2019

FHWA-Colorado Division and CDOT Stewardship and Oversight Agreement Annual Report

U.S. Department of Transportation
Federal Highway Administration

COLORADO
Department of Transportation

Prepared by the Quality Improvement Council

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2019 Annual CDOT Stewardship and Oversight Agreement Report

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SECTION 1. PURPOSE

This report serves as the principal instrument by which the Colorado Department of Transportation (CDOT) informs the Federal Highway Administration (FHWA) of its performance across a number of mutually agreed upon indicators and measures associated with the administration of the Federal Aid Highway Program (FAHP). In 23 U.S.C. 106(g), Congress directs that the Secretary shall establish an oversight program to monitor the effective and efficient use of funds authorized to carry out the FAHP. This program includes FHWA oversight of the State's processes and management practices, including those involved in carrying out the approvals and related responsibilities assumed by the State under 23 U.S.C. 106(c). Congress defines that, at a minimum, the oversight program shall be responsive to all areas relating to financial integrity and project delivery.

The goal of this performance summary is to ensure that FHWA and CDOT are administering the FAHP in a cost-effective manner that maintains Colorado's national highway network, optimizes operations, improves safety, and provides for national security while protecting and preserving environmental resources.

Section 2 briefly introduces the various functional program areas, describes key activities accomplished in 2019, and provides tables summarizing CDOT's performance and compliance in each area. Performance/compliance measures, and their associated reporting frequencies and targets/baselines, were established in the May 2018 version of the FHWA-CDOT Stewardship and Oversight Agreement.

Section 3 describes risk response strategies that the CDOT and FHWA Quality Improvement Council (QIC) is currently focusing on and the status of recommendations in the implementation phase.

SECTION 2. CDOT PERFORMANCE BY FUNCTIONAL PROGRAM AREA

2.1. ENGINEERING: CIVIL RIGHTS

INTRODUCTION

CDOT Manager: Greg Diehl and Kristi Graham-Gitkind
FHWA Manager: Nicole Bumpers

The Civil Rights Program is responsible for all activities in CDOT related to civil rights programs and requirements under state and federal law. Civil rights programs are an integral part of all aspects of CDOT's ongoing activities. The Civil Rights Stewardship Agreement is a Quality Control and Quality Assurance (QC & QA) approach, which relies on joint FHWA/CDOT team reviews of program activities to accomplish oversight of the program. The plan shifts federal oversight from a project-by-project basis to a program-level basis. Staff from CDOT's Civil Rights & Business Resource Center (CRBRC) work in partnership with each Regional Civil Rights Manager and with the FHWA Civil Rights Specialist to review, evaluate, and improve CDOT's Civil Rights Programs. The partnership between CDOT and FHWA continues to be an important part of ensuring compliance with the letter and spirit of laws and regulations.

QUALITY/RESULTS

Statewide activities conducted to accomplish elements in Quality Section:

1. Exceeded FFY 2019 Disadvantaged Business Enterprise (DBE) goal of 11.55% with 12.41% overall DBE participation.

2. Launched a partial bond guarantee program to support Emerging Small Businesses (ESBs) in bidding as prime contractors.

3. Graduated three teams from the ESB Mentor-Protégé program. The full cohort was five teams, and the two remaining teams will graduate this year after completing a full two-year tenure in the program. Impact-related activities include Service Diversification (incl. SWOT analysis, Go/No Go Determination, Implementation Planning), Hiring Candidate Referrals, On-Time, On-Budget Project Delivery, Geographic Market Diversification, Relationship Development, Process Review and Improvement, Software Training, Cross-Team Collaboration

4. Advertised and awarded two professional services contracts restricted to bidding only by ESB certified firms.

5. Hosted 8 small business forums (4 each for professional services and construction) to increase transparency in CDOT process and improve communication on small business related issues.

6. In collaboration with the American Council of Engineering Companies (ACEC) and DBE Professional Services firms, the process for DBE Compliance on Non-Project Specific Contracts was improved to address both consistency and impact issues; 231 people have attended training on the new procedures, 112 of which were external consultants. Out of

the people trained, over 80% rated the training as good or excellent in preparing them for the 2020 NPS process/contract changes.

7. Given the challenges around compliance related to Trucking, a Compliance Training specifically geared toward Trucking Firms was held in May, with nearly 100 in attendance. The training and associated resources were also offered in Spanish to ensure all participants were able to understand the information, and 7 individuals made use of live translational services.

8. Annual Construction Contractor Compliance Training Sessions have long been part of CRBRC's services; in Q1 of 2019 nearly 270 individuals received training on Civil Rights requirements, and 98% of participants rated the training as Excellent or Good.

9. Completed a total of 19 Contractor Compliance Reviews. The reviews were for Contractors that either were newly identified or that had not been reviewed in three years.

10. Achieved 67,637.65 On-the-Job Training (OJT) hours which exceeded the goal of 50,000 hours.

11. Implemented the On-the-Job Training Specification (developed in 2018) and contractor manual that contains more than 30 pre-approved classifications that contractors can use immediately. Continued to work collaboratively with contracting associations, contractors, and Regional civil rights personnel to continuously enhance OJT program via a task force that met regularly.

12. Launched a 3-week pre-On-the-Job Training intensive to provide introductory skills in Construction, Labor, and Welding to students interested in construction careers. Trained 30 participants.

13. 595 Curb Ramps were upgraded over the past year to increase overall accessibility compliance.

14. In collaboration with the CDOT Bike and Pedestrian Unit, the Americans with Disabilities Act (ADA) Curb Ramp data collection tool was reconfigured to ensure all elements of the PROWAG technical requirements are being gathered by CDOT inspectors. Multiple ADA Curb Ramp data sets were combined into one central data location for increased accuracy of information.

15. Development of an e-learning in CDOT's Learning Management System that will be required for all CDOT staff.

16. A two-day training was conducted for CDOT internal staff and Federal Transit Administration (FTA) subrecipients, with 74 individuals participating.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Civil Rights Program:

Table - Performance/Compliance Measures (Civil Rights)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
107	**DBE participation (as percentage) to date on Federal Aid Highway Program**	DBE Program	Transport	Federal FY **Semiannual Reporting**	11.55%	13.0%	12.41%
459	**# of DBE firms receiving supportive services/benefits**	DBE Supportive Services (DBE/SS)	Connect2DOT Program	Federal FY	100	94	101
313	**# of completed Contract Compliance Reviews**	Contractor Compliance (External EEO) Program	Google Drive	Federal FY	18	22	19
460	**# of OJT hours achieved**	On the Job Training (OJT) Program	Google Drive/ LCPtracker	Federal FY	50,000 hours	54,489 hours	67,637 hours
461	**# of persons placed and employed (post-services)**	OJT Supportive Services (OJT/SS)	Google Drive	Federal FY	50	81	Not available
310	**# of completed STA reviews**	Title VI Program	Title VI Assessment	Federal FY	6	6	6
462	**# of completed sub recipient reviews**	ADA Title II Program	ADA Transition Plan	Federal FY	10	10	10

KEY LEARNINGS

No lessons learned identified.

NEXT STEPS

No next steps identified.

2.2. ENGINEERING: CONTRACTING, ENGINEERING ESTIMATES AND OTHER PROJECTS

INTRODUCTION

CDOT Manager: Markos Atamo
FHWA Manager: Chris Horn

The Engineering Contracts Branch contracts for construction and professional services in accordance with applicable Federal rules and regulations. The Engineering Estimates and Market Analysis (EEMA) Unit prepares project engineering cost estimates, as required by federal regulations, and monitors bidding activity for materially unbalanced bids and collusion. The Engineering Applications Unit provides technical support on the AASHTOWare Project suite of software to statewide users.

The Branch includes the following functional groups and assigned responsibilities:

Engineering Contracts Unit – The Engineering Contracts unit provides two different types of services – construction contracting and professional services contracting. The construction contracting staff conducts the contracting process for construction projects including contractor prequalification, advertisement for bids, opening of paper and electronic bids, award and execution of the contract, and issuance of the Notice to Proceed (NTP) once signed by the Chief Engineer. The professional services contracting staff conducts the contracting process for professional services (engineers, architects, surveyors, and industrial hygienists), including consultant prequalification, issuance of the Request for Proposals (RFP), facilitation of the selection process, contract negotiations, and execution of the contract.

Engineering Estimates and Market Analysis (EEMA) Unit – The EEMA unit prepares engineering cost estimates of construction projects prior to bidding, performs materially unbalanced bid and bid collusion analyses on submitted bids, and prepares cost estimates for added work on active construction projects.

Engineering Applications Unit – The Engineering Applications Unit is responsible for user support, training, and system enhancements for the AASHTOWare Project Bids, Preconstruction and SiteManager, PM Project Systems, and Survey 123 Field Diaries.

QUALITY/RESULTS

1. Contract performance (Engineering Contracts) – CY2019:
    - 119 construction contracts awarded ($499M) 99% of which were awarded within 30 days of bid opening exclusive of the Award by Review (ABR) and projects requiring additional Transportation Commission fund approval.
    - 59 consultant selections, average processing time approximately 13.67 weeks. 85% of contracts executed within desired 17 weeks.
    - 967 task orders written, average processing time approximately 10.42 calendar days.

2. Engineering Applications – CY2019:
    - 540 tickets resolved
    - 3035 non-ticket issues resolved
    - 9 SiteManager classes conducted
    - 7 Reviews statewide (in requirements process for SiteManager upgrade)

3. Overall Program Estimate Accuracy (EEMA):
   - CY2019 Total Program Estimate (Design Bid Build projects): $480.2M
   - CY2019 Total Program Award (Design Bid Build projects): $486.6M
   - Accuracy: -1.3% of Engineer's Estimate

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Contracts and Market Analysis Program:

Table - Performance/Compliance Measures (Contracts and Market Analysis)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
809	**Overall program estimate accuracy (EEMA)**	Accuracy of total Program Estimate as compared to total Program Award on ALL Design-Bid-Build projects	CMA Branch Work Plan	Calendar FY	+/- 3%	-3.3%	-1.3%
463	**Percent of projects awarded within set percentage of Engineer's Estimate**	Percent of awarded low bids within +/- 10% of Engineer's Estimate on ALL projects	CMA Branch Work Plans	Calendar FY	50%	48.28%	52.9%

KEY LEARNINGS

Engineering Contracts and Engineering Estimates had key learning revolving around staff efficiency and accuracy. High level of turn over with Engineering Contracts was overcome through cross-training and resource sharing amongst the units. Removed the performance measure reporting the percentage of projects that were awarded within 30 days of bid letting based on the team's consistent ability to meet or exceed the target over the past five (5) years.

NEXT STEPS

Engineering Contracts and Engineering Estimates will continue to focus improvement on opportunities that increase speed to market and accuracy of estimates. New software and industry best practices are being analyzed for process improvements.

2.3. ENGINEERING: HYDRAULICS

INTRODUCTION

CDOT Manager: Alfred (Al) Gross
FHWA Manager: Matt Greer

The Hydraulic program addresses statewide issues involving design of hydraulics structures that include bridges, culverts, inlets, manholes, channels/ditches, and water quality basins. The program is responsible for working with the Regions to ensure that hydrologic and hydraulic design is implemented consistently according to CDOT Drainage Design Manual standards and criteria. The program is also responsible for creating and reviewing drainage/water related policy and procedural directives along with relevant and applicable standards and specifications.

