Authority's P3 and Infrastructure Course 2018, and an an HPTE facilitated an FHWA peer exchange.

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Revenues and Expenses

HPTE Fiscal Year 2017-2018 Revenues and Expenses

Revenues and expenses of HPTE are accounted for on a fiscal year (FY) basis. For this 2018 Annual Report, data from FY 2017-18 (which started on July 1, 2017, and ended on June 30, 2018) are being used. The Colorado High Performance Transportation Enterprise statute, Section 43-4-806 CRS, requires two separate funds for management of the Enterprise: (1) Statewide Transportation Enterprise Special Revenue Fund (Fund 536); and (2) Statewide Transportation Enterprise Operating Fund (Fund 537).

Laws require that the Transportation Special Fund 536 is maintained and reported on separately from the Operating Fund 537. Therefore, revenue and expense information are reported separately by fund for this report. HPTE's finances are audited each year as part of the state audit. The audited financial statements for FY 2017-18 will be posted on the HPTE website by the end of January 2019 at **www.coloradoHPTE.com**.

Summary of Fund 536

Fund 536 receives revenues collected from tolls, fees, and other fines on Express Lane corridors. Fund 536 also uses debt and other financing proceeds to pay for eligible project expenses and capitalized interest. Revenues are used primarily for expenses related to tolling operations of an Express Lanes corridor, including toll processing, maintenance, and debt service.

Summary of Fund 537

Fund 537 receives revenues from fees for services it provides to CDOT and earned interest. Revenues are used primarily for expenses related to administration of the HPTE program, including staff time, communications, and project development.

See Appendix B: HPTE Fiscal Year 2017-18 Budget to Actual for further information on Funds 536 and 537.

Recommended Statutory Changes for 2019

HPTE is not recommending any legislation for the 2019 session.

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Appendices

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Appendix A: Summary of Express Lane Projects

EXPRESS LANES IN OPERATION

I-25 Central Express Lanes—20th Street to US 36

Description 6 miles from Downtown Denver to US 36; barrier separated, reversible, two lanes; single toll gantry

Delivery Method Originally delivered as a bid-build project

Tolling Strategy Single toll point in each direction (reversible)

AVI Low & High Rates

Time-of-day:	$0.95 to $5.25
Weekends:	$0.95
Truck surcharge:	$25

Total Cost $217 M (1991 $$)

Funding Sources

Federal	$127.0 million
RTD	$54.0 million
CDOT	$14.0 million
CCD	$22.0 million

2004 $2.8 million FHWA Value Pricing Program for HOV conversion, conversion cost total around $9 million

Governance Upon opening, operations governed by intergovernmental agreement (IGA) with RTD for toll rates and travel times

Now part of the US 36 P3, the lanes are governed by the terms of the US 36 Concession Agreement (CA)

Benchmarks and Delivery Date Opened for tolling June 2006

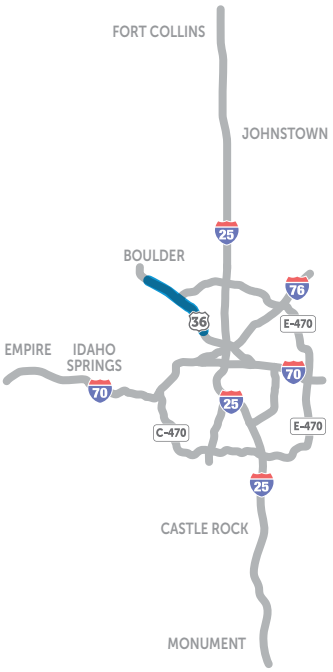
Became part of the US 36 P3 project in March 2014

Notes and History Opened by RTD and CDOT as a bus lane w/HOV in the 1990s

Automated gate system for reversible lane access, closure, and sweep

EXPRESS LANES IN OPERATION

US 36 Express Lanes



Phase 1 Pecos Street to Interlocken Loop

Description 20 miles (both directions) from Pecos Street to Interlocken Loop; two single lanes, buffer separated; operates 24/7

Delivery Method Design-Build project delivery

Tolling Strategy 5 toll points in each direction

AVI Low & High Rates

Time-of-day:	$0.35 to $0.95 per gantry
Weekends:	$0.35
Truck surcharge:	$25

Total Cost $317.9 M

Funding Sources

TIGER	$10.0 million
TIFIA	$54.0 million
CDOT	$77.7 million
DRCOG	$46.6 million
RTD	$124.0 million
Local	$5.6 million

Benchmarks and Delivery Date Opened for tolling in July 2015

Phase 2 Interlocken Loop to Table Mesa Drive

Description 12 miles (both directions) from Interlocken Loop to Table Mesa Drive; two single lanes, buffer separated; operates 24/7

Delivery Method P3 Design-Build-Finance-Operate-Maintain project delivery

Tolling Strategy 2 toll points in each direction

AVI Low & High Rates

Time-of-day:	$0.35 to $0.95
Weekends:	$0.35
Truck surcharge:	$25

Total Cost $179.5 million

Funding Sources

Private*	$120.0 million
CDOT	$15.0 million
DRCOG	$15.0 million
RTD	$18.5 million
Local	$11.0 million

**Includes $60 M TFIA loan*

Benchmarks and Delivery Date Opened for tolling in March 2016

Phase 1 and 2 Pecos Street to Interlocken Loop to Table Mesa Drive

Governance

Total Phase 1 and 2 cost is $497.4 million

50-year Revenue Risk Concession Agreement between Plenary Roads Denver and HPTE, which began in 2016

CDOT oversaw construction

CA fully executed February 2014. CA caps tolls for Phase 1 and Phase 2 at $15.76 total in 2018 dollars

Notes and History

Originally built as a toll road (Boulder-Denver Turnpike) in 1951

Environmental Impact Statement (EIS) began in 2003 and was completed in 2009

Regional commuter bike trail is a significant design feature

American Association of State Highway and Transportation Officials, Grand Prize: Use of Technology and Innovation

EXPRESS LANES IN OPERATION

I-70 Mountain Express Lane (Eastbound)—Empire to Veterans Memorial Tunnels

Description 12 miles from Empire through Veterans Memorial Tunnels. One single lane, peak travel times only

Delivery Method Construction Manager/General Contractor project delivery

Tolling Strategy 3 toll points

AVI Low & High Rates

Demand/Peak-Period range:	$3.00 to $30.00
General price:	$4.00 to $7.00

Total Cost $72.0 M

Funding Sources

HPTE	$24.6 million*
CDOT	$47.4 million

**Includes financing costs*

Governance Intra-Agency Agreement with CDOT

Loan Agreement with Bank of America

Benchmarks and Delivery Date Opened for tolling in December 2015

Notes and History Shoulder lane open during peak travel times only, 100 days total per year

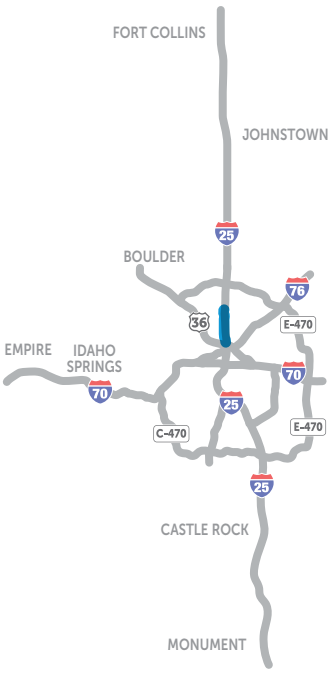
No HOV; vehicles more than 25 feet in length or more than two axles not allowed

Governor's Elevation Award for Superior Customer Service

Women's Transportation Seminar (WTS), Colorado Innovative Transportation Solution of the Year

EXPRESS LANES IN OPERATION

I-25 North Express Lanes—US 36 to 120th Avenue



Description
12 miles (both directions) from US 36 to 120th Avenue; single lanes northbound and southbound, buffer separated, operates 24/7; focus on the extension of I-25 Express Lanes and regional express bus

Delivery Method
Design-Build project delivery

Tolling Strategy
3 toll points in each direction (Segmented tolling)

AVI Low & High Rates

Time-of-day:	$1.05 to $3.15
Weekends:	$1.35
Truck surcharge:	$25

Total Cost
$64.8 M

Funding Sources

TIGER Grant	$15.00 million
Federal	$32.37 million
State	$9.15 million
Local	$8.28 million

Governance
Intra-Agency Agreement with CDOT

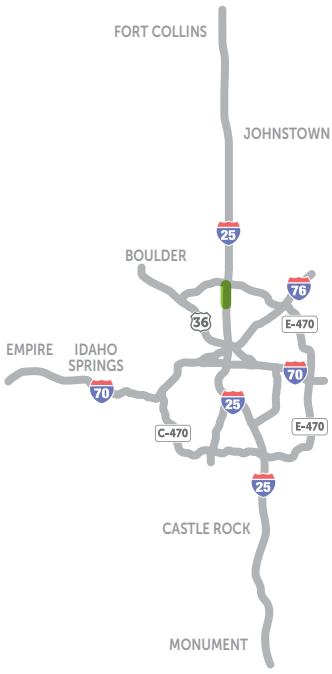
Benchmarks and Delivery Date
Opened for tolling in July 2016

Notes and History
Express Lanes designed to fit within the existing road footprint; direct connect with I-25 Central (southbound only during AM peak)

Sound barrier and Active Traffic Management are significant design features

EXPRESS LANES UNDER CONSTRUCTION

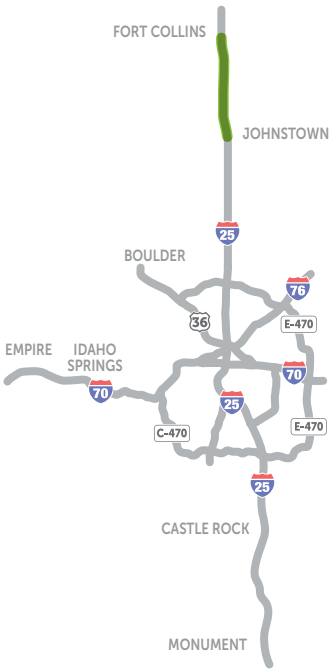
I-25 North Express Lanes—120th Avenue to Northwest Parkway/E-470



Description	10 miles (both directions) from 120th Avenue to E-470/Northwest Parkway; single lanes northbound and southbound, buffer separated, operates 24/7; extension of I-25 Express Lanes and regional express bus
Delivery Method	Design-Bid-Build project delivery
Tolling Strategy	6 toll points are anticipated (Segmented tolling)
AVI Low & High Rates	Toll schedule to be determined
Total Cost	$97.5 M
Funding Sources	CDOT $75.5 million HPTE* $22.0 million **May also include financing costs*
Governance	Intra-Agency Agreement with CDOT Loan Agreement with Bank of America
Benchmarks and Delivery Date	Project is currently being constructed and will open for tolling in 2020
Notes and History	Project will widen approximately 16 feet to 18 feet to the outside of the road to accommodate the additional new lane in each direction Sound barrier, median lighting, median barrier, and water quality treatment are significant project features

EXPRESS LANES UNDER CONSTRUCTION

I-25 North Express Lanes—Johnstown to Fort Collins:



Description
34 miles (both directions) from SH 402 to SH 14; two single lanes, buffer separated, operates 24/7; extension of I-25 Express Lanes and regional express bus platform located in the median of I-25 near Kendall Parkway, which provides a direct pedestrian connection to a new Park-n-Ride facility

Delivery Method
Design-Build project delivery

Tolling Strategy
6 tolling points are anticipated

Final design and toll schedule to be determined

Total Cost
$341 M

Funding Sources

CDOT	$178.5 million
Local	$56.0 million
HPTE*	$50.0 million
Federal	$41.7 million
TIGER	$15.0 million