QUALITY/RESULTS

Staff Branches Activities:

1. Bridge Scour (Plan of Action) POA project involved preparing scour designs on approximately 18 projects and 42 scour critical structures that were completed in Task Order #11 by December 2019. Several of these projects and structures will be carried over into TO #12 for 2020. A yearly report was completed and sent to FHWA and CDOT Staff Bridge. A summary breakdown of CDOT's scour critical projects and structures is as follows:

    - R1: Project # 20923 Douglas County Scour with structures G-18-H, G-17-M, G-17-AN and G-17-AO went to construction in spring and was completed in early summer 2019. Project #21222 I-76 Clear with structures E-16-P, E-16-O, E-16-KB, E-16-KC, E-16-KS, E-16-PM and E-16-KD was created and scour designs were started. These structures originally only had ER memos from Staff Bridge but after further analysis POA reports were completed and it was determined all were all scour critical with scour item 113 Code = 3. The structures are located along the Clear creek corridor adjacent to I-70 between SH 121 Wadsworth and SH 95 Sheridan.

    - R2: Project # 21461 I-17-EG/EQ on US 24 over Fountain Creek is scheduled to go to construction late December or early January 2020. Project #21922 with structures K-16-T, K-16-V, L-14-C, L-14-D and L-16-R had final plans completed late 2018 and went to shelf late spring 2019. Project # 22481 with structures K-18 BY/BZ completed design plans but AD is delayed until early January with construction scheduled to begin in early spring 2020. Project # 21591 for structure P-17-F on SH 12 over N. Fork Purgatoire River scheduled for Advertisement (AD) late December/early January with construction in early spring 2020.

    - R3: Project #20753 US 40 Craig East project for structures B-06-A and B-06-S was scheduled for construction in fall 2019 and was completed December 2019. Structure C-07-A within the project limits was discovered to be scour critical and was to be added but due to lack of funding was pulled. This structure will go on shelf and look to be combined with some other Region work. Project #20923, I-70 Big & Little Salt Washes is a stand-alone scour project for structures: H-02-FO, H-02-FP, H-02-FM, H-02-FN with design completed and plans submitted early spring 2018. It was supposed to go construction in fall of 2019 but was pulled as low bid was more than 10% over budget. Project #21200 G-

07-B on SH 82 over Cattle Creek had construction begin late summer 2019 and was completed in early fall. Region is in process of setting up a project for F-05-R on SH 13 over Colorado River in late spring or early summer. This structure had scour equipment installed for CDOT Rapid Deployment Scour Research study. Working on new structures: K-08-D on SH 149 over Cebolla Creek and L-07-A SH 149 over Lake Fork of Gunnison River. Consultant received survey for both structures from 105 West and is starting 2-D models for both structures.

- R4: Project #20257 with 4 bridges; A-28-M/N/O/P on US 385 over South Platte River near Julesburg, Co. went to AD in early spring 2018 and is going on to construction early fall. However, only A-28-P went to construction and the other structures will need additional scour design work with revised design plans and POA reports prepared. We will be working with Region 4 to complete this work. Project # 20518 with structure G-25-F was pulled from shelf and went to AD in December 2019 with construction planned for early 2020. Project #18611 with Structure G-19-A went to AD in early summer with construction completed in early fall 2019. Project #21819 for structures I-22-O and I-22-A had AD in September with construction scheduled February 2020.

- R5: Project #20267 with structure N-10-V on SH 160 over Rio Grande River was back on with Final Office Review (FOR) meeting scheduled January 2019. Finals (Plans, Specifications and Estimate (PS&E) sent to R5 in April 2019. Construction was scheduled for fall 2019 but now pushed out 2021. ROW acquisition goal is for June 2020. Project #20685 with structure P-01-G on SH 160 over San Juan River is progressing under design with FOR held in January 2019 in Durango. This is also a structure that was selected for CDOT's research Rapid Deployment project and that had brackets installed on Pier 5. Ongoing work progressing for deflector design with Benesch sub-consultant.

2. Supported the Transportation Engineering Training Program (TETP) – Transportation Core Curriculum for the Hydraulic training presentation that was conducted in February 2019. Steven Harelson, the new Chief Engineer, was a long time hydraulic presenter and supporter of the Core Curriculum TETP Hydraulics presentation. Steve, because of new duties and time commitments, will no longer be able to participate. To that, we solicited opportunities for Region Hydraulic to present at the Hydraulic presentation and two wanted to participate; one from R3 and one from R4. The R3 Hydraulic engineer took the required prerequisite classes in December 2019 and will present at the 2020 February class.

3. Supported the Environmental Programs Branch by participating in various committees and meetings. Committees included; Water Quality Advisory Committee (WQAC) and the Water Quality Mitigation Pool Committee (WQMPC). Attended meetings and reviewing documents for development of the new permanent water quality operation and manual template. Will be meeting soon to address concerns regarding the Mile High Flood District web portal. CDOT is required to enter in all permanent water quality control measures that detain and treat water, as it could become a water rights issue. We are also helping the Permanent Water Quality Group with the Pond Volume Certification form.

4. Supported the Specifications and Standards Unit – Worked on several drainage related standards and specifications details. Reviewed and signed/sealed CDOT Standard Plans M&S (Miscellaneous Standard) Standards for 28 drainage related details e.g. inlets, culverts, manholes etc. Worked on several new culvert pipe material types issuing new standards and specifications. As an example, we are preparing specifications for Hobas Pipe Inc. which is a new composite culvert pipe material. Worked with the Materials Branch in reviewing new drainage related products that are requesting to go onto the Approved Products List.

5. Supported the Applied Research and Innovation Branch. Attended meetings and reviewed documents and materials for several drainage related projects. The research projects could include: *Innovative Development of Neo-Rational Method for Highway Drainage Designs*, *Precipitation and Stream Gage Flood Warning System*, *Bridge Scour- Use of Non-contact Radars to Detect and Monitor Scour at CDOT Ungagged Structures*, and *Rapid Deployment Bridge Scour Alert System*. Equipment for this study has been in place for two structures; F-05-R in R3 and P-01-G in R5. They have been collecting data and monitoring the structures now for one year.

6. Hydrau-Tech consultant completed work for the CDOT Drainage Design Manual in June of 2019. The manual was uploaded onto CDOT website in September. There were a couple issues with the posting; either converting from Word to PDF or PDF to the actual website posting. It was brought to our attention that there a couple of chapters that also had formatting concerns. The consultant is in process of fixing those before the years end. The manual was also submitted for external review to the Colorado Water Conservation Board (CWCB), Mile High Flood District (MHFD) and FHWA. Received comments from MHFD and FHWA and those comments will need to be addressed in the coming year.

7. Championed and supported FHWA's Every Day Counts (EDC-5) and Collaborative Hydraulics Advancing to the Next Generation of Engineering C.H.A.N.G.E. Program. Encouraged Regions and their consultants to use 2D modeling on most-to-all culvert and bridge projects. Consultants for the Bridge Scour POA project are using 2-D modeling on most-to-all of our scour designs for CDOT's scour critical bridges. Staff Hydraulics and several of the Regions participate regularly in FHWA's 2-D Hydraulic Modeling Users Forum webinar. Brian Varrella, R4 RE (formerly R4 Hydraulic Engineer), and I participated in FHWA 2-D Peer Exchange in Phoenix, Arizona on Dec. 9-12. Exchange was sponsored by FHWA and 6 surrounding states participated attended. Various range of topics and presentations were given on 2-D modeling.

8. Responded to internal and outside agency requests for drainage information. Met with vendors and set up internal meeting with hydraulic staff and others for various drainage related products. Worked on the Risk and Resiliency group; attended meetings, participated in workshops, and reviewed reports.

Region Activities:

1. The annual Hydraulic Meeting was held in October 2019. It was an all-day meeting that consisted of presentations by Region Hydraulic Engineers (RHE's) followed by round table discussions based on an agenda of topics ranging from hydrology and hydraulics to various specific Region issues or concerns.

2. Sponsored Hydraulic training in conjunction with FHWA/Central Federal Lands. Worked with the Regions to determine the most appropriate class for the Region Hydraulic Engineers. Office of Employee Development (OED) was kind of enough to provide funding for one Hydraulic Engineer from each Region. Unfortunately, due to a conflict with Annual Colorado Association of Stormwater and Floodplain Managers (CASFM) September conference in September, only one person was able to attend.

3. CDOT Project Support continues to sponsor a corporate membership for the Colorado Association of Stormwater and Floodplain Managers (CASFM). CDOT has approximately 35-40 members statewide from Hydraulics, Environmental and other specialty disciplines.

PERFORMANCE MEASURES

The following performance measures demonstrate the heath of the Hydraulics:

Table - Performance/Compliance Measures (Hydraulics)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
	Update of the Scour Designs going to Construction for all Scour Critical Bridges	The percentage of scour critical on-system bridges (NBI Item 113 Code: 2, 3 or U) in current year that went to AD or construction.	Consultant management reports	State FY	30%	15%	35%

KEY LEARNINGS

1. RHE's voiced concerns that they cannot get approval to attend various workshops or conferences. The MHFD annual seminar and the CASFM conference are the two most important water related events to attend each year. Some of the RHE's are attending but are paying for these expenses themselves.

NEXT STEPS

1. At the advice of Staff Bridge, will be setting up a new invoice system to better track costs associated with Bridge Scour POA project for scour critical bridges.

2. Repairing existing problem culverts is an important effort for CDOT. Will be working with Specifications and Standards group to put together a culvert repair template.

2.4. ENGINEERING: PAVEMENT AND MATERIALS

INTRODUCTION

CDOT Manager: Craig Wieden
FHWA Manager: Brian Dobling

The Materials and Geotechnical Branch is responsible for ensuring quality in the products used for construction of the State transportation system. The Branch is responsible for the specifications, test procedures, and associated testing of materials to ensure compliance with CDOT standards and specifications and FHWA Regulations. The Programs in this Branch include Soils/Geotechnical, Geohazards, Concrete and Physical Properties, Asphalt Pavements, Pavement Management, and Pavement Design.

QUALITY/RESULTS

1. Fifty (50) students were trained in SMM/LIMS (Site Manager Materials tracking software) with an overall course evaluation score of 4.55 out of 5. Additionally, the CDOT Soils and Geotechnical Program conducted 12 regularly scheduled Western Alliance for Quality Transportation Construction (WAQTC) certification classes plus an additional 5 certification classes due to the demand from consultants and contractors. One certification course was provided in Grand Junction. In August 2019, the CDOT Soils and Embankment Inspector tests were reviewed and updated and CDOT will be tracking pass/fail trends related to the updated tests. 6 WAQTC training courses were also conducted.

2. Through partnerships with industry (Colorado Asphalt Pavement Association [CAPA], American Concrete Pavement Association [ACPA], Colorado Ready Mixed Concrete Association [CRMCA], etc.), CDOT hosted numerous ACI certification courses and Concrete Paving Inspector courses at our Central Lab location, and provided certified proctors for various LabCAT certifications courses over the year. 44 American Concrete Institute (ACI) certification/training courses and 4 Concrete Paving Inspector classes were offered via the Colorado Ready Mixed Concrete Association and American Concrete Pavement Association. 32 LabCAT certification courses and 7 Asphalt Inspector certification courses were offered via the Rocky Mountain Asphalt Education Center (RMAEC), including courses in Grand Junction, Colorado.

3. Two manuals were updated and improved over the course of the year. They included the Field Materials Manual (FMM), and the Pavement Design Manual. FMM improvements included additional enhancements to project documentation when using SiteManager, updated forms, the addition of a section for suspension of testers, and instructions for new documentation procedures. The Pavement Design Manual updates included a new section for design optimization, widened lanes, bottom-up cracking, designs where milling of existing asphalt was performed, and guidelines for use of geosynthetics in pavement design.

4. The Materials Advisory Committee met five times and identified and resolved Materials related issues. Significant improvements that were made include: Additions to Section 412, concrete pavement to standardize concrete pavement repairs for diamond grinding (re-texturing) cross stitching, dowel bar retrofit and slot stitching, a complete re-write of Section 601, Structural Concrete, to change the requirements for concrete mix designs from mostly prescriptive to performance based, and completed the update and rewrite of Section 502 – Piling. The MAC also approved a revised specification for the Asphalt Cement Cost Adjustment in 2019. This

specification revision was undertaken to address issues seen with the index used in the specification in late 2018 that adversely affected project delivery in 2019. The updated specification will use multiple neat binder indices instead of a single crude oil index, and will allow for an opt in/out clause similar to our current fuel cost adjustment specification.

5. The CDOT, Arizona Department of Transportation, New Mexico Department of Transportation Utah Department of Transportation Four Corners peer exchange meeting was conducted in May 2019. This meeting brought materials engineers from the Four-Corners state DOT's together for collaboration and problem-solving on shared technical issues.

6. The Central Laboratory maintained 88 tests in the American Association of State Highway and Transportation Officials (AASHTO) Accreditation Program (AAP).

7. The Central Laboratory quality review of each of the five Region Laboratories and remote testing facilities was conducted and reporting completed in May, 2019.

8. The testing reports for the round-robin proficiency program with the Regions, consultants and contractors were completed for asphalt, concrete compressive strength, aggregates, sulfates in soil, and soils materials.

9. The Pavement Management Technical Committee met five times during the year. Improvements made to the Pavement Management system are documented in the Technical Committee meeting minutes.

10. The Geohazards and Pavement Management Programs, in coordination with the CDOT Regions, finalized four-year project lists for the statewide Geohazards and Surface Treatment Programs.

11. Partnering with Industry: The Asphalt Industry Forum (AIF)/Colorado Asphalt Pavement Association (CAPA) and the CDOT/American Concrete Paving Association (ACPA) Coop each met four times to identify and resolve issues. The Colorado Ready Mixed Concrete Association and the Concrete & Physical Properties Program meet bi-monthly to discuss specification changes and administration of the ACI certifications. The Pavement Design Program met with industry representatives five times to discuss enhancements to CDOT's Pavement Design Manual, including industry concerns and enhancements regarding CDOT's Life Cycle Cost Analysis (LCCA) procedures. A new meeting process was implemented where both industries and CDOT representatives attend the LCCA review meetings to openly discuss changes and concerns with the LCCA process. Industry partnerships generate and refine the finished implemented improvements that are listed under MAC accomplishments in item 4 above. CDOT's Soils and Geotechnical Program met with industry, education, and government agencies to begin planning for the 2021 Shallow Exploration Drillers Clinic.

12. The use of CP-59 to document and approve WMA technologies and contractors continued in 2019. The total number of approved Warm Mix Asphalt (WMA) technologies now stands at 10 and contractors at 12.

13. LIMS (Laboratory Informantion Management System) continues with full project implementation on all active construction projects. System and network improvements continue to document performance improvement of the system. The Hot Mix Asphalt (HMA) and Concrete quality level/incentive programs have been incorporated into LIMS making them automated based on sample data within the program, and thus reducing the chance of erroneous information related to incentive/disincentive payments. The HMA incentive program has been vetted and was

approved for use by the Materials Advisory Committee (MAC), and the beta testing of the concrete incentive program is nearly complete and is anticipated to be adopted for official use by the MAC soon. CDOT has also engaged in a migration analysis study to evaluate cost/feasibility of moving SMM/LIMS to a web based platform, as well as to incorporate Design Build projects into SMM/LIMS.

14. A new e-learning certification entitled CDOT Materials Technician Certification was added to CDOT's Transportation Engineering Training Program (TETP). This e-learning certification provides Materials Technicians an overview of what is expected from them as a Materials Technician on CDOT projects, including processes and resources, communication protocols/expectations, documentation requirements, and also provides an overview/refresher of SMM/LIMS.

15. CDOT participated in a week long FHWA Quality Assurance Stewardship Review in September 2018. The purpose of the review was to provide an evaluation of the State DOT Quality Assurance (QA) Program and related procedures to implement the FHWA's "Quality Assurance Procedures for Construction" (23 CFR 637 Subpart B) regulation. CDOT's Quality Assurance Program was determined to be compliant with Quality Assurance Regulation, 23 CFR 637, Subpart B. Five Opportunities for Improvement were identified during the Review and all were addressed in 2019 through procedural/process revisions in our Field Materials Manual, or through specification revisions.

16. CDOT has an on-going internal process improvement initiative with respect to Buy America documentation requirements related to precast elements. Updates to our processes will continue into 2020 through coordination with pre-cast product manufacturers.

17. Low Volume Road treatments used around the State continue to be tracked on an annual basis for evaluation of pavement performance. Several innovative low volume road and preventative maintenance type treatments will be constructed in 2019 in an effort to expand low volume and PM type treatment options available to the CDOT Regions. Performance/lessons learned will be captured and reported back to the MAC.

18. Participated in a multi-state Peer Exchange/Listening Session related to the FHWA Policy on Pavement Design. This event also provided an opportunity to hear from other states on their pavement type selection processes and future planned implementation strategies.

19. The Product Evaluation Program has several new and ongoing changes/improvements in the works, including updating the FMM to show subject matter experts (SME) contact information, setting up Team Drive Folders for the SMEs to access, as well as updates to various forms related to the APL items and documentation.

20. The Concrete/Physical Properties Program, in addition to certifying Pavement Smoothness Testing Devices, also took over the certification of Pavement Smoothness Operators this year. Through these certifications, the Program certified 19 Operators, and 12 Devices in 2019. Prior to 2019, Pavement Smoothness Operators had been certified through the LabCAT Level S certification.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Pavement and Materials Program:

Table - Performance/ Compliance Measures (Pavements and Materials)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2017	2018[1]
811	**Percentage of pavements of the Interstate System in good condition**	Percent of all Interstate pavement segments rated good under the criteria set by 23 CFR 490	Highway Performance Monitoring System (HPMS)	State FY	National Performance Measure Targets: 2020: 46% 2022: 47%	44.74%	44.30%
812	**Percentage of pavements of the Interstate System in poor condition**	Percent of all Interstate pavement segments rated poor under the criteria set by 23 CFR 490	Highway Performance Monitoring System (HPMS)	State FY	National Performance Measure Targets: 2020: 1% 2022: 1%	0.31%	2.47%
813	**Percentage of pavements of the non-Interstate NHS System in good condition**	Percent of all non-Interstate NHS pavement segments rated good under the criteria set by 23 CFR 490	Highway Performance Monitoring System (HPMS)	State FY	National Performance Measure Targets: 2020: 50% 2022: 51%	42.56%	42.32%
814	**Percentage of pavements of the non-Interstate NHS System in poor condition**	Percent of all non-Interstate NHS pavement segments rated poor under the criteria set by 23 CFR 490	Highway Performance Monitoring System (HPMS)	State FY	National Performance Measure Targets: 2020: 1% 2022: 2%	0.99%	3.03%

[1]Data for the reporting year is not available until June 15th after the close of the reporting year. Therefore, data from 2018 is reported.

KEY LEARNINGS

CDOT's Asphalt Cement Cost Adjustment Specification for projects constructed in 2019 was based on an index developed from a single source crude oil supply. Concerns with how that index correlated with asphalt cement binder prices was always a concern, however, in November/December 2018, the index used dropped to historic lows, potentially resulting in a rather large unforeseen fiscal impact to CDOT for projects constructed in 2019. CDOT, as a result, undertook a rewrite of our specification, revising it to be based on neat asphalt cement binder pricing from numerous locations and various sources. We anticipate this will result in a more stable index, leading to less volatility associated with the Asphalt Cement Cost Adjustment values on projects.

CDOT still has concerns with ensuring the proper Buy America Documentation is being received for qualifying items. Buy America has always been a difficult one to enforce with the Contractor's and with Project Personnel, and continues to be difficult. CDOT would like to work with our precast Concrete Manufacturers to better educate them on our expectations related to proper documentation, and see that education and understanding documented in the Quality Manufacturing Plans submitted to CDOT to allow for Manufacturers to be listed on our Qualified Manufacturers List. The concern and goal would be to ensure compliance with Federal Buy America requirements

to the satisfaction of the FHWA Personnel, without causing additional undue burden on CDOT's Field Construction Staff.

NEXT STEPS

Asphalt Cement Cost Adjustment - Monitor the index trends and associated payments with the new specification to track the benefit to CDOT.

Buy America - Schedule a meeting with our current Qualified Manufacturers to discuss our concerns/expectations and work with them to ensure the Quality Manufacturing Plans being submitted contain the steps needed to ensure compliance. Follow up on them to ensure compliance by conducting on-site plant reviews/audits. FHWA personnel will be involved in the discussions with the manufacturers and in the plant audits to let us know they are on board with the directions taken.

2.5. ENGINEERING: DESIGN AND CONSTRUCTION

INTRODUCTION

CDOT Manager: Neil Lacey (Design) and Markos Atamo (Construction)
FHWA Manager: Shaun Cutting

The Design Program Manager and Construction Area Engineers are responsible for assisting the five CDOT Regions to maintain uniform administration and management practices in construction, design and contract administration. In addition, they are responsible for providing technical assistance to the Regions and various local agencies.

QUALITY/ RESULTS

Quality/ Results

1. There were 408 Change Orders submitted in FY2019. Of those 408, 375 (92%) were complete as submitted, 33 (8%) needed revision, and 0 (0%) needed supplemental documentation. There were 14 Major Change Orders requiring FHWA approval.

2. The Liquidated Damages table was revised and in place for FY 2020-21. The next revision is scheduled for review in FY 2022, revised bi-annually.

3. There were Two claims filed in FY 2019. Claims are filed only after the dispute resolution process is exhausted.

Status of FY19 Claims		< $250,000	>$250,000
Claims Open Beginning FY19	0	0	0
New Claims FY19	2*	0	1
Claims Resolved FY19	0	0	0
Claims Carrying Over FY20	2*	0	1

*One claim of undetermined amount

4. Dispute Status FY 2019

Status of FY19 Disputes		< $250,000	>$250,000
Disputes Open Beginning FY 19	8	4	4
New Disputes FY19	5*	3	1
Disputes Resolved FY19	8	6	2
Disputes Carrying Over FY20	2*	1	1

*One dispute of undetermined amount

5. Three Joint CDOT/ Colorado Contractors Association (CCA) Specifications Committee meetings were held and 32 standard special provisions and 4 sample project special provisions, and 4 project special provision worksheets were issued. There were 7 M-standard plans issued.