**May also include financing costs*

Governance
Intra-Agency Agreement with CDOT

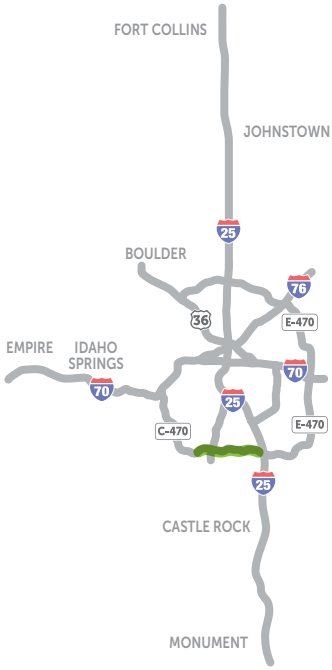
Potential loan agreement

Benchmarks and Delivery Date
The project began construction in September 2018 and will open for tolling in 2022

Notes and History
Environment Impact Statement completed in 2011. Entire northern corridor costs about $2.2 B; a phased approach to corridor improvements is being implemented

EXPRESS LANES UNDER CONSTRUCTION

C-470 Express Lanes—I-25 to Wadsworth Boulevard



Description
30 miles (both directions) from I-25 to Wadsworth Boulevard; westbound two express lanes from I-25 to Colorado Boulevard and one express lane from Colorado Boulevard to Wadsworth; eastbound one express lane from I-25 to Wadsworth, buffer separated; operates 24/7

Delivery Method
Design-Build project delivery

Tolling Strategy
7 toll points are anticipated

Time-of-day toll schedule to be determined

Total Cost
$326 M

Funding Sources

CDOT	$47.8 million
Local	$10.0 million
HPTE*	$161.7 million
TIFIA	$106.8 million

**Includes financing costs*

Governance
Intra-Agency Agreement with CDOT

Loan Agreement and Master Trust Indenture with TIFIA

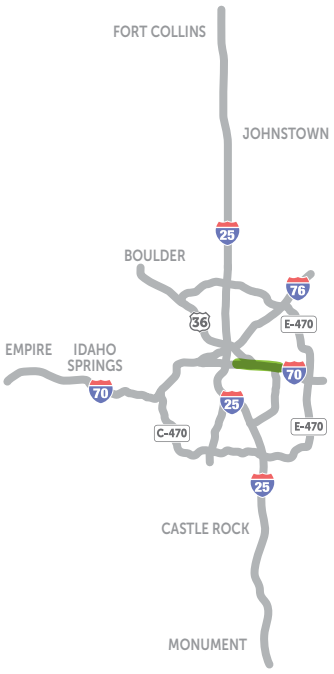
Benchmarks and Delivery Date
Construction began in August 2016 and the Express Lanes will open for tolling in 2019

Notes and History
Project includes full reconstruction of existing pavement, new auxiliary lanes, and reconfigured roadway geometry

No HOV option offered

EXPRESS LANES UNDER CONSTRUCTION

Central 70—Brighton Boulevard to Chambers Road



Description
20 miles (both directions) from Brighton Boulevard to Chambers Road

Delivery Method
P3 Design-Build-Finance-Operate-Maintain delivery with Project Agreement

Tolling Strategy
10 toll points are anticipated

Time-of-day schedule to be determined

Total Cost
$1.3 B (projected)

Funding Sources

Bridge Enterprise	$457.0 million
CDOT	$180.0 million
PABs	$114.6 million
TIFIA	$416.0 million
Private Equity	$65.0 million
Federal	$50.0 million

Governance
Project Agreement sets project scope of work and operational requirements

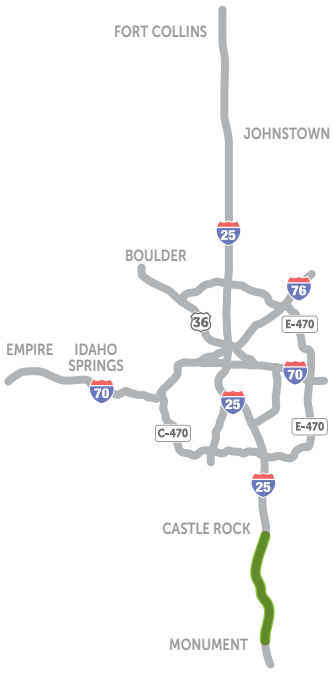
Availability Payment

Benchmarks and Delivery Date
The project began construction in August 2018 and will open for tolling in 2022

Notes and History
Record of Decision (ROD) was approved January 2017; financial close was completed December 2017; construction began in August 2018

EXPRESS LANES UNDER CONSTRUCTION

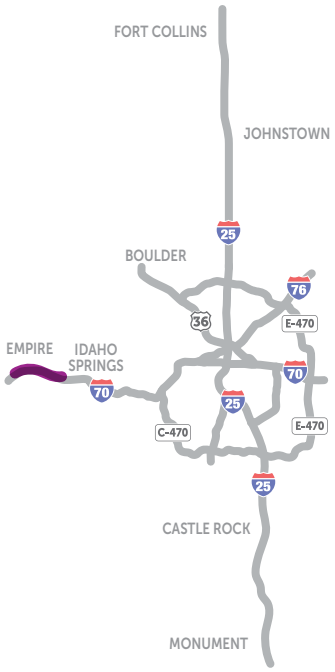
I-25 South—Monument to Castle Rock



Description	36 miles (both directions) from Monument to Castle Rock to be widened from four to six lanes
Delivery Method	CM/GC project Delivery
Tolling Strategy	4 toll points are anticipated (2 in each direction) Time-of-day schedule to be determined
Total Cost	$382 M
Funding Sources	CDOT $282.0 million Local $35.0 million INFRA $65.0 million
Governance	To be determined
Benchmarks and Delivery Date	The project began construction in September 2018 and will open for tolling in 2022 HPTE assisted with a Traffic and Revenue Analysis
Notes and History	Accelerated project delivery is a top goal. The Traffic and Revenue Analysis found that Express Lanes will provide travel time reliability for both general purpose lane and Express Lane users

EXPRESS LANES IN DEVELOPMENT AND PLANNING

I-70 Mountain Express Lane (westbound) Project



Description The westbound Mountain Express Lane project will add an approximate 12-mile tolled Peak-Period Shoulder Lane on westbound I-70 between the Veterans Memorial Tunnels (just west of MP 243) and the US 40/I-70 interchange (MP 232)

Delivery Method Design-bid-build delivery

Tolling Strategy Three-point toll throughout project limits with variable toll pricing to maintain an appropriate and reliable travel speed in the Mountain Express Lane. "Variable" refers to pricing based upon a time-of-day schedule

Total Cost $80 M (projected)

Funding Sources

CDOT	$55.0 million
INFRA	$25.0 million

Governance Transportation Commission/FHWA

Benchmarks and Delivery Date The I-70 Mountain Express Lane (westbound) is anticipated to open for tolling in winter 2020/2021

Notes and History Operational improvement similar to the eastbound I-70 Mountain Express Lane project intended to ease congestion and improve travel time reliability until an ultimate solution can be implemented

Appendix B: HPTE Fiscal Year 2017-18 Budget to Actual

Statewide Transportation Enterprise Special Revenue Fund (C.R.S. 43-4-806(3)(a)) 536

Line	Detail by Corridor	Budgeted Revenues	Budgeted Expenses	Year-to-Date	Remaining Budget
1	**U.S. 36 Managed Lanes (Cost Center T8620-536) Revenue**				
2	**Fiscal Year 2017-18 Revenues**				
3	Express Lanes Advertising Reimbursement From Plenary	$ 70,000		$ 254,668	$ 184,668
4	Interest Earnings	175,000		501,132	(326,132)
5	Annual Concession Management Fee	400,000		417,275	(17,275)
6	***Total FY 2017-18 U.S. 36 Available Revenue***	***$ 645,000***		**$ 1,173,074**	**$ (158,739)**
7	Additional Budget from FY 2016-17 Roll Forward	3,637,247			
8	***Total Current Available FY 2017-18 Operating Budget***	***$ 4,282,247***			
9	**Fiscal Year 2017-18 Expenses**				
10	CDOT Staff Consulting		$ 15,000	$ 20,748	$ (5,748)
11	Project Oversight		400,000	291,613	108,387
12	Toll Processing Oversight		200,000	-	200,000
13	Annual Audit		5,100	1,413	3,687
14	Attorney General Fees		10,000	3,821	6,179
15	Miscellaneous Corridor Studies		100,000	25,496	74,504
16	***Total U.S. 36 FY2017-18 Expenses***		***$ 730,100***	**$ 343,091**	**$ 387,009**
17	***U.S. 36 Remaining Balance***	***$ 3,552,147***			
18					
19	**I-25 North Managed Lanes (Cost Center T8630-536) Revenue**				
20	**Fiscal Year 2017-18 Revenues**				
21	Toll Revenue	$ 10,896,066		$ 7,399,796	$ 3,496,270
22	Transponder Revenue	450,000		724,712	(274,712)
23	Interest Earnings	1,500		4,422	(2,922)
24	I-25 North Loan Funds for Debt Service Payment	470,237		470,237	-
25	***Total I-25 North Managed Lanes FY2017-18 Revenue***	***$ 11,817,803***		**$ 8,599,167**	**$ 3,218,636**
26	**Fiscal Year 2017-18 Expenses**				
27	I-25 North Segment III Loan Payment		$ 470,237	$ 470,237	$ 0
28	Margin Rate Payment		77,987	-	77,987
29	CDOT Staff Consulting		15,000	5,762	9,238
30	Attorney General Fees		10,000	731	9,269
31	General Reimbursable Expenses and Toll Processing Costs		2,330,284	1,653,606	676,678
32	Corridor Operations & Maintenance		500,000	119,941	380,059
33	Note Registrar		1,000	-	1,000
34	Master Installment Purchase Agreement Debt Service		1,580,744	1,577,664	3,080
35	***Total I-25 North Managed Lanes FY2017-18 Expenses***		***$ 4,985,252***	**$ 3,827,941**	**$ 1,157,311**
36	***I-25 North Remaining Balance***	***$ 6,832,551***			
37					
38	**I-70 West Mountain Express Lanes (MEXL) (Cost Center T8640-536)**				
39	**Fiscal Year 2017-18 Revenues**				
40	Toll Revenue	$ 1,938,285		$ 1,947,767	$ (9,482)
41	Interest Earnings	1,000		1,173	(173)
42	MEXL Loan Funds for Debt Service Payment	697,500		697,500	-
43	FY2016-17 Rollforward	463,555		-	463,555
44	***Total MEXL FY2017-18 Revenue***	***$ 3,100,340***		**$ 2,646,440**	**$ 453,900**
45	**Fiscal Year 2017-18 Expenses**				
46	MEXL Loan Payment		$ 697,500	$ 697,500	$ 0
47	Margin Rate Payment		115,677	-	115,677
48	CDOT Staff Consulting		15,000	8,186	6,814
49	Attorney General Fees		10,000	593	9,407
50	General Reimbursable Expenses and Toll Processing Costs		172,264	173,517	(1,253)
51	Corridor Operations & Maintenance		383,625	114,061	269,564
52	Note Registrar		1,000	-	1,000
53	***Total MEXL FY2017-18 Expenses***		***$ 1,395,066***	**$ 993,857**	**$ 401,209**
54	***MEXL Remaining Balance***	$ 1,705,274			
55					
56	**C-470 Express Lanes (Cost Center T8650-536)**				
57	**Fiscal Year 2017-18 Revenues**				
58	C-470 Bond Proceeds for Debt Service	$ 8,500,000		$ 8,500,000	$ -
59	Interest Earnings on Bond Proceeds	$ -		$ 967,186	N/A
60	***Total C-470 FY2017-18 Revenue***	***$ 8,500,000***		**$ 9,467,186**	**$ (967,186)**
61	**Fiscal Year 2017-18 Expenses**				
62	Bond Debt Service		8,500,000	$ 8,089,750	$ 410,250
63	Bond Cost of Issuance		-	$ -	-
64	***Total C-470 FY2017-18 Expenses***		***$ 8,500,000***	**$ 8,089,750**	**410,250**
65	***C-470 Remaining Balance***	$ -			

Total Fund 536 Revenues	**$ 27,700,390**
Total Fund 536 Expenses	**$ 15,610,418**
Remaining Unbudget Funds	**$ 12,089,972**
MEXL Loan Balance	**$ 1,605,981**
Segment III Loan Balance	**$ 17,633,495**
C-470 Bond Proceeds Balance	**$ 65,218,167**
Cash Balance As of June 30, 2018	**$ 7,477,019**

Statewide Transportation Enterprise Operating Fund (C.R.S. 43-4-806(4)) 537

Line	Operations Details	Budgeted Revenues	Budgeted Expenses	Year-to-Date	Remaining Budget
1	**Fiscal Year 2017-18 Revenue**				
2	Fee for Service	**$ 5,169,500**		$ 5,169,500	$ -
3	Interest Earnings	**25,000**		62,493	(37,493)
4	Reimbursement from Fund 536 for HPTE Staff	**-**		20,919	(20,919)
5	***Total FY 2017-18 Operating Revenue***	**$ 5,194,500**		**$ 5,252,913**	**$ (58,413)**
6	Additional Budget from FY 2016-17 Roll Forward	**1,851,835**			
7	***Total Current Available FY 2017-18 Operating Budget***	**$ 7,046,335**			
8	**Fiscal Year 2017-18 Expenses**				
9	**Administrative Cost Center (T8700-537)**				
10					
11	**Program Operations**				
12	HPTE Staff Costs		**$ 958,900**	$ 888,896	$ 70,004
13	CDOT Staff Consulting		**100,000**	144,574	(44,574)
14	Attorney General		**90,000**	42,993	47,007
15	Annual Accounting & Audit Services		**55,200**	15,084	40,116
16	Board Expenses		**18,400**	6,774	11,626
17	Staff Training and Certifications		**45,000**	1,305	43,695
18	Administrative and Office Needs		**12,000**	9,855	2,145
19	Conferences and Industry Memberships		**10,000**	16,755	(6,755)
	Transportation Commission Loan Repayment		**1,500,000**	1,526,980	(26,980)
20	**Total Program Operations**		**$ 2,789,500**	**$ 2,653,215**	**$ 136,285**
21					
22	**Program Planning & Development**				
23	Program Management		**$ 100,000**	$ 73,301	$ 26,699
24	Express Lanes Communications and Public Affairs Support		**422,000**	268,880	153,120
25	P3 Advisor		**300,000**	15,241	284,759
26	Toll Operations Advisor		**200,000**	56,968	143,032
27	Professional and Legal Services		**500,000**	377,609	122,391
28	Surveillance and Ratings Fees		**150,000**	1,596	148,404
29	Strategic Partnerships and CDOT Project Support		**200,000**	42,636	157,364
30	Aconex Document Management System		**224,000**	191,500	32,500
31	Express Lanes Master Plan		**760,000**	79,740	680,260
32	Express Lane Project Development Support		**1,200,000**	777,412	422,588
33	In and Out of State Travel		**18,000**	21,825	(3,825)
34	Miscellaneous		**182,835**	14,830	168,005
35	**Total Program Planning & Development**		**$ 4,256,835**	**$ 1,921,537**	**$ 2,335,298**
36	***Total FY 2017-18 Operating Expenses***		**$ 7,046,335**	**$ 4,574,752**	**$ 2,471,583**
37	***Total FY 2017-18 Remaining Balance***	**$ -**			
	Total Fund 537 Revenues	**$ 7,046,335**			
	Total Fund 537 Expenses	**$ 7,046,335**			
	Remaining Unbudgeted Funds	**$ -**			
	Cash Balance As of June 30, 2018		**$ 2,840,775**		
	Transportation Loan Principal Balance		**$ 4,104,167**		

Appendix C:
Colorado Senate Bill 18-01 Managed Lanes Study

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COLORADO HPTE
PARTNER, INNOVATE, ACCELERATE.

COLORADO SENATE BILL 18-01

Managed Lanes Study

REPORT TO TRANSPORTATION LEGISLATION REVIEW COMMITTEE

Contents

List of figures & tables

1

Introduction

SECTION

1

The purpose of this document is to fulfill the requirements of Colorado Senate Bill (SB) 18-01, and report on the number of Managed Lanes, Managed Lane Financing, corridor-specific Managed Lane impacts, and the number of Managed Lane trips by different types of motor vehicles in Colorado.

1.1 Purpose of Document

This Managed Lanes Study report has been drafted as a result of Colorado SB 18-01. C.R.S.§ 43-2-151 requires the Colorado Department of Transportation to conduct or contract with an independent third party to conduct a data-driven study of the use of Managed Lanes throughout Colorado. Specifically, SB 18-01 mandates a data-driven report on:

- The number of Managed Lanes and the total lane miles of Managed Lanes in the state;
- How Managed Lanes are being used to finance highway projects and, with respect to any project financed in whole or in part through the use of Managed Lanes, whether the project would or could have been completed without the use of Managed Lanes;
- The statewide, regional, and transportation corridor-specific impacts of Managed Lanes on traffic congestion; and
- The number of trips made on Managed Lanes by different types of motor vehicles including, but not limited to, transit vehicles, commercial vehicles, high occupancy vehicles (HOV), and single occupant vehicles (SOV).

The purpose of this document is to not only fulfill the requirements as set out in the Act, but also to identify a range of factors to help inform stakeholders about Colorado's Express Lanes program to date. Pursuant to the requirements of SB 18-01, the results of this study as described throughout this document were also presented to the Transportation Legislation Review Committee (TLRC) on October 1, 2018.

1.2 Background

Express Lanes may be among the newest variant of tolling, but the overall concept is hardly new. Since the gold rush of 1858, toll roads have operated within Colorado. Colorado's contemporary history with tolling and Managed Lanes began in 1988. At this time, two events occurred:

- The creation of the E-470 Public Highway Authority (PHA), which authorized the state's first toll road (still in operation); and
- The investment by the Colorado Department of Transportation (CDOT), Regional Transportation District (RTD), City and County of Denver (CCD), U.S. Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) in a reversible bus/HOV facility on I-25.

Although the I-25 HOV lanes were successful upon opening and met the project's purpose, they provided excess unused capacity. In 1999, Colorado enacted SB 99-088 (the HOT Lane Act), which required CDOT to convert and operate the I-25 HOV lanes as tolled Managed Lanes. Since the first tolled Managed Lanes were opened in 2006 by the Colorado Tolling Enterprise (CTE) on I-25, the E-470 PHA has provided toll system integration and collection services for Colorado Express Lanes.

HPTE Organization

In 2009, SB 09-108 — the Funding Advancement for Surface Transportation and Economic Recovery (FASTER) Act — created the High Performance Transportation Enterprise (HPTE). The HPTE is the successor to the CTE that was established in 2002 when the Colorado General Assembly passed House Bill (HB) 02-1310. The goal of HPTE, pursuant to C.R.S.§ 43-2-151, is to:

- Aggressively pursue innovative means of more efficiently financing important surface transportation infrastructure projects that will improve the safety, capacity, and accessibility of the surface transportation system;
- That can be feasibly commenced in a reasonable amount of time; and
- That will allow for more efficient movement of people, goods, and information throughout the state.

The statute specifically states that HPTE may use public-private partnerships (P3), issue revenue bonds, enter into operating concession agreements, use design build contracting, and implement user-fee based project financing — also known as tolls.

HPTE operates and maintains the I-70 Mountain Express Lane (eastbound) and the I-25 North Express Lanes from US 36 to 120th Avenue. Plenary Roads Denver (PRD), a P3 partner to HPTE, operates and maintains the US 36 and I-25 Central reversible Express Lanes with HPTE overight of all activities.

HPTE's Mission

Partner with CDOT, private industry, and local communities

Aggressively pursue innovative financing alternatives not otherwise available to the state

Quickly deliver transportation infrastructure options that improve mobility

Communicate openly with all stakeholders

2

Number of Managed Lanes and Lane Miles

SECTION

2

Colorado has one of the fastest growing Express Lane networks in the western United States, with four facilities in operation and another six in development or under construction.

2.1 Colorado Express Lanes

This section has been drafted in accordance with SB 18-01, C.R.S.§ 43-2-151(1)(a), and describes the facilities in Colorado that are currently served by Express or Managed Lanes, as well as the facilities with Express Lanes under construction or in the planning and design phases. For the purposes of this report, **Express Lanes** are defined as lanes that involve a tolling component and fall under the jurisdiction of HPTE. By comparison, **Managed Lanes** are an umbrella term defined as any roadway lane that utilizes traffic management strategies (such as bus only lanes, HOV options, or active lane control systems). However, due to the Managed Lanes terminology used in SB 18-01, both terms are used interchangeably throughout this document.

Number and Location of Lane Miles

Altogether, there are three facilities with operational Express Lanes in Colorado:

- **I-25 from downtown Denver to 120th Avenue:** There are two discrete segments of I-25's Express Lanes:
  - **I-25 Central:** *A two-lane barrier-separated, reversible facility that opened in 2006 and extends from downtown Denver to US 36, operated by PRD.*
  - **I-25 North:** *A single-lane, concurrent flow facility (both directions between US 36 and 120th Avenue) that opened in 2016, operated by HPTE.*
- **US 36 from Table Mesa Drive to I-25:** Although procured in two discrete segments with different delivery mechanisms, US 36 functions as a continuous, single-lane, concurrent flow facility in both directions, and is operated by PRD. The initial segment opened in 2015, and the corridor was fully functional in 2016.
- **I-70 Mountain Express Lane Eastbound, from US 40 to US 6:** The I-70 Mountain Express Lane is a single-lane, concurrent flow express lane that operates in the eastbound, left-side shoulder during peak periods only. The lane opened in 2015, and is operated by HPTE.

These facilities provide for a total of 68 lane miles of operational tolled Express Lanes in the state. For comparison, CDOT reports that it maintains more than 23,000 total lane miles in Colorado. In addition to the operational facilities, there are six Express Lane projects currently under construction or in development, totaling 142 lane miles.

It is also worth noting that two part-time non-tolled HOV lanes also operate on Colorado highways, including Santa Fe Drive in the Denver metro area and SH 82 between Basalt and Aspen. **Figure 2-1** provides the lane miles of operational Express Lane facilities in Colorado, as well as those currently in construction or under development. **Figure 2-2** on the following page presents a map of these facilities.