6. No Post Construction Reviews were performed.

7. One inter-regional reviews (IRR) was conducted for FY 2019: Region 3 East hosted Region 5 on November 6, 2019. Two IRR's are scheduled for middle to late August 2019: Region 3 West to host Region 4 North and Region 2 South to host Region 1 Central.

8. The Area Engineers and FHWA Area Engineers conducted Residency Visits with all of the regional design/construction residencies and traffic units.

9. Three Area Engineer/FHWA Program Delivery Team Leader meeting was held in FY 2019.

10. The Project Development and/or Contracts and Market Analysis Branches were represented at the following committee meetings:
    - CDOT/CCA Specifications Committee - 3 of 3 meetings
    - CDOT/ American Concrete Pavement Association (ACPA) Coop - 4 of 4 meetings
    - CDOT/ Colorado Asphalt Pavement Association (CAPA) Coop - 4 of 4 meetings
    - Project Development Advisory Committee (PDAC) - 4 of 4 meetings
    - Materials Advisory Committee (MAC) - 6 of 6 meetings
    - Local Agency Roundtable Team (LART) - 3 of 3 meetings
    - Resident Engineer Committee – 6 of 6 Meetings including the Annual PE II Meeting.
    - Water Quality Advisory Committee – 4 of 4 Meetings

11. Twenty construction projects and two maintenance project traffic control reviews were conducted in FY 2019, of which two were nighttime reviews. Statewide average construction and maintenance project scores were 94.1% and 98.5%, respectively. The final report was submitted to FHWA on December 19, 2019.

12. One Construction Bulletin, 3 Design Bulletins, No Division of Project Support Memos were issued. The TETP conducted training courses in numerous subject areas (number of classes held): Transportation Core Curriculum (1), Intro to Context Sensitive Solutions (1), CPM Scheduling for Construction (7), Work-Hour Estimation (updating course), Construction Project Administration (1), Construction Project Administration, Local Agencies (2), Construction Project Administration, Maintenance (1), Reading Structural Plans (1), Applied Roadway Design (1), Managing Contract Time (1), CDOT Lighting Design (1), Disputes and Claims Resolution (1), Interchange Planning and Design (1), Writing for Engineering Professionals Day 3 days (2), Preconstruction Project Management Workshop 2-day (2), Preconstruction Project Management Workshop for Specialty Groups 4 hr. (6), Project First (new course pilot 1), Train the Trainer (2). 32 instructor-led courses were held in FY 2019. In addition to the instructor-led training courses there are 8 e-learning courses: Survey Basics for Engineers, Budget Management for Project Engineers, Plan Checking, Construction Project Financials (Form 65), Specifications Writing for Designers, Guardrail Systems for Construction Engineers and Inspectors, Construction Change Orders, and Construction Force Account.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Design and Construction Programs:

Table 1 - Performance/ Compliance Indicators (Design and Construction)

SAP #	Indicator	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2019 Actual
465	**Revisions under Advertisement**	Percent of projects that have one or more Revisions under Advertisement	CDOT Work Plan	State FY	Track trend	2019: 48% 2018: 43% 2017: 39% 2016: 55% 2015: 45% 2014: 51%
466	**Constructability reviews**	Number of projects that include a constructability review during the design phase	CDOT Work Plan	State FY	Track trend	2019: 1 2018: 0 2017: 2 2016: 0 2015: 0 2014: 5
323	**Number of major change orders**	Number of change orders which required FHWA approval	CDOT Work Plan	State FY	Track trend	2019:14 2018: 11 2017: 20 2016: 4 2015: 5 2014: 0
328	**Number of change orders approved by CDOT**	Number of change orders which did not require FHWA approval	CDOT Work Plan	State FY **Quarterly reporting**	Track trend	2019 :394 2018: 415 2017: 443 2016: 374 2015: 278 2014: 314
324	**Number of claims paid out after Dispute Resolution Board (DRB) process followed**	Claim dollars disputed divided by total contract dollars	CDOT Work Plan	State FY	Track trend	2019 5.80% 2018: 0.03% 2017 :0.03% 2016: 0.19% 2015: 0.04% 2014: 0.06%
325	**Number of disputes filed each year**	Contract dollars disputed divided by total contract dollars	CDOT Work Plan	State FY	Track trend	2019: 0.20% 2018: 6.72% 2017: 0.27% 2016: 0.20% 2015: 1.99% 2014: 0.23%

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SAP #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2019 Actual
464	**Value Engineering (VE) Reviews**	The percentage of projects over $40 million in which a Value Engineering Assessment was completed	CDOT Work Plan	State FY	100%	100%

345	**Time to close a project from final acceptance to project closure in (Fiscal Management Information System (FMIS)**	Average # of days to close a project	CDOT Work Plan	State FY **Quarterly reporting**	200 days	372 days*

*average number of days to close a project following acceptance date. The results are based on a list of projects closed in FMIS that have a construction phase, and are CDOT projects.

KEY LEARNINGS

1. CDOT determined that landscape establishment is a major factor for the delay in project closure, SAP #345. Currently we are working on process improvements in this regard. The goal is to have 95% of projects closed and de-budgeted within 12 months of project acceptance.
2. Removed QA reviews, Item #13, since all prior QAR's have been completed and recommendations implemented.
3. Removed FHWA FIPI's and certifications for proprietary items as these are no longer a FHWA requirement.

NEXT STEPS

Continue to teach and support the development of engineering training courses in order to support consistency and maintain knowledge throughout our design and construction staff.

2.6. ENGINEERING: PROGRAM AND PROJECT DELIVERY – PROGRAM MANAGEMENT

INTRODUCTION

CDOT Manager: Jane Fisher
FHWA Manager: Kelly Galardi

QUALITY/ RESULTS

To ensure overall Program quality, the Program Management Office (PMO) tracked program delivery monthly at the statewide level using the Expenditure Performance Index (XPI) to compare actual construction expenditures to planned for the 2019 calendar year (CY19). The results of data analysis and data trending are reported to the Regions on a monthly basis for review and actions, if necessary. Statewide data trends were monitored and, when necessary, actions were taken at the Governance level to adjust the portfolio of projects and meet Program goals.

To improve the quality of Program and Project Management, PMO led the initiatives described in the table below.

Table – PMO Initiatives

Initiative	Description	Status	Benefits
Asset Management	Guidance that supports decision-making for key asset programs	Draft prepared; migration to the PM webpage is in process	Improves consistency in the management of key asset programs by delineating roles and responsibilities, processes, business rules, terminology and reporting requirements
Program/ Project Management Webpage	Webpage with PM information, guidance, tools, templates, etc.	Updated quarterly	One-stop shop for program and project management information regarding processes and tools
Web-based Project Development Manual (PDM)	Integration of The Project Development Manual on the PM Webpage	Initial specialty content launched. Overall completion planned for early 2020.	• Summarizes technical project information for the PM and team • Links to Specialty Unit information in technical manuals and websites
MS Power BI Dashboards	Visual, easy-to-read reports that instantly aggregate and organize key program and project management data and metrics	Updated Monthly	• Provides access to consolidated data in an easily accessible and understandable manner • Track project progress and helps identify issues • Facilitates responses to questions and set realistic expectations regarding funding availability, project timelines, etc.
Landscape warranty task force efforts	Landscape establishment for most projects will be handled by CDOT Maintenance and/or a separate contract, allowing projects to close sooner.	New Contracting capacity will be in place by mid to late November. New Traffic Control contracts to be issued 1st quarter 2020.	• Closing construction projects earlier. • Landscape establishment will be accomplished by trained CDOT staff or contractors specializing in landscaping, leading to better quality work. • Improved inspection of soil and seeding will ensure that quality work is provided.

Initiative	Description	Status	Benefits
OnTrack	Project information system to support program and project management lifecycle, including multiple levels of CDOT stakeholders across functions, Regions, headquarters and partner organizations (e.g. FHWA)	Pilot testing - 2020 Rollout -Late 2020	• User friendly, one-stop shop for all project information, including progress tracking, workflows, approvals, notifications, and more • Supports efforts to group and aggregate projects, identify program needs, prioritize projects and distribute funds • Provides access to easy-to-use metrics-based dashboards • Data from across the program and project lifecycle can be used to forecast • Increases efficiency of process workflows, collaboration and data entry • Aligns programs/projects with the STIP and track asset improvements
Project Management Guidance for Preconstruction & Construction	Processes, guidance, tools and requirements for project managers that are standardized across CDOT	Preconstruction Guidance Updated quarterly; Construction Guidance is in development	• Establishes standardized, consistent approach for managing projects across Regions • Ensures accurate and consistent project data is maintained in OnTrack, critical to supporting accurate progress reporting and the capability to aggregate project data in dashboards
Updated 09/30/2019			

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Program Management Program

Table - Performance/ Compliance Measures (Program Management)

PM #	Indicator	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
555	**Expenditure Performance Index (XPI)**	XPI is actual program expenditures divided by annual target[1] for program expenditures.	Reported to PM Governance	**Monthly**	0.95≤XPI ≤1.05	0.91	0.75

[1]CY19 annual target was reflects planned expenditures as of 01/2019.

KEY LEARNINGS

The Calendar Year End 2019 XPI is 75 percent of the target XPI, with total expenditures of $669 million compared to a target of $889 million, a variance of $220 million or -24.7 percent, which exceeds the annual target of ± 5 percent.

Lower than planned expenditures and XPI are due to a combination of factors influenced by several major projects as well as the remainder of the project portfolio. Analysis of the causes include delays to the construction schedule caused by later than planned advertisement and award, construction issues, disputes, and weather; delays to payments resulting from landscaping requirements and late contractor invoices; impacts to costs from project savings; and scope changes.

NEXT STEPS

The CY20 Expenditure Target will take into account the level of design maturity of the projects

included in the target. Project baselines will be set at the Field Inspection Review (FIR) Milestone and adjusted at construction contract award. Baseline updates may occur at other intervals during the project lifecycle, through uniform change control administered by the Regions. PMO Governance will determine when program adjustments are necessary.

2.7. ENGINEERING: RIGHT OF WAY

INTRODUCTION

CDOT Manager: Christine Rees
FHWA Manager: Jeff Bellen

The acquisition of private property for public use is governed by a host of state and federal rules and regulations. The Right of Way (ROW) program has overall responsibility for the acquisition of real property on Federal Aid projects. This responsibility includes assuring that acquisition and relocation activities are conducted in compliance with Federal and State legal requirements.

The ROW program is part of the CDOT Project Development Branch. The right of way phase of the project development process can be divided into four process categories or work activities:

- Surveying;
- Valuation (Appraisals/Review and Waiver Valuations);
- Acquisition; and
- Relocation.

QUALITY/RESULTS

1. All of the required actions in the FHWA ROW Required Actions List assigned to ROW were completed for fiscal year 2019.

2. CDOT's ROW Manual is updated every 5 years, with the last complete update submitted to FHWA on October 15, 2015. Process updates to reflect the *Amerco* decision and changes to 23 CFR 710-201(C)(2)(i) were made with direction and prior approval from FHWA.

3. There were no requests for waivers.

4. In accordance with the Statistical Report requirement in 49 CFR Part 24 Appendix B, CDOT submitted the required annual statistical report to FHWA on November 19, 2019.

5. To better understand data, a baseline of the number of Federal Aid projects with ROW is useful and shown below.

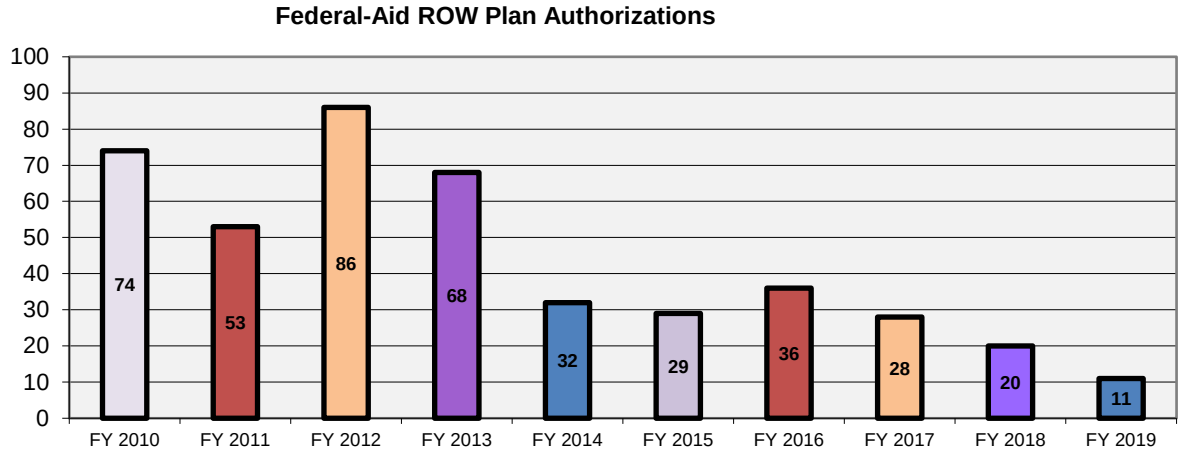
Table - FY 2010-2019 CDOT Authorized ROW Plans for Federal Aid Projects

ROW Plans Authorized	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	10 Year Avg
Federal Aid Projects with ROW	74	53	86	68	32	29	36	28	20	**11**	44

6. Ongoing monitoring regarding Uniform Act-based processes was performed on every project for which federal participation was sought. All required forms were fully completed, and three or more levels of review were done on each acquisition and relocation prior to issuance of any funds.

7. CDOT authorized 11 ROW Plans for Federal Aid Participation projects and 28 ROW plans for non-participation projects, for a total of 39. (See Figure FY 2010 – 2019 Federal Aid ROW Plan Authorizations).

Figure - FY 2010 – 2019 Federal Aid ROW Plan Authorizations



8. HQ ROW staff and Region ROW staff continue to conduct systematic file reviews. In FY 19, HQ ROW developed new quality assurance efforts for a completed business relocation on the I-70 Central Project. Quality assurance efforts included a pre-designed interview form, a site visit to the new business location, an interview with the business owner and a complete reconciliation of all claims and determinations within the file. As a result of the effort, the ROW Program has identified communication during the reimbursement process, photographic documentation of displacement business sites, and transparency of remaining benefit eligibility as potential areas for improvement in the relocation program.

9. On September 25, 2018, HQ ROW, in cooperation with a consulting firm and CDOT's Civil Rights unit, presented a half-day training for CDOT's consultant ROW agents and local agencies for those who could not attend the four previously offered trainings. The focus of the training session was CDOT's new ADA Voluntary Curb Ramp Acquisition Pilot Program and new Title VI documentation procedures required by the Civil Rights unit. HQ ROW Staff also presented information related to Valuation, Acquisition, Relocation, and Pilot Programs at the October 2018 meeting of the Denver Chapter of the International Right of Way Association. HQ ROW, in cooperation with a consultant, completed an in-depth update to training materials for the annual TETP statewide training program. The new materials included survey, acquisition, and relocation information and were presented to CDOT staff in February 2019. Finally, HQ ROW continued to provide training and technical assistance to consultants, local agencies and CDOT Region ROW staff as requested.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Right of Way Program:

CDOT will track continue to track the Conditional Clearance, Condemnation, Fair Market Value Settlement Rate, and Appeals statistics and compare against the prior 10 years for major deviations.

Table - Performance/Compliance Measures (ROW)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	10-Year Avg	2019
319	**Conditional clearances**	Percentage of Federal-aid projects with conditional ROW certifications	A list of conditional clearances	State FY	Track trend	13%	20%
320	**Condemnations**	Percentage of parcels acquired using condemnation	Uniform Act Relocation Assistance and Real Property Acquisition Statistical report as required by 49 CFR, Appendix B	State FY	Track trend	4.31%	5.31%
322	**Fair market value settlement rate**	The percentage of parcels settled at FMV	Calculation of the number of parcels that settled at FMV versus the total number of parcels acquired	State FY	Track trend	69%	64%
321	**Appeals**	The number of appeals filed each year	A list of appeals	State FY	Track trend	1.3	2
426	**ROW customer survey**	ROW appraiser and agent customer service rating	ROW customer service survey by Region	State FY	Achieve very good or better in all categories	4.4	4.52

Additional detail on the performance measures is provided below:

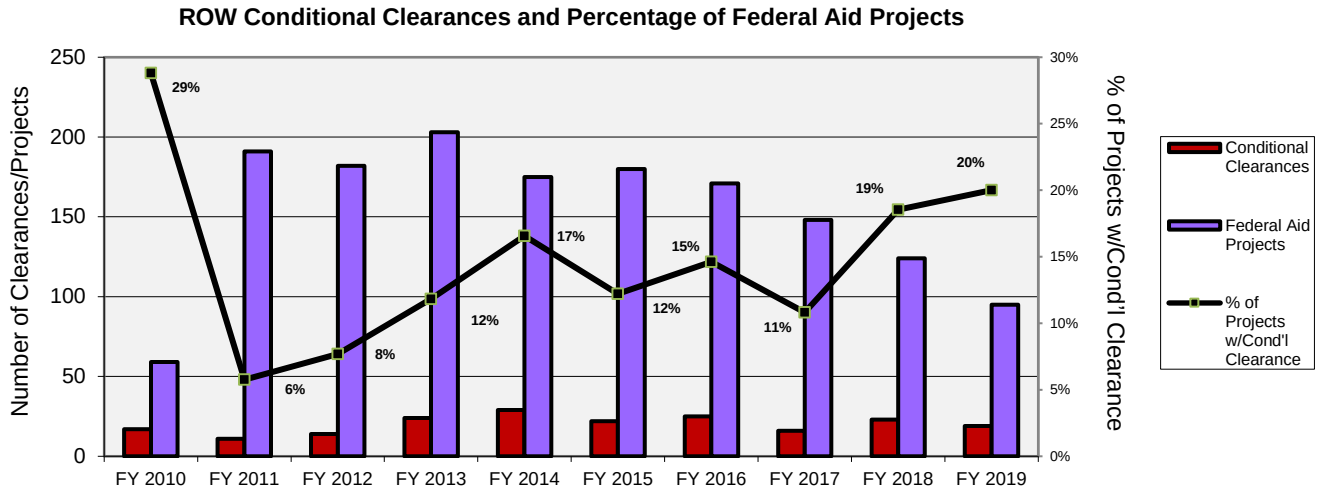
10. Conditional Clearances – Percentage of Federal Aid projects with conditional ROW certifications was 20%.

Table - FY 2010 – 2019 Federal Aid Projects with Conditional Clearances

Federal Aid Projects with ROW Conditional Clearances	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	10-Year Avg
Federal Aid Projects with ROW	59	191	182	203	175	180	171	148	124	**95**	**153**
Conditional Clearances (granted)	17	11	14	24	29	22*	25*	16*	23*	**19**	**20**
Percentage of Conditional Clearances	29%	6%	8%	12%	17%	12%	15%	11%	19%	**20%**	**13%**

* FY 2015, 2016, 2017, 2018 & 2019 Clearances include Local Public Agency (LPA) projects.

Figure - FY 2010 – 2019 Federal Aid Projects with ROW Conditional Clearances

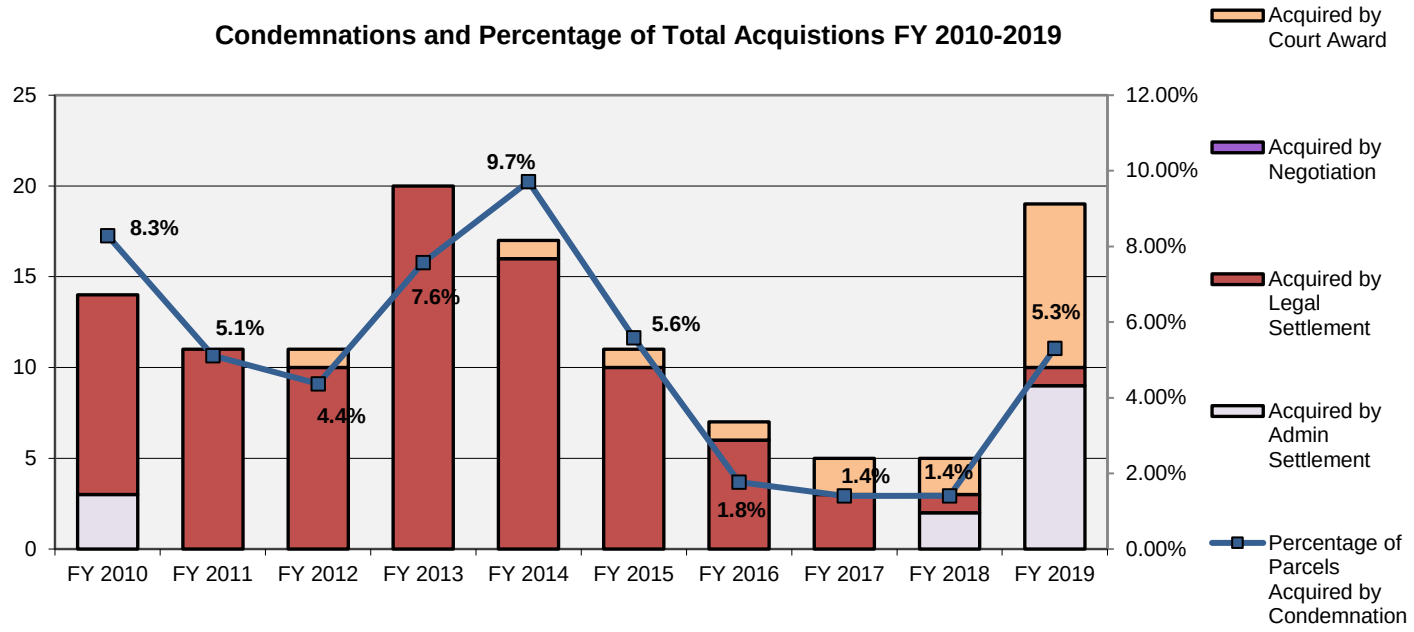


11. Condemnations – In FY 2019, 358 acquisitions were conducted. Nineteen (19) acquisition cases were forwarded to the Office of the Attorney General for the initiation of condemnation proceedings. Nine (9) cases resulted in acquisition by condemnation (via court award).