Figure 2-1 // Lane miles of Managed Lanes

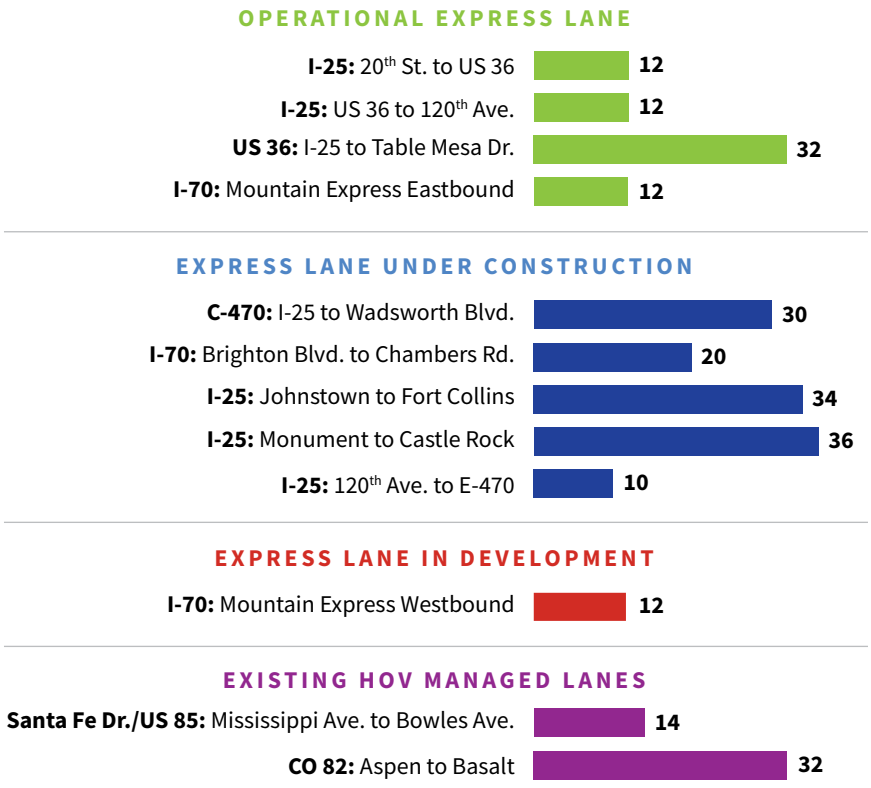
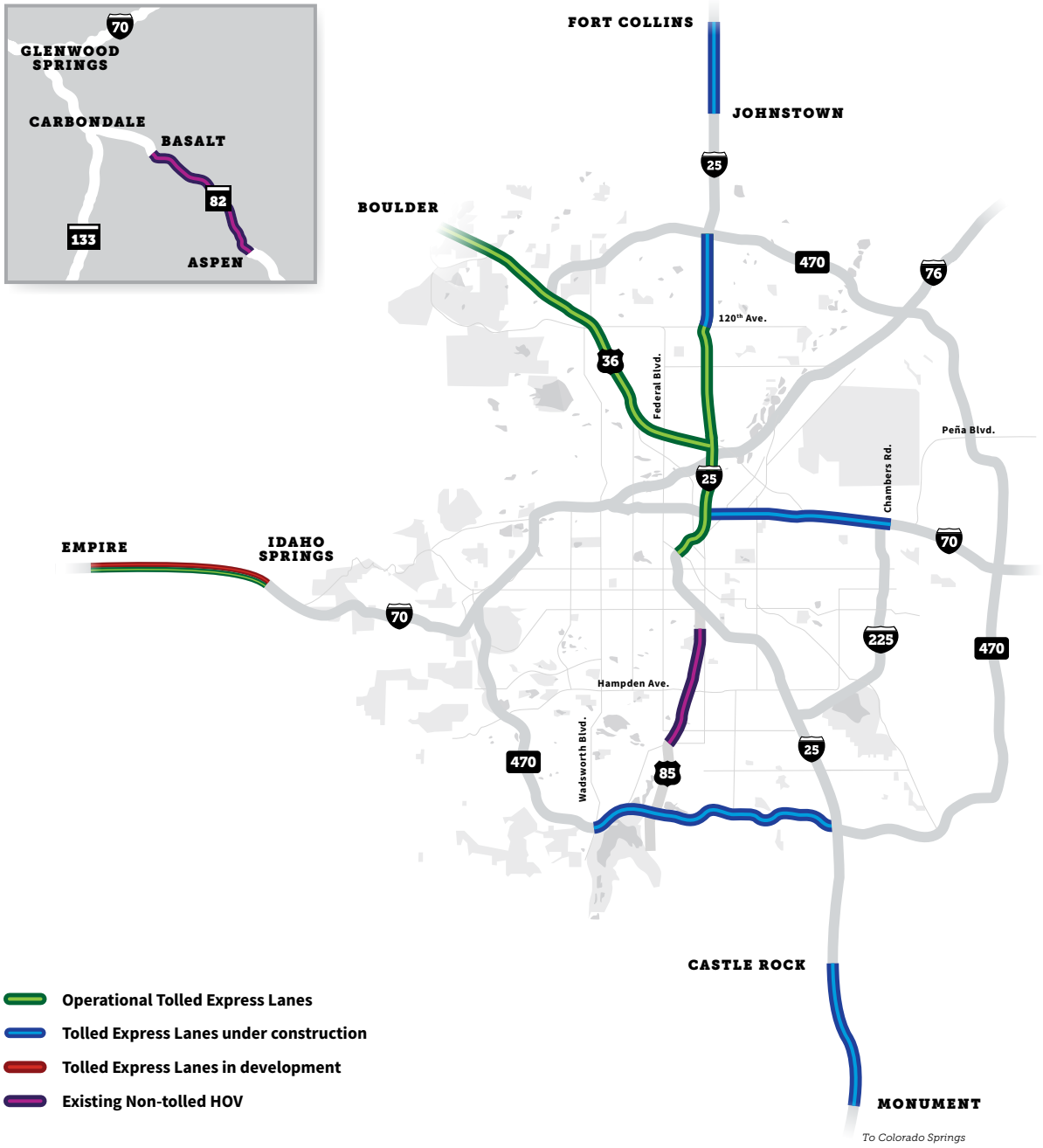


Figure 2-2 // Map of existing and planned Managed Lane network in Colorado



2.2 Express Lanes in Operation

US 36/I-25 Central

The US 36/I-25 Central corridor is a P3 concession and connects Boulder and Denver. The corridor supports various population and employment centers in the northwest Denver metropolitan area that grew dramatically in recent years and are expected to continue expanding in the coming years and decades.

The US 36 facility includes an Express Lane in each direction of the freeway alongside two General Purpose Lanes. Toll rates for the Express Lane vary depending on the time of day, and in future years will be "fully dynamic" based on real-time traffic conditions.

The US 36 Express Lanes were opened in March 2016 and delivered through a P3 between HPTE and PRD. The private-sector concessionaire PRD was responsible for the design and construction of a two-phase, 16-mile segment of the US 36 Express Lanes and will operate and maintain the corridor for 50 years (agreement began in 2015). The concession contract mandates that PRD maintain average speeds of the Express Lanes between 45 to 55 miles per hour (MPH), depending on the segment.

The US 36 Express Lanes connect with two reversible Express Lanes along I-25, from the US 36 interchange to 20th Street in downtown Denver. These lanes opened in 1994 as HOV lanes and were converted to High Occupancy Toll Lanes in 2006 after a series of technical studies and legislative authorizations. These lanes are managed and operated by PRD as part of the P3 concession. The US 36/I-25 Central concession is structured as a toll revenue risk P3, whereby PRD collects toll revenue over the life of the agreement in order to earn back their up-front investment in the facility.

The Express Lanes in each facility are free for carpoolers with at least three individuals per vehicle. Other drivers can use the lane if they pay a toll that varies depending on the time of day.

Express buses such as RTD's Flatiron Flyer service and CDOT's Bustang service also have access to the Express Lanes on each corridor. RTD's Flatiron Flyer service provides frequent connections between two different stations in Boulder to Denver's Union Station, Denver's Civic Center Station, or the Fitzsimons Medical Campus in Aurora. Many of the buses utilize the Express Lanes, especially during peak periods of congestion, to maintain travel speeds and travel time reliability. To coincide with the Express Lanes opening in 2016, RTD increased express bus service significantly and currently runs approximately 129 buses during each AM and PM peak period — an increase of more than three times the service that was offered prior to implementing the Express Lanes. Ridership has likewise increased on routes along the corridor, from approximately 2,000 passengers utilizing the service during peak periods on a representative day in 2015, to nearly 6,000 passengers riding the service on a similarly representative day in 2018. In order to ensure continued enhanced transit performance on the Express Lanes, HPTE entered into an intergovernmental agreement with RTD prior to the opening of the US 36 Express Lanes. As part of this agreement, minimum bus travel time performance must be maintained between Pecos Street and downtown Denver, and minimum toll rates are maintained to ensure that Flatiron Flyer Express bus fares are not more expensive than a toll-paying SOV Express Lane trip along the US 36 corridor.

I-25: US 36 to 120th Avenue

A dedicated, one-lane Express Lane in each direction of I-25 from US 36 to 120th Avenue in Thornton was completed in 2016 as a link to the reversible I-25 Central Express Lanes. In addition to constructing the new Express Lanes, the project resurfaced existing General Purpose Lanes along the six-mile segment of the highway. As with the US 36 and I-25 Central Express Lanes, motorists can use the lanes for free with a minimum of three individuals per vehicle, or pay a toll that varies depending on the time of day. These lanes are operated by HPTE, and are currently being extended an additional five miles north to the I-25/E-470 interchange. As with I-25 Central, minimum express lane bus travel times must be maintained as part of an intergovernmental agreement with RTD.

I-70 Mountain Express Lane Eastbound: Empire to US 6

To confront growing congestion along the I-70 mountain corridor, an innovative, shoulder-running Express Lane was completed along a 12-mile stretch of eastbound I-70 from Empire to Idaho Springs in 2015. The lane is operated by HPTE, and only opens during peak travel periods, offering a third travel lane that is dynamically priced based on congestion conditions along the roadway. Digital signage above the lane alerts travelers to whether the Express Lane is open or closed, as well as the current price of travel on the lane.

2.3 Express Lanes in Design / Under Construction

The following Express Lane projects are currently either under construction or at various stages of the planning and design process.

I-25: 120th Avenue to E-470

Construction of a five-mile extension of the I-25 North Express Lanes began in summer 2016, and will provide Express Lane travel options to the I-25/E-470 interchange in Thornton. The corridor has experienced substantial growth and development in recent years, and pending developments are expected to bring continued growth and congestion to the area in the future. This project will be operated by HPTE.

I-25: Johnstown to Fort Collins

Construction began in summer 2018 to add an Express Lane in each direction on a 17-mile segment of I-25 North from Johnstown to Fort Collins. This segment of I-25 serves the communities of Loveland and Fort Collins, and provides a connection to US 34 which serves Greeley to the east, and Estes Park and the recreational destinations within Rocky Mountain National Park to the west. As with the other Express Lanes along I-25, regional buses such as CDOT's Bustang service will have access to the lane, as well as HOV commuters and toll-paying drivers. The project will be operated by HPTE, and is anticipated to be complete in early 2022.

The project will also include a bus platform located in the median of I-25 near Kendall Parkway, which will provide a direct pedestrian connection to a new Park & Ride facility at the Centerra Shopping Complex.

I-25: Monument to Castle Rock

An 18-mile segment of I-25 South from Monument to Castle Rock is known as "the Gap" because the interstate narrows to only two lanes in each direction, making it the only segment of I-25 between Denver and Colorado Springs with only four lanes. This segment of I-25 has experienced growing congestion, as well as a significant number of crashes in recent years. Conditions on the corridor are exacerbated by steep changes in elevation and narrow shoulders, which impact the ability of emergency vehicles to respond to crashes.

To address these issues, CDOT will widen the roadway and add an Express Lane in each direction for the entire 18-mile segment. Construction broke ground in August 2018 and the Express Lanes are anticipated to open in 2022. These Express Lanes will be operated by HPTE.