Table - FY 2010 – FY 2019 Condemnations – Cases Settled

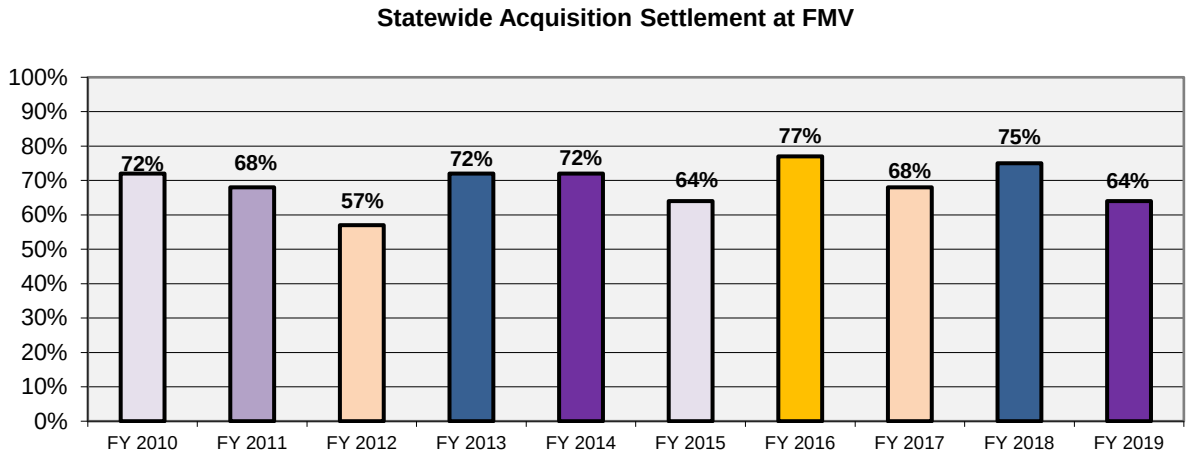
Condemnations – Cases Settled	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	10-Year Avg
Total Number of Acquisitions (Acq)	169	215	252	264	175	197	395	252	427	**358**	**281**
Parcels Acquired by Region Administrative Settlement / % of Total Acq	3 / 1.7%	0 / 0%	0 / 0%	0 / 0%	0 / 0.0%	0 / 0%	0 / 0%	0 / 0%	2 / 0.5%	**9 / 2.5%**	**1.4 / 0.5%**
Parcels Acquired by Legal Settlement / % of Total Acq	11 / 6.5%	11 / 5.1%	10 / 4.0%	20 / 7.6%	16 / 9.1%	10 / 5.1%	6/ 1.5%	3 / 1.2%	1 / 0.2%	**1 / 0.3%**	**8.9 / 3.2%**
Parcels Acquired by Negotiation / % of Total Acq	0 / 0%	0 / 0%	0 / 0%	0 / 0%	0 / 0%	0 / 0%	0 / 0%	0 / 0%	0 / 0%	**0 / 0%**	**0 / 0%**
Parcels Acquired Using Condemnation (via court award) / % of Total Acq	0 / 0%	0 / 0%	1 / 0.4%	0 / 0%	1 / 0.6%	1 / .5%	1 / 0.3%	2 / 0.8%	2 / 0.5%	**9 / 2.5%**	**1.7 / 0.6%**
TOTAL (Cases) / % of Total Acq	14 / 8.3%	11 / 5.1%	11 / 4.4%	20 / 7.6%	17 / 9.7%	11 / 5.6%	7 / 1.8%	5 / 1.4%	6 / 1.4%	**19 / 5.3%**	**12.1 / 4.3%**

Figure - FY 2010 – FY 2019 Condemnations



12. Statewide acquisition settlement rate at Fair Market Value: 64%. Tracking the settlement rate at Fair Market Value (FMV) is used as one gauge to assess the overall health of the CDOT ROW Program. Settlement rates are influenced by the strength and quality of the property rights valuations and the negotiation skills of the acquisition agents. The ROW Program's consistent settlement rate trend in the 60-75% range is interpreted as evidence that the property owners from whom CDOT acquires property rights have confidence in CDOT's valuation methods and outcomes used to determine the FMV. Similarly, the trend also indicates that the acquisition agents meeting and negotiating with the property owners are doing a very good job of explaining CDOT's valuation and acquisition processes, and then negotiating toward the final acquisition price.

Figure - FY 2010 – FY 2019 Settlement at FMV



Beginning in FY 19, CDOT ROW will begin tracking the FMV settlement rate at three different valuation thresholds to reflect the different valuation methods used and to provide additional context to the FMV Settlement Rate statistic. The three thresholds will be 1) FMVs under $5,000 where the landowner does not have a right to obtain an appraisal at CDOT's expense, 2) FMVs between $5,000 and $25,000 where CDOT may perform waiver valuations, but the landowner is provided an option of obtaining an appraisal, and 3) FMVs above $25,000 where CDOT will always perform appraisal and the landowner is provided an option of obtaining an appraisal. In FY 2019, the FMV settlement rate below $5,000 was 77%, between $5,000 and $25,000 was 48%, and above $25,000 was 34%.

Table - FY 2010 – FY 2019 FMV Settlement Rates

FMV Settlement Rate	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	10-Year Avg
FMV Settlement Rate below $5,000	NA	NA	NA	NA	NA	NA	NA	NA	82%	**77%**	**80%***
FMV Settlement Rate between $5,000 and $25,000	NA	NA	NA	NA	NA	NA	NA	NA	66%	**48%**	**57%***
FMV Settlement Rate above $25,000	NA	NA	NA	NA	NA	NA	NA	NA	50%	**34%**	**42%***
TOTAL FMV Settlement Rate	72%	68%	57%	72%	72%	64%	77%	68%	75%	**64%**	**69%**

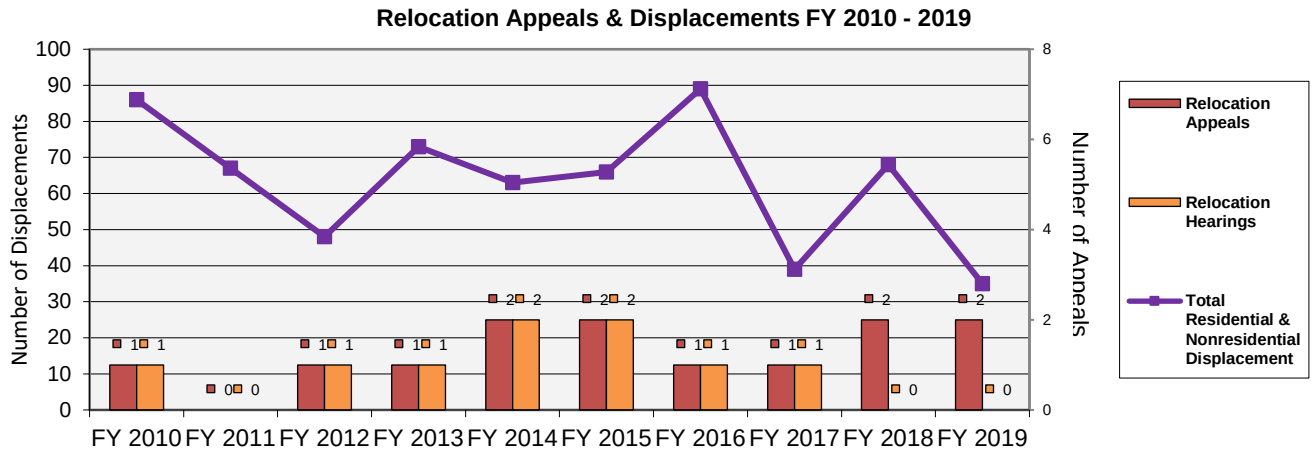
*10-Year FMV Settlement Rates only reflect 2 years of data for the three valuation thresholds

13. Appeals – Two (2) relocation appeals were filed.

Table - FY 2010 – FY 2019 Appeals

Appeals	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	10-Year Avg
Appeals Filed	1	0	1	1	2	2	1	1	2	**2**	**1.3**
Appeals that went to Hearings	1	0	1	1	2	2	1	1	0	**0**	**0.9**
Total Residential and Nonresidential Displacements	86	67	48	73	63	66	89	39	68	**35**	**63.4**

Figure - FY 2010 – 2019 Appeals



14. Mid FY 2010, CDOT ROW began the process of surveying the public impacted by ROW acquisition and/or relocation. That survey was a Quality Assurance Review (QAR) effort and, although it

was conclusive, CDOT has decided to continue these efforts in order to assure continued high quality customer service to the public. For FY 2019, the rate of return on this survey was 58%. Following are statewide results of said survey for FY 2019 and FY 2018. In FY 2019, CDOT achieved very good or better in all categories, and an overall rating of 4.53, which was higher than the 10-year average of 4.4.

Figure - FY 2019 ROW Customer Survey

Colorado Department of Transportation:
Right of Way Customer Service Survey
(FY 2019 Information Summary - STATEWIDE)

We are striving to provide excellent customer service and request for your assistance. Please take a moment to fill out this survey and give us your constructive input. Please skip any questions that are not applicable to your experience. Please return this survey to us in the provided envelope, or send to CDOT – ROW, 2829 W. Howard Place Ave., Denver, CO 80204

Appraiser — Average Ratings

1. What was the Appraiser's name who worked with you? (See Details on Compilation Sheet)

2. How well did the Appraiser explain the appraisal process to you? (Please circle one) — 4.41 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. How well did the Appraiser work with you when your appraisal visit was conducted? — 4.41 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

4. Were your questions answered in a clear and timely manner? (Please circle one) — 0.99 **

Yes	*No*
98.91%	1.09%

Comments (See Details on Compilation Sheet)

Acquisition Agent

1. What was the Agent's name who worked with you on Acquisition? (See Details on Compilation Sheet)

2. How well did the Acquisition Agent explain the project as it related to your property? — 4.59 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. Were you comfortable with the amount of time you had to consider the offer for your property? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

4. Were your questions answered by the Acquisition Agent in a clear and timely manner? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

Relocation Agent

1. What was the Agent's name who worked with you on Relocation? (See Details on Compilation Sheet)

2. How well did the Relocation Agent explain the project as it related to your property? — 4.70 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. Were you comfortable with the amount of time you had to consider your Relocation offer? — 0.89 **

Yes	*No*
88.89%	11.11%

Comments (See Details on Compilation Sheet)

4. Were your questions answered by the Relocation Agent in a clear and timely manner? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

Other

Do you have any other comments or questions about the service we provided? Please feel free to write on the back of this sheet as well. Please include your name and contact information if you would like a response.
(See Details on Compilation Sheet)

Overall Rating 4.53

Number of Surveys Disbursed: 257
Number of Surveys Received: 150
Response Rate: 58.37%

* Excellent = 5, Very Good = 4, Good = 3, Fair = 2, Poor = 1
** Yes = 1, No = 0

Figure - FY 2018 ROW Customer Survey

Colorado Department of Transportation:
Right of Way Customer Service Survey
(FY 2018 Information Summary - STATEWIDE)

We are striving to provide excellent customer service and request for your assistance. Please take a moment to fill out this survey and give us your constructive input. Please skip any questions that are not applicable to your experience. Please return this survey to us in the provided envelope, or send to CDOT – ROW, 4201 E. Arkansas Ave., Denver, CO 80222.

Appraiser — Average Ratings

1. What was the Appraiser's name who worked with you? (See Details on Compilation Sheet)

2. How well did the Appraiser explain the appraisal process to you? (Please circle one) — 4.26 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. How well did the Appraiser work with you when your appraisal visit was conducted? — 4.32 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

4. Were your questions answered in a clear and timely manner? (Please circle one) — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

Acquisition Agent

1. What was the Agent's name who worked with you on Acquisition? (See Details on Compilation Sheet)

2. How well did the Acquisition Agent explain the project as it related to your property? — 4.51 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. Were you comfortable with the amount of time you had to consider the offer for your property? — 0.98 **

Yes	*No*
98.46%	1.54%

Comments (See Details on Compilation Sheet)

4. Were your questions answered by the Acquisition Agent in a clear and timely manner? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

Relocation Agent

1. What was the Agent's name who worked with you on Relocation? (See Details on Compilation Sheet)

2. How well did the Relocation Agent explain the project as it related to your property? — 4.88 *

Excellent	*Very Good*	*Good*	*Fair*	*Poor*

3. Were you comfortable with the amount of time you had to consider your Relocation offer? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

4. Were your questions answered by the Relocation Agent in a clear and timely manner? — 1.00 **

Yes	*No*
100.00%	0.00%

Comments (See Details on Compilation Sheet)

Other

Do you have any other comments or questions about the service we provided? Please feel free to write on the back of this sheet as well. Please include your name and contact information if you would like a response.
(See Details on Compilation Sheet)

Overall Rating: 4.49

Number of Surveys Disbursed: 108
Number of Surveys Received: 57
Response Rate: 52.78%

* Excellent = 5, Very Good = 4, Good = 3, Fair = 2, Poor = 1
** Yes = 1, No = 0

KEY LEARNINGS

FY 2019 saw both a reduction in the Fair Market Value Settlement Rate and an increase in the total number of condemnations. The reduced Fair Market Value Settlement Rate appears to be mainly due to administrative settlements for parcels valued above $5,000, but the overall rate is still within the range of values seen over the last ten years.

While the number of condemnations in FY 2019 is higher than the prior three fiscal years, the number of condemnations as a percentage of total acquisitions is still well below the average seen in FY 2010 through FY 2016.

NEXT STEPS

CDOT will continue to monitor the Fair Market Value Settlement Rate across different valuation thresholds to identify the root cause of any changes in the rate.

In response to the findings of the quality assurance relocation site visit, HQ ROW will begin tracking relocation claims and determinations on an ongoing business, and site visits will continue to be utilized as a quality assurance method on future projects with complex business relocations.

2.8. ENGINEERING: STRUCTURES

INTRODUCTION

CDOT Manager: Mike Collins
FHWA Manager: Matt Greer

The Structures Program is responsible for working with the Regions to ensure structures are properly designed, constructed, and maintained throughout the state. Structures include: major structures (bridges and culverts that span more than 20 feet), minor structures (culverts and bridges that span 4 to 20 feet), overhead sign structures, high mast luminaires, and mast arm traffic signals, retaining walls, noise walls, and tunnels. The staff of the Structures program develops structural design requirements, standard structural details, and structural construction specifications. In addition, the Structures program evaluates structural products and materials. The Structures program provides the vital services of: structure inspection, fabrication inspection, construction assistance, structure asset management, bridge load rating, and oversize overweight vehicle permit investigations.

QUALITY/RESULTS

Staff Branch and Region Activities:

1. The FHWA Colorado Division bridge engineer continues to be invited to participate in the Department's quarterly bridge inspection & asset management meetings as well as the biweekly Staff Bridge unit leader meetings. Issues with the Department's structures program and needed improvements are identified, process improvements are discussed, and process improvements are implemented at these meetings.

2. Funds continue to be directed to On-System bridge preventative maintenance actions, bridge repairs requiring engineering, and bridge rehabilitations, per the CDOT Transportation Asset Management Plan.

3. The data management program Bridge Management (BrM) has been upgraded to the Enterprise version to improve data quality, data collection processes, and streamline inspection data reporting for the department moving forward until the System for Inspection & Management of Structural Assets (SIMSA) is in production.

4. Development of SIMSA began in 2018 which will expand the data collection to all structural assets, improve data collection quality and timeliness, be web based, be spatially driven, reduce paper usage, and expand the access to structure data for CDOT personnel at all levels.

5. The CDOT Load and Resistance Factor Design (LRFD) Bridge Design Manual became mandatory to use Jan 1, 2018. Minor improvements have been identified and those improvements are now being reviewed for incorporation into the manual.

6. Staff Bridge completed the first stage with the CDOT Office of Financial Management and Budget (OFMB) on Off-System Bridge Program process improvement to better manage off-system funding and awarded projects tracking from award to completion. The entire Off-System Bridge Program process has been documented and sent out for review and implementation by all stakeholders.

7. Staff Bridge continues to improve FHWA National Bridge Inspection Standards (NBIS) inspection metrics evaluation by regularly tracking bridge inspection frequency, and inspection schedules.

8. Consultants have been selected to perform nondestructive evaluation of post tensioned bridges and efforts have begun to implement the first task order.

9. Staff Bridge has completed all ratings of bridges on the Interstate and within reasonable access for Emergency Vehicles (EVs) and is continuing to rate required bridges for Specialized Hauling Vehicles (SHVs), with an expected completion date of December 2020. These efforts are reducing the risk of bridge overloading due to EVs and SHVs.

Region Activities:

1. The Branch produces an essential repair tracking report. The essential repair finding spread sheet is effective in tracking maintenance needs, identifying future structure project work, and the subsequent repairs.

2. Regions bridge maintenance continue to schedule essential repair work.

3. Regional maintenance crews have been performing regular preventative maintenance to ensure the longevity of CDOT's bridges.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Structures Program. CDOT updates the bridge[1] reporting data annually in April.

Table - Performance/ Compliance Measures (Structures)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
745, 746, 747	**NHS bridges[1] and deck area in Poor condition (FHWA Definition)**	Number of Poor bridges* per NHS Deck area of Poor bridges* per NHS Percentage of Poor deck area per NHS	Staff Bridge annual asset management reports	State FY	National Performance Measure Targets: 2020: 4% 2022: 4%	101 1.14M sf 3.8%	104 1.85M sf 6.12%
748, 749, 750	**NHS bridges[1] and deck area in Good condition (FHWA Definition)**	Number of Good bridges* per NHS Deck area of Good bridges* per NHS Percentage of Good deck area per NHS	Staff Bridge annual asset management reports	State FY	National Performance Measure Targets: 2020: 45% 2022: 44%	1,193 14.2M sf 47.3%	1,148 14.0M sf 46.39%

[1]The term "bridge" is used in place of "major structures", which includes all bridge and culvert structures that span more than 20 feet along the centerline of the carried roadway.

Additional detail on the performance measures is provided below:

Figure - NHS Bridge Condition

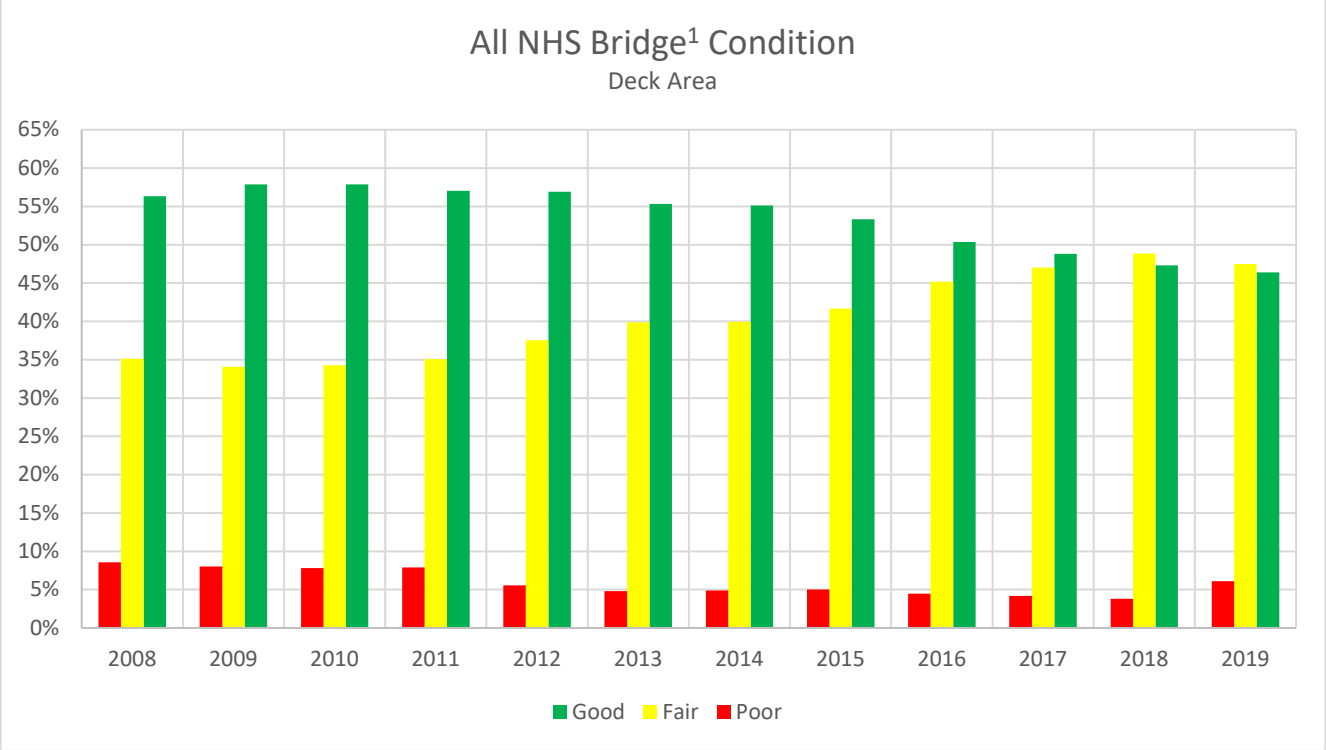
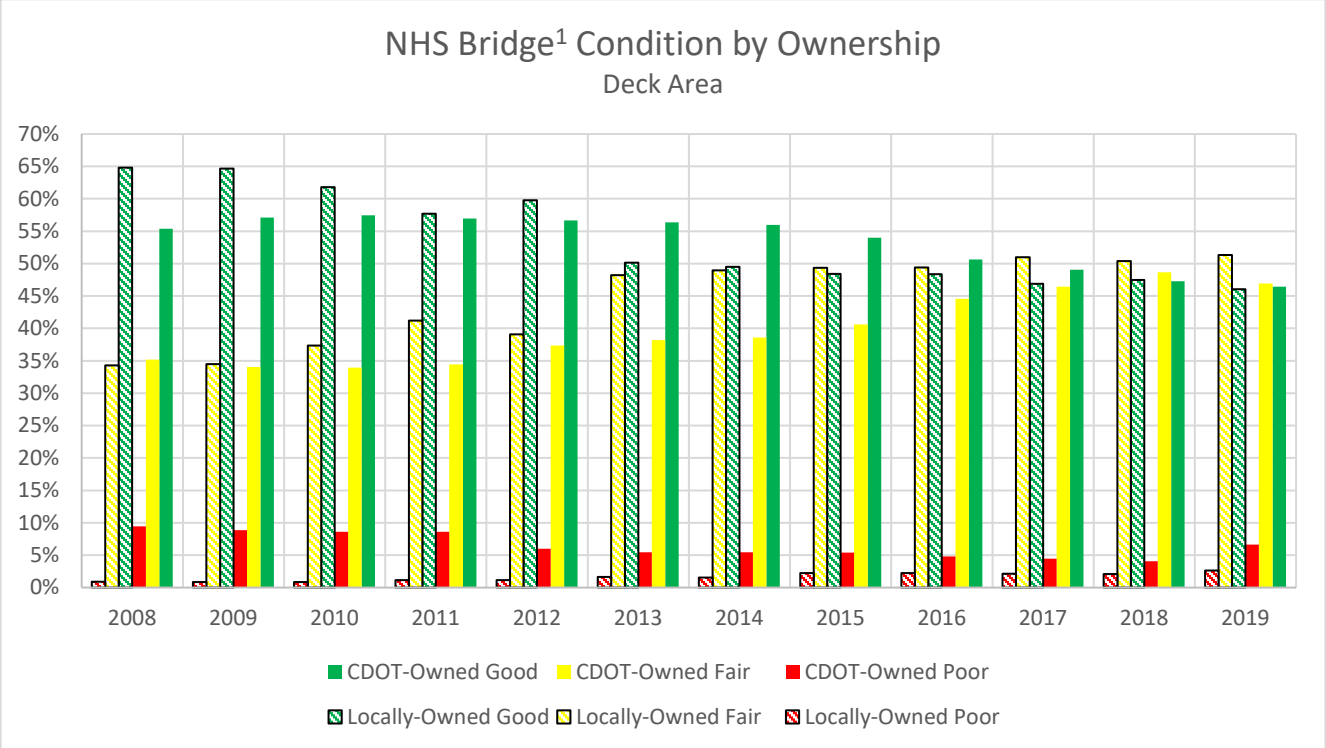