C-470: I-25 to Wadsworth Boulevard

Express Lanes are currently under construction along a 12.5-mile segment of C-470 between I-25 and Wadsworth Boulevard. This section of C-470 serves the south Denver metro region, providing connections to important employment centers, as well as links to US 285, I-70, and E-470. Over 100,000 motorists currently use this segment of C-470 each day with volumes projected to increase 40 percent by 2035.

The project will add two Express Lanes on westbound C-470 from I-25 to Colorado Boulevard, and one Express Lane from Colorado to Wadsworth Boulevard. Eastbound C-470 will have one Express Lane from Wadsworth Boulevard to I-25. The project is expected to be complete in 2019.

I-70: Brighton Boulevard to Chambers Road

The project referred to as "Central 70" will involve reconstructing a 10-mile stretch of I-70 between Brighton Boulevard and Chambers Road, adding one new Express Lane in each direction. This segment of I-70 serves central Denver and connects Denver International Airport to the downtown business district. The corridor is home to 1,200 businesses and

carries more than 200,000 vehicles per day. The project is currently under construction by P3 concessionaire Kiewit Meridiam Partners, and is anticipated for completion in 2022. This concession is structured as an availability payment P3, whereby the State of Colorado, through HPTE, will retain Express Lane toll revenues.

I-70 Mountain Express Lane Westbound: US 6 to Empire

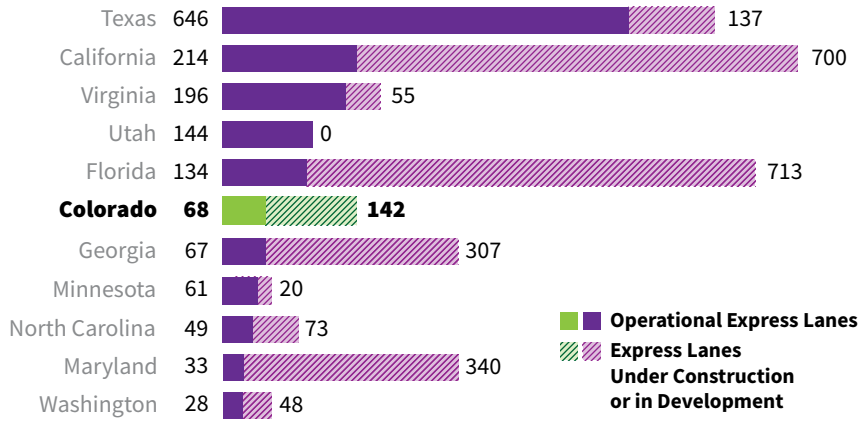
A peak-period shoulder lane, similar to the eastbound I-70 Mountain Express Lane, is currently being studied for deployment on a 12-mile stretch of westbound I-70 between the Veterans Memorial Tunnels and Empire Junction. Like the eastbound Express Lane corridor on I-70, the westbound lanes also experience a surge in vehicle volumes and related congestion during peak periods on weekends and holidays when motorists from Denver travel to recreational destinations in the Rocky Mountains.

This stretch of I-70 is currently one of the most congested segments of the entire mountain corridor which impacts local businesses and residents in addition to recreational motorists. As with the eastbound portion, westbound Express Lanes will also be operated by HPTE.

2.4 U.S. Comparison

Over the past decade, interest in Express Lanes has accelerated in states and regions across the country. Facilities are currently in operation in 11 states, with Texas, Virginia, and California having the most facilities currently in operation. **Figure 2-3** shows the estimated number of lane miles of Express Lanes in these states. As shown in the chart, Colorado is firmly In the middle of the pack in terms of lane miles in operation or in development.

Figure 2-3 // Miles of Express Lanes in comparable states



3

How Managed Lanes Finance Highway Projects

SECTION

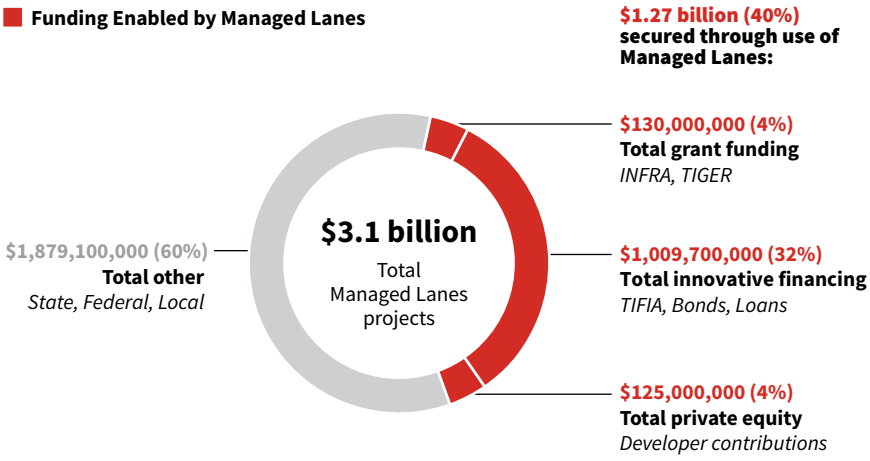
3

Managed Lanes have enabled more than $3 billion worth of projects in Colorado.

Subsection (b) of SB 18-01, C.R.S. § 43-2-151, calls for a description of how Managed Lanes are used to finance highway projects, and whether or not projects would or could have been completed without the use of Managed Lanes (Express Lanes). Overall, innovative financing enabled by Express Lanes has helped deliver more than $3 billion in projects in the last five years. **Figure 3-1** illustrates that Express Lanes have:

- Helped lead to $130 million in federal grant dollars;
- Directly attracted $125 million in private investment; and
- Leveraged more than $1 billion dollars of bond proceeds and other loans to contribute to projects in the state's most congested regions.

Figure 3-1 // Summary of project financing secured through Managed Lanes



HPTE uses three main "innovative finance" tactics as part of its overall strategy to deliver surface transportation projects. According to FHWA, "innovative finance" specifically includes using loans and other financing mechanisms to leverage additional funds, P3s, and user-fee based systems. FHWA also considers loan programs — like TIFIA — to be part of the innovative financing toolbox.

First, the tolls paid and expected to be paid on Express Lanes are leveraged to borrow funds for up-front capital construction costs. HPTE has borrowed using the Federal TIFIA loan program, issued private activity bonds and toll revenue backed bonds, and has obtained commercial loans directly from banks. HPTE evaluates each project independently

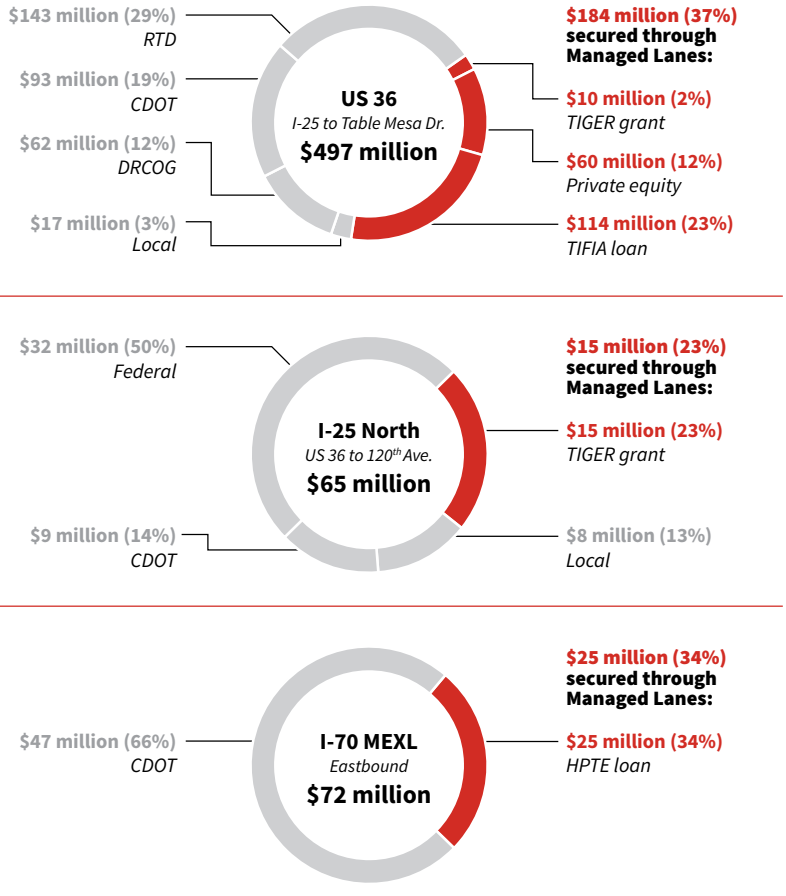
to determine whether financing may be available, and which form of loan products would be most efficient to use.

Second, tolled Express Lanes increase Colorado's competitiveness for federal grants. Grant applications for projects that raise revenue directly are given priority at the U.S. Department of Transportation. The applications for each of the TIGER/INFRA and BUILD grant programs specifically contain provisions that indicate a preference for projects that impose user-fees. Out of the seven grants awarded for state highway projects since 2009, five of those projects have been Express Lane projects.

Third, Express Lanes projects can attract private capital and equity, in certain circumstances. The revenue from Express Lanes can serve as a reliable repayment stream for up-front capital that is provided by the private sector in P3 projects.

Since the creation of the Enterprise, nine out of ten HPTE projects have used some form of innovative financing. **Figure 3-2** through **Figure 3-4** below and on the following page illustrate the breakdown of the type and percentage of innovative financing used for each project, based on whether it is an operational Express Lane, Express Lane under construction, or Express Lane in development.*

Figure 3-2 // Financing and funding of operational Express Lane projects



** Dollar values rounded and based on capital construction costs.*

Figure 3-3 // Financing and funding of Express Lane projects under construction

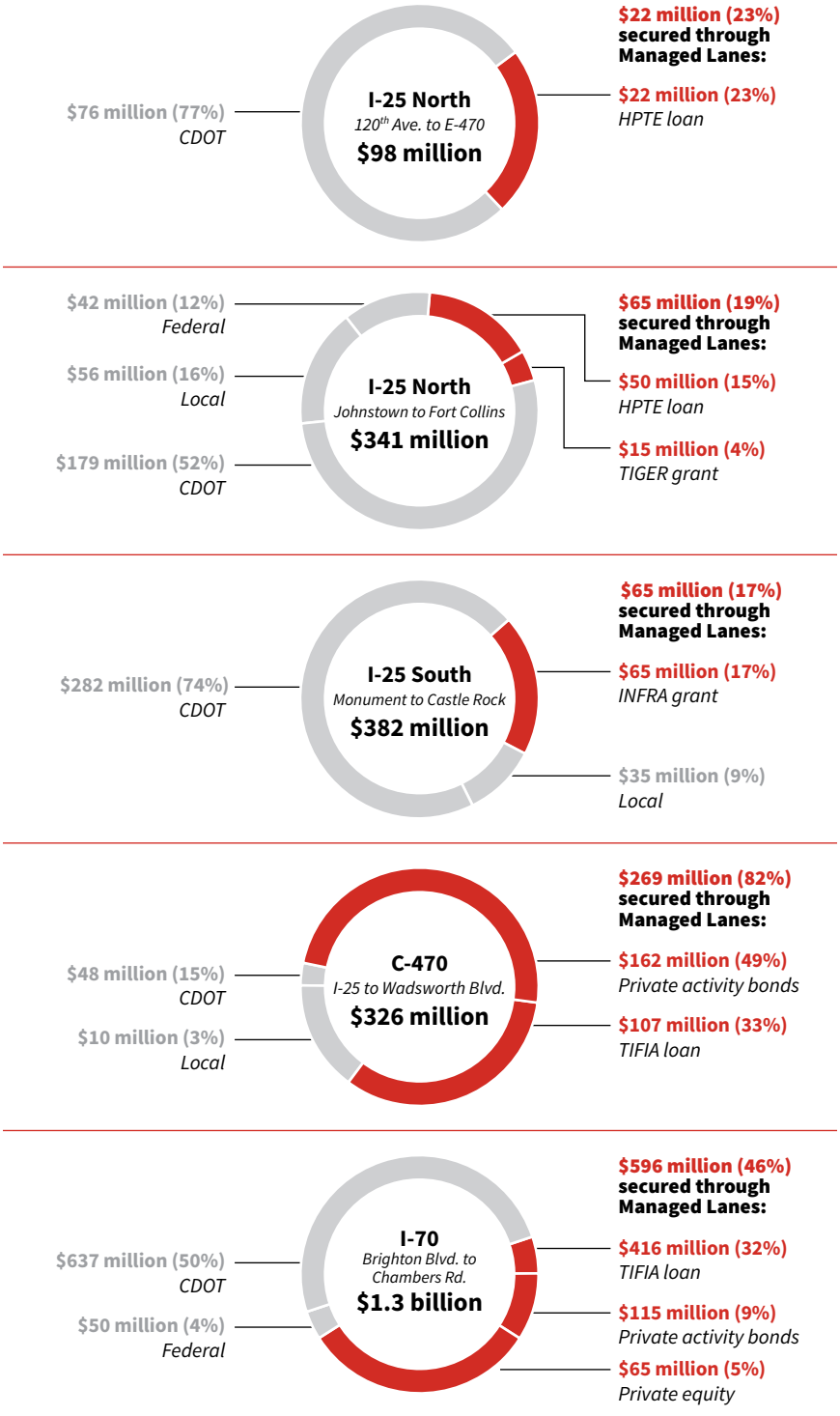
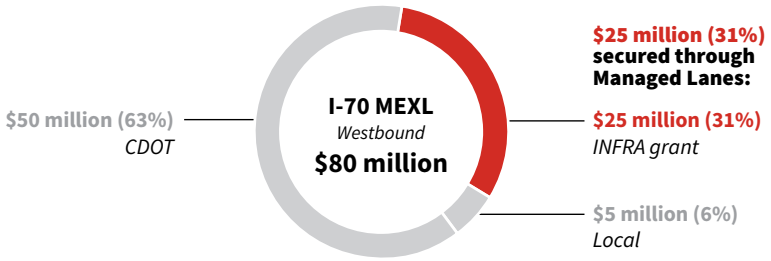


Figure 3-4 // Financing and funding of Express Lane projects in development



Without the use of Express Lanes as a financing tool, the state of Colorado would have had to find an additional **$1.27 billion** in funds to deliver these projects. Otherwise, the projects would have been significantly delayed, scope would have been significantly reduced, or money would have to have been reallocated from other projects around the state to fill the holes. Without the use of Express Lanes as a financing tool, HPTE and CDOT would not have been able to deliver nine projects in five years totaling more than $3 billion in project value. Rather, without Managed Lanes, CDOT would have been able to deliver one, or possibly two, of the projects, with a value well under $1 billion.

4

Managed Lanes Trips by Vehicle Type

SECTION

4

Express Lanes accommodate over 21 percent of total peak-period traffic along freeways with Express Lane facilities.

4.1 Methodology

In accordance with SB 18-01, C.R.S.§ 43-2-151(d), this section quantifies the number of trips made on Managed Lanes by different vehicle types.

Data Sources

This report references multiple data sources to perform the volume analysis requested by SB 18-01. Sources include Microwave Vehicle Radar Detector (MVRD) data, and reported toll transaction information. MVRD devices integrate into the CDOT roadside Intelligent Transportation Systems (ITS) network, and are placed at half-mile intervals along most freeways in the Denver Metro area. They record speed, volume, and lane occupancy along the roadway. In addition, toll transaction reports were generated for each Express Lane facility. Toll transaction records provide the most accurate volume counts for the Express Lane facilities during peak periods.

Analysis in this section is based on the best readily available data from CDOT, HPTE, the E-470 PHA, or private partners. For the purposes of this report, data from each existing Express Lane corridor was collected and summarized from a representative two-week period in either October 2017 or February 2018. October was chosen as a representative timeframe due to the lack of major holidays, likelihood of inclement weather, and seasonal traffic variation relative to other months. However, data from February 2018 was utilized for the I-70 MEXL in order to capture peak recreational traffic conditions.

It should also be noted that raw MVRD detector data records were utilized for this analysis. Although every effort has been made to process this data, identify any malfunctions, and eliminate apparent data recording errors, this analysis should be considered at a summary level, and not a comprehensive evaluation of traffic conditions.

4.2 Volume Analysis

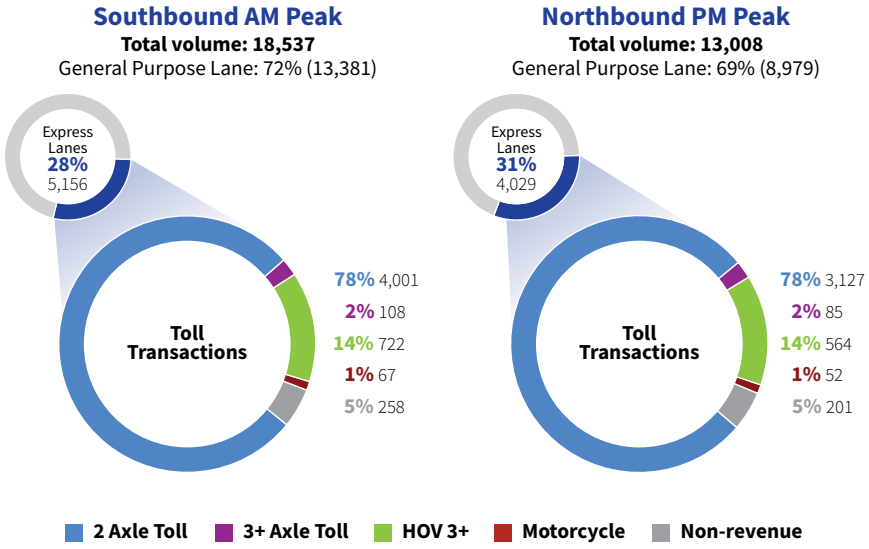
Peak period volumes were analyzed for each existing Colorado Express Lane corridor. For each corridor, a representative point location and toll zone was selected in order to draw a meaningful comparison. At selected locations, General Purpose Lane volumes were derived from lane by lane 15-minute MVRD device counts to determine total General Purpose Lane volumes during the AM and PM peak periods. Express Lane volumes were determined from toll transaction counts reported from PRD for US 36 and I-25 Central, and the E-470 PHA as HPTE's back office tolling services provider for I-25 North and I-70 MEXL. Peak period totals from a representative two-week period were then averaged to-

gether in order to determine average peak period volumes in the morning and afternoon. The morning peak is defined as 6:00 to 9:00 a.m., and 3:30 to 6:30 p.m. for the afternoon. Toll transaction records were also used to represent the share of Express Lane traffic by different vehicle types, including qualifying carpools, commercial vehicles with three or more axles, and motorcycles.

I-25: 20th Street to US 36

Average peak period Express Lane and General Purpose Lane volumes for the I-25 Central reversible lanes through central Denver are shown in **Figure 4-1**. In the mornings, this lane operates only in the southbound direction, and in the afternoons, the lane operates in the northbound direction. This data was collected at a representative location just south of I-70.

Figure 4-1 // I-25 Central: Peak period vehicle volumes



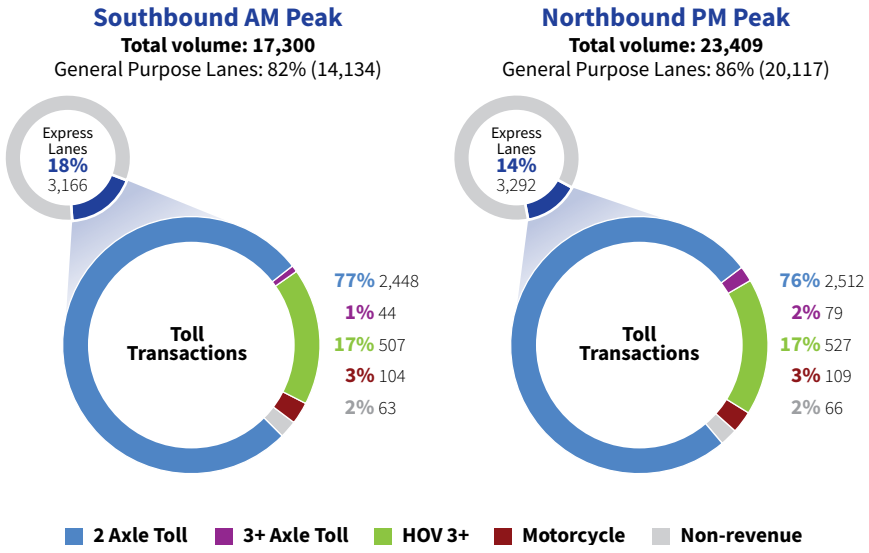
The morning commute peak had about 18,000 vehicles using I-25 in the area during 6:00 to 9:00 a.m., and 28 percent of all vehicles chose to use the Express Lanes. Of those using the Express Lanes, 18 percent were two-axle, toll-paying vehicles; 14 percent were carpools with three or more riders, and less than 1 percent were motorcycles. With respect to truck traffic, the total average volume of trucks along the corridor averaged about 22,000 vehicles. Of those 22,000 trucks per day, about 108 chose to use the Express Lanes during the southbound rush hour.

In the northbound direction, where the peak is from 3:30 p.m. to 6:30 p.m. While the total volume of traffic is smaller, the capture rate of vehicles in the Express Lane is actually larger, where 31 percent of vehicles are choosing to use the express lanes. The percentage distribution of different vehicle types in the Express lanes in the afternoon peak mirrors that of the morning peak. The 14 percent share of HOV vehicles during this analysis period is slightly lower than monthly HOV averages between March 2017 and February 2018, which ranged from 14.5 to 17.6 percent (annual average during same period was 16 percent HOV).

I-25: US 36 to 120th Avenue

Average peak period Express Lane and General Purpose Lane volumes for I-25 between US 36 and 120th Avenue near Thornton Parkway are shown in **Figure 4-2**. Express Lane volumes were highest southbound during the AM peak period with 3,166 vehicles and northbound during the PM peak period with 3,292 vehicles. The Express Lane capture rate, or the percentage of vehicles in the Express Lane, is lower than the reversible I-25 Central Express Lanes, with an 18 percent capture rate in the morning and a 14 percent capture rate in the afternoon. The percentage of HOV vehicles with more than three passengers runs at about 17 percent (the same as 2017 average annual percent HOV share), and motorcycle use about 3 percent. Truck traffic again comprises two percent or less of all Express Lane vehicles.

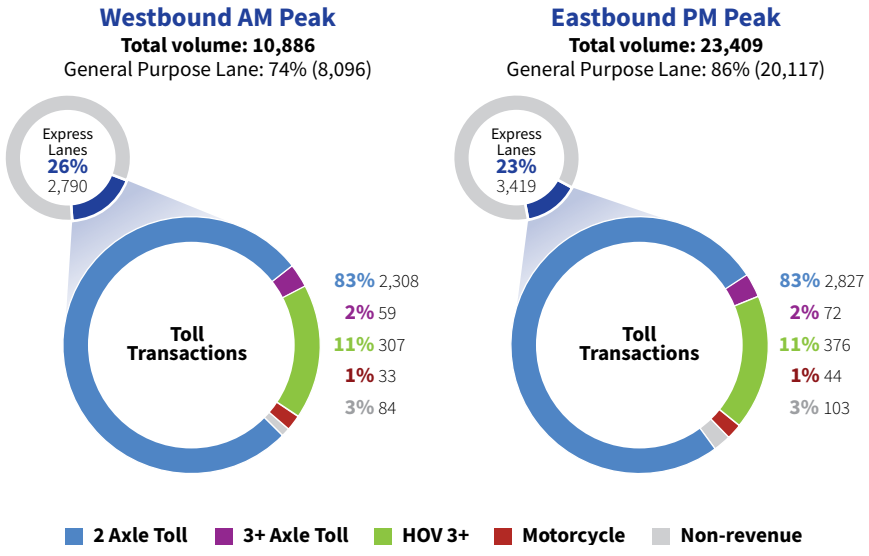
Figure 4-2 // I-25 North: Peak period vehicle volumes



US 36: I-25 to Table Mesa Drive

Figure 4-3 shows recorded volumes for general purpose and Express Lanes near 104th Avenue on US 36. During the two-week October analysis period, General Purpose Lane volumes ranged from 10,886 to 14,763 vehicles during peak periods. Express Lane volumes were highest westbound during the morning peak with 2,790 vehicles, and eastbound during the afternoon peak with 3,419 vehicles. The Express Lane capture rate averages between 23 and 26 percent. More than 80 percent of the vehicles are toll paying users, and HOV users with more than three passengers during the peak periods runs at 11 percent, with motorcycles and trucks accounting for about 3 percent of the Express Lanes traffic. During October 2017, 14.3 percent of all Express Lane vehicles were qualifying carpool vehicles. The October 2017 HOV average is slightly lower than the 16.6 percent annual HOV volume average from March 2017 to February 2018.

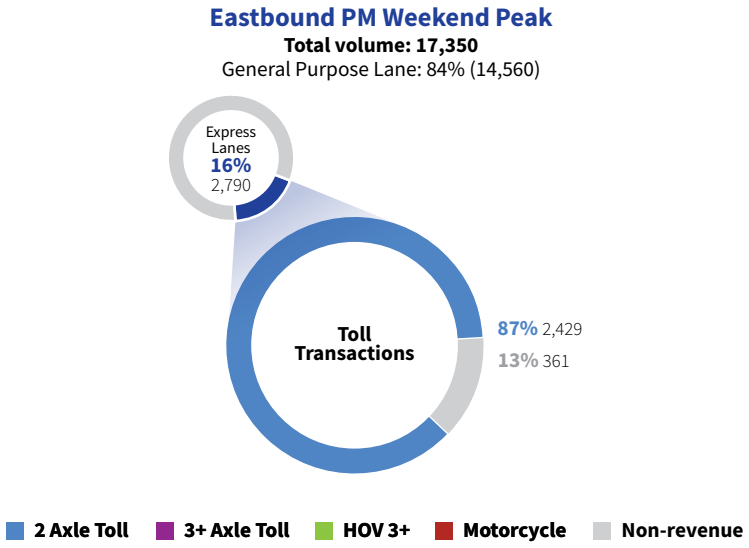
Figure 4-3 // US 36: Peak period vehicle volumes



I-70: Empire to Idaho Springs

Peak period volumes for the I-70 MEXL corridor are shown in **Figure 4-4**. The volume analysis of the I-70 MEXL corridor focused on the PM period in the eastbound direction only, and utilized data from February 2018 weekends instead of weekdays. This data was collected east of Fall River Rd, and the peak is considered to run between 2 p.m. and 7 p.m. or whenever the express lanes is closed for the evening due to declining traffic volumes. The average PM peak period volumes during weekends in February 2018 was 14,560 in General Purpose Lanes, and 2,579 in the MEXL. It should also be noted that the I-70 MEXL requires all vehicles to pay a toll, and does not offer free access to HOV vehicles.

Figure 4-4 // I-70 MEXL Eastbound: Peak period vehicle volumes



5

Corridor-specific Impacts

SECTION

5

Corridor-specific analysis shows that Express Lanes are operationally successful and offer consistent travel time savings, reliability, and speed benefits.

This section documents the corridor-specific impacts of Managed lanes on congestion, as specified by subsection SB 18-01, C.R.S.§ 43-2-151(c). The analysis focused on speed and travel time performance for the purposes of this report.

5.1 Methodology

Corridor-specific analysis relied on two main data sources in order to quantify Managed Lane impacts — Microwave Vehicle Radar Detectors (MVRD) installed in the field, as well as INRIX historical travel time data. INRIX is a private company that packages and sells crowd-sourced roadway speed and travel time data to state and regional transportation agencies throughout the United States for project planning and design purposes. As described in **Section 4**, CDOT relies on MVRD devices to record lane by lane speed, volume, and lane occupancy on freeways throughout Colorado. In addition, cellphone based probe data was also provided from INRIX in order to provide a historical comparison of corridor travel times. As with the volume analysis described in **Section 4**, the findings described in this section are based on the best readily available data from CDOT and INRIX.

5.2 Speed Analysis

The Express Lane speed analysis performed for the purpose of this report relied on similar underlying data and assumptions that were used for the analysis of corridor volumes. Weekday peak period data from a representative two week period in October was used for the analysis of I-25 and US-36, while weekend peak period data from February 2018 was used for the I-70 MEXL corridor. Analysis also focused only on peak periods and peak directions, with the morning peak period defined as 6:00 a.m. to 9:00 a.m. and the afternoon peak period defined as 3:30 p.m. to 7:30 p.m. As expected, a comparison of the peak

Table 5-1 // Express Lane speed differential

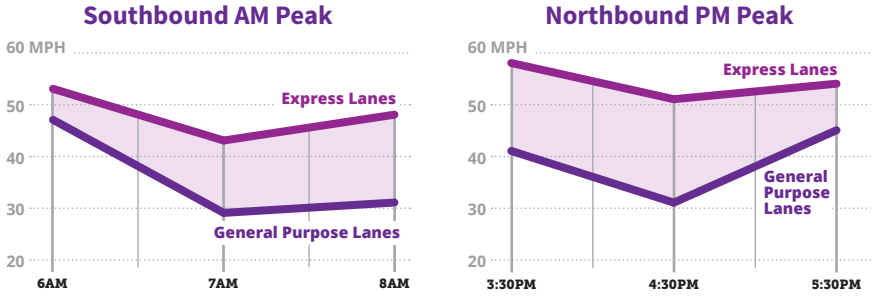
EXPRESS LANE (MPH)			LOW	HIGH	AVERAGE
I-25 Central	Southbound	Morning	5.7	16.2	12.3
I-25 Central	Northbound	Afternoon	8.8	20.1	15.3
I-25 North	Southbound	Morning	10.5	13.2	11.9
I-25 North	Northbound	Afternoon	8.5	13.3	11.4
US 36	Westbound	Afternoon	6.5	16.3	12.6
US 36	Eastbound	Afternoon	9.7	17.3	13.8
I-70 MEXL	Eastbound	Afternoon	7.0	9.9	7.9

period average speed (in MPH) between General Purpose Lanes and Express Lanes results in a fairly significant speed differential, as listed in **Table 5-1**, and shown in **Figure 5-1** through **Figure 5-4** on the following pages.

I-25: 20th Street to US 36

A review of these findings indicates that the reversible I-25 Central Express Lanes experience a speed 6 to 16 MPH faster than the adjacent General Purpose Lanes southbound during the AM peak period, and northbound speeds during the PM peak period between 8.8 to 20.1 MPH higher than the General Purpose Lanes (**Figure 5-1**).

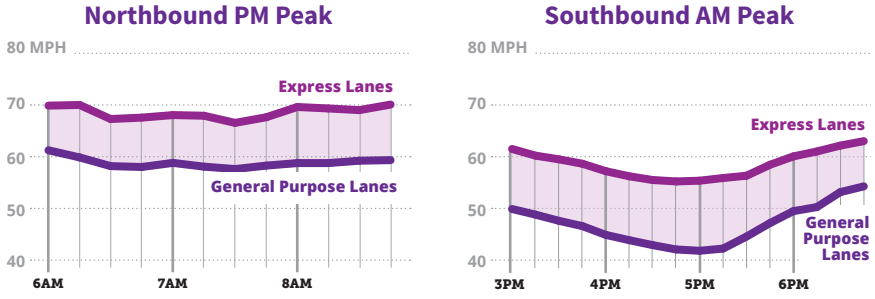
Figure 5-1 // I-25 Central: Peak period average speeds



I-25: US 36 to 120th Avenue

The I-25 Express Lanes between US 36 and 120th Avenue experience a speed 8 to 13 MPH faster than the adjacent General Purpose Lanes northbound during the PM peak period, and a southbound speed during the AM peak period that is between 10 to 13 MPH faster than the General Purpose Lanes (**Figure 5-2**). This speed differential results in average travel time savings of up to four minutes for Express Lane vehicles relative to the adjacent General Purpose Lanes.

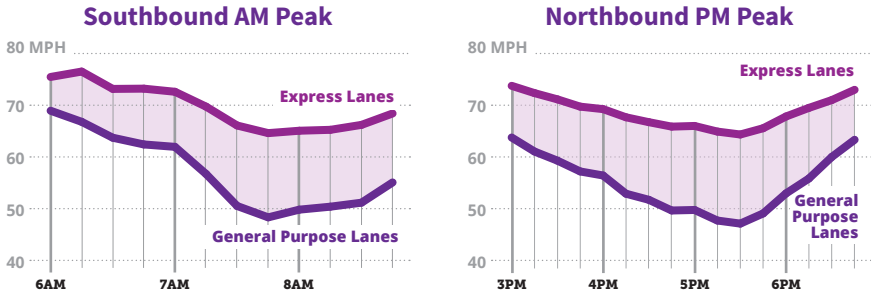
Figure 5-2 // I-25 North: Peak period average speeds



US 36: I-25 to Table Mesa Drive

Speed differential was shown to be even more significant along US 36 (**Figure 5-3**), where average Express Lane speeds were close to 13 MPH faster than speeds in the adjacent General Purpose Lanes. This significant speed differential during the AM and PM peak periods resulted in travel time savings of up to 10 minutes during the most congested times of the peak periods.

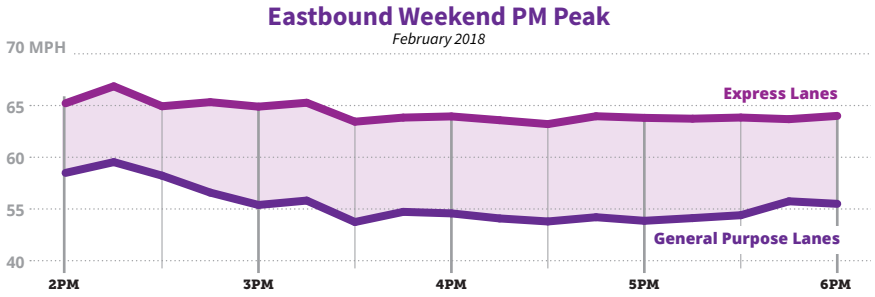
Figure 5-3 // US 36: Peak period average speeds



I-70: Empire to Idaho Springs

As shown in **Figure 5-4**, the I-70 MEXL also resulted in higher speeds than General Purpose Lanes during the weekend PM peak period, where average speed differential was close to 8 MPH. The speed differential results in a travel time savings of up to 4.5 minutes.

Figure 5-4 // I-70 MEXL Eastbound: Peak period average speeds



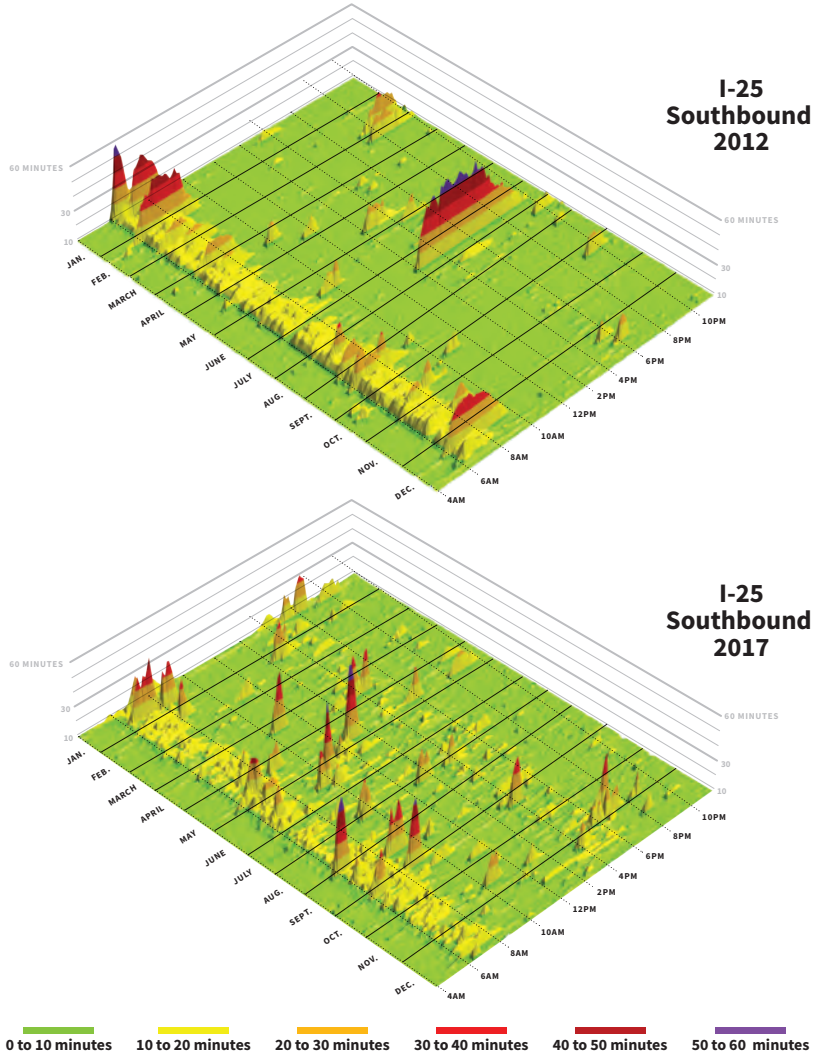
5.3 Historical Corridor Performance

The analysis discussed earlier in this section is intended to provide information on existing Express Lane performance relative to adjacent General Purpose Lanes. However, this analysis does not give a sense of the improvement in overall corridor performance before and after the implementation of Express Lanes. For this evaluation, historic corridor travel times obtained from INRIX were summarized for 2014 and 2017, in order to represent conditions before and after the opening of each Express Lane facility. These historical comparisons are presented in heat plots in **Figure 5-5** through **Figure 5-7**. However, please note information was unavailable for the reversible I-25 Express Lanes.

I-25: US 36 to 120th Avenue

Before and after travel time heat plots for the southbound I-25 corridor are shown in **Figure 5-5**. As shown in the figure, the red spikes in travel time delay, representing average travel times that exceed 30 minutes, are significantly reduced between 2014 and 2017 after the implementation of Express Lanes. This is especially significant since the data is based on average weekday travel times within the entire corridor, both General Purpose and Express Lanes, indicating improved travel times and reliability for all drivers and vehicles along this corridor of I-25. In addition, congestion outside peak periods has been dramatically reduced, increasing trip reliability for all users, and decreasing the duration of the morning peak itself.

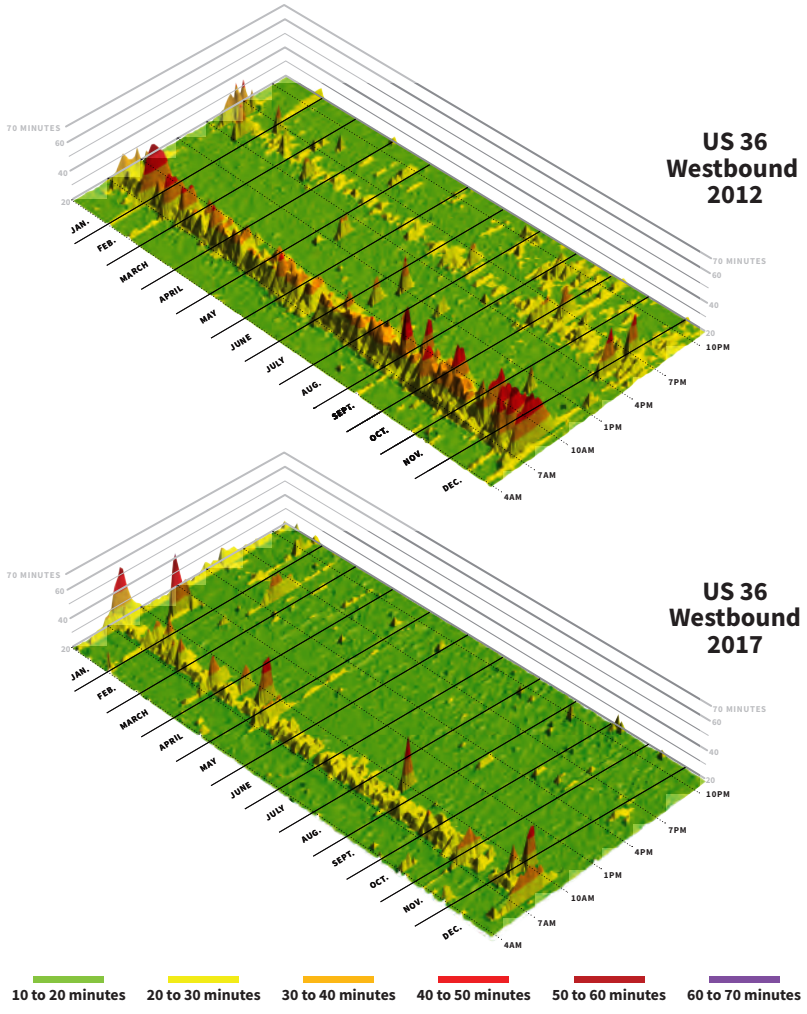
Figure 5-5 // I-25: Peak period average speeds



US 36: I-25 to Table Mesa Drive

Figure 5-6 shows the INRIX 2014 and 2017 travel time heat plots for the westbound US 36 corridor. The improvement of corridor travel time performance along this corridor is even more pronounced, compared to I-25, with dark spikes of travel times exceeding 30 minutes in 2014 becoming nearly non-existent in 2017. It should also be noted that even at the most congested times — at the height of the peak period — vehicles are generally making the trip in 20 minutes or less.

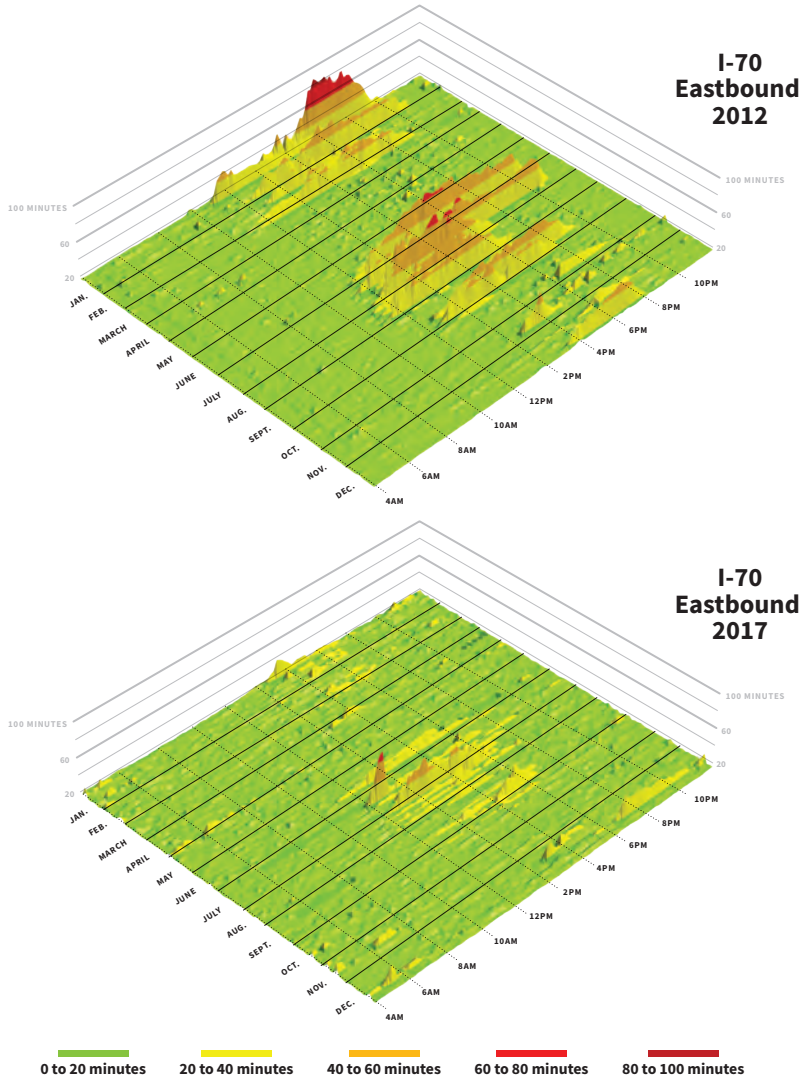
Figure 5-6 // US 36: Peak period average speeds



I-70: Empire to Idaho Springs

The weekend peak period performance of the I-70 MEXL corridor (**Figure 5-7**) also indicates significant corridor improvement from the implementation of the peak period shoulder lane. In this case, travel times of over 30 minutes are still present in 2017, but the intensity and duration of those spikes are drastically reduced. In addition, during the winter ski season, peak period delays have been virtually eliminated for all travelers along the corridor.

Figure 5-7 // I-70 MEXL Eastbound: Peak period average speeds



6

Key Takeaways

This report is intended to provide data driven answers to key questions regarding Colorado's Express Lanes program.

From general characteristics of the existing Express Lanes network, to their impact on traffic congestion, carpooling, and transit use, the content of this report should underscore the ability of Express Lanes to accelerate projects, generate revenue, and manage traffic in real-time for the benefit of corridor congestion, throughput, and safety. Key takeaways include:

- Express Lanes have led to the accelerated delivery of over $3 billion in freeway projects throughout Colorado. If not for the tolling component of Express Lanes, these projects would have been either significantly delayed, delivered with a significantly reduced scope, or advanced at the expense of other CDOT projects throughout Colorado.
- Colorado has more than 68 lane miles of Express Lanes currently in operation, with an additional 142 lane miles proposed and under construction. Nationally, Colorado ranks sixth among all states for total existing Express Lane mileage.
- Express Lanes offer consistent travel time savings and travel time reliability, relative to adjacent General Purpose Lanes, for toll paying customers, transit vehicles, and qualifying HOV 3+ carpool vehicles.
- Express Lanes have improved congestion and reduced delay in the US 36, I-25, and the I-70 Eastbound MEXL corridors in both Express Lane and General Purpose Lanes.

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2018 Annual Report

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