Figure - NHS Bridge Condition by Ownership



KEY LEARNINGS

No key learnings were identified.

NEXT STEPS

1. Begin a more formal process for tracking construction-related issues with CDOT's structures across the state. Constructed-related issues are becoming a more frequent concern for CDOT structures as well as other CDOT-owned assets. Staff Bridge plans to begin a more formal project-tracking process which will, in part, assist in tracking construction-related issues with CDOT's structures.

2. Begin to track projects in more detail to capture (a) construction milestones for new structures (b) potential construction-related issues with structures (c) lifecycle costs for structures.

2.9. ENGINEERING: TRAFFIC AND SAFETY ENGINEERING

INTRODUCTION

CDOT Managers: Charles Meyer and Julie Mileham
FHWA Manager: Dahir Egal

The Traffic and Safety Engineering Branch (The Branch), in collaboration with the CDOT Highway Safety Office and many other safety stakeholders, is focused on reducing fatalities and serious injuries resulting from crashes on the transportation system and the associated human and economic loss and as such is the responsible steward for developing, maintaining, and coordinating delivery of the Highway Safety Improvement Program (as defined by 23 CFR 924) for CDOT.

The Branch administers the FHWA Highway Safety Improvement Program (HSIP), which includes maintaining the Colorado Strategic Highway Safety Plan (SHSP), delivering HSIP funding through crash-reducing projects and programs, and addressing high risk rural roads. The Branch is responsible for developing and maintaining the FHWA-mandated Strategic Highway Safety Plan (SHSP). CDOT understands the importance of a vision of transportation safety around Colorado and worked with Colorado stakeholders in 2014 to form that vision - Moving Colorado Toward Zero Deaths. CDOT continues to work with its stakeholders to deliver the SHSP implementation plan, and will update the plan in 2019. FHWA and CDOT will ensure that SHSP implementation efforts are developed and tracked for each emphasis area identified.

This strategic safety plan is the roadmap for developing the annual Colorado Integrated Safety Plan (ISP). The ISP is a comprehensive program and project plan for addressing both behavioral and engineering safety issues. The ISP meets the annual safety program planning requirements of the NHTSA. The goal of the program is to reduce traffic deaths on Colorado's highways. Primary focuses of the program, which are implemented by the Office of Transportation Safety, include reducing impaired driving related traffic deaths, motorcycle and pedestrian fatalities, and increasing adult seat-belt use. Public information and outreach activities are coordinated through the program, as are training and education services and high visibility and enforcement (HVE). The ISP also lists programs and projects for building and improving roadway infrastructure to improve roadway safety.

The SHSP also provides a basis for delivering HSIP funding. The Branch works with Region traffic engineers and local agencies to identify and construct cost-effective projects that improve safety on Colorado's roadways. This is accomplished by assessing the nature and magnitude of safety problems on roadways in a Region, county, or town and providing adequate information to support the development of an investment strategy to resolve the problems. Finally, a cost-benefit analysis is employed to ensure that the most beneficial and cost-effective safety projects are selected for implementation by the Regions.

Statistically-based and consistent with the Highway Safety Manual (HSM), the Branch applies advanced safety performance functions (SPF) and diagnostic analysis to identify statewide locations of high crash concentrations with potential for crash reduction. This analysis is applied to the above HSIP programs as well as nearly every project in the state by means of project-safety assessments done during the early planning and design phases.

The Branch also acts as the state's repository for statewide traffic crash information. On average, over 100,000 crash records are reported in a calendar year. The Branch administers both the National Highway Traffic Safety Administration (NHTSA) and FHWA funding to improve the accuracy, completeness, timeliness, and availability of the data after receiving the statewide crash records from the Department of Revenue. The Branch serves on and carries out the strategic plan of the

Statewide Traffic Records Advisory Committee (STRAC), made up of representatives from the Colorado Department of Transportation, Revenue, Public Health and Environment, Human Services, Public Safety, and the Judicial Department. Crash data serves as the foundation for planning safety mitigation projects and programs.

State agencies rely on crash data to meet the requirements of the federal FAST Act (Fixing America's Surface Transportation Act, December 4, 2015), which includes timeliness, accuracy, uniformity, integration, and accessibility of data suitable for problem identification and countermeasure analysis. CDOT has put forth significant effort over the last year to cultivate a crash data set that possesses these attributes. CDOT remains committed to improving its safety data and has established a goal that crash data processing backlogs are kept to a minimum of no more than four months at all times.

The Office of Transportation Safety (OTS) administers the state's traffic safety program funded by the NHTSA.

QUALITY/RESULTS

1. Traffic Fatalities – The mission of both the OTS and the Branch is to "reduce the incidence and severity of motor vehicle crashes and the associated human and economic loss". In 2017, Colorado saw fatalities hit the highest number since 2010, with a slight drop from 2017 in the 2018 fatalities. While CDOT has continued to deliver programs that engineer safer highways, educate the driving public, recommend traffic safety legislative enhancements, and conduct high-visibility enforcement of the State's driving laws, fatalities and the fatality rate continued to increase. This marked increase can in part be attributed to Colorado's popularity – increases in population, significantly in urban areas, and increases in VMT and registered vehicles. Consistently now, for the last three years, Colorado saw urban fatalities surpass rural fatalities, a historic trend change. While 2019 crash data is currently being verified and is not yet official, preliminary indications show that the number of fatalities has dropped again from 2018 but still consistent with the overall increasing trend from 2010.

   Many of the most serious transportation safety challenges continue to be driver behavior related - impaired driving and the lack of occupant protection compliance (seat belts). And these driver behaviors are leading to an alarming increase in vulnerable user fatalities. In fact, fatalities to pedestrians, motorcyclists, and bicyclists continue to remain high or increase each year. Preliminary 2019 crash data shows a slight decrease in pedestrian and bicycle fatalities. The OTS aggressively addresses these challenges by supporting projects, programs, and other measures to educate the public and raise awareness. Public information programs and high-visibility enforcement have served to raise the awareness of the public of the risks of driving and their responsibilities as drivers. Grassroots organizations, state partnerships, and local community efforts also have had a significant impact.

   Below is a snapshot of how fatalities have changed from the previous year in certain areas. Note: some of the fatalities below are accounted for in multiple categories.

Table - Change in Type of Fatalities – 2013-2018

Fatal Crashes by Category	2013	2014	2015	2016	2017	2018
Run off road crash fatalities (FHE)	221	201	240	235	239	244
Intersection related fatalities	118	128	153	200	190	210

Fatal Crashes by Category	2013	2014	2015	2016	2017	2018
Speed related fatalities	150	167	216	211	230	210
Unrestrained fatalities (Excl MC)	181	163	191	192	233	221
Impaired driving crash fatalities	100	132	128	137	142	155
Overturning fatalities (FHE ; Excl MC)	76	73	102	97	84	98
Motorcycle fatalities (Incl Scooters)	87	94	106	125	103	103
Aging road user 65+ ; (All Person Types)	77	69	95	109	113	110
Pedestrian fatalities (Any Event)	52	65	64	84	92	90
Head-on crash fatalities (FHE)	46	56	51	57	78	74
Rear-end crash fatalities (FHE)	32	24	35	40	40	30
Wildlife/Animal caused fatalities (FHE)	7	6	7	4	5	2

2. National Safety Performance Measures - Now in its third year of implementation, CDOT met with safety stakeholders and established 2016-2020 safety performance measure targets. Below is a table of all years so far for comparison, reflecting the continued expectation of fatality increases, yet injury decreases in Colorado.

Table – Colorado Safety Targets - Actual vs. Target for 3 Years

Colorado Safety Targets		Time Period		
		2014 - 2018	2015 - 2019	2016 - 2020
	Baseline:	2012-2016	2013-2017	2014-2018
	Targets must be set by:	Jul-2017	Jul-2018	Jul-2019
	Data / Results will be official:	Jan-2020	Jan-2021	Jan-2022
Fatalities	Target	610	644	618
	Baseline	520	555	584
	Actual / Preliminary	584		
	Target Met?	Yes		
Fatality Rate	Target	1.2	1.21	1.143
	Baseline	1.064	1.097	1.125
	Actual / Preliminary	1.125		
	Target Met?	Yes		
Serious Injuries	Target	3350	2909	3271
	Baseline	3215	3161	3122
	Actual / Preliminary	3122		
	Target Met?	Yes		
Serious Injuries Rate	Target	6.79	5.575	6.075
	Baseline	6.71	6.463	6.035
	Actual / Preliminary	6.033		
	Target Met?	Yes		
Non-motorized Users Fatalities and SI	Target	586	514	670
	Baseline	524	542	576

	Actual / Preliminary	576		
	Target Met?	Yes		

The above measures reflect the unfortunate trend that Colorado is seeing general increases in these categories, and we expect to continue to see increases in the future. While all safety stakeholders in Colorado are striving to reduce crashes and fatalities, they are having to be ever more strategic and effective with limited resources. Noting that without significant changes in funding, legislation, population growth, VMT, or increased enforcement and education, these trends will continue. Agencies are striving to be more strategic in their approaches and more prioritizing of effective strategies that will reduce crashes - for example, concerted data analysis, project safety analysis and prioritization, and deployment of innovations and technologies. Further, the automotive industry alone, and transportation partnerships with them hold promise for future years' reductions in crashes and fatalities.

CDOT continues to work with the Metropolitan Planning Organizations (MPOs) to assist them in establishing their own safety performance targets, required to be done again by February 2019.

3. Strategic Highway Safety Plan (SHSP) – The current SHSP, which set a bold and visionary goal of zero deaths for Colorado's transportation network, continues to be implemented, now in its fifth year. Moving Towards Zero Deaths in Colorado has become a vision for several agencies and safety programs. Given the challenges that Colorado has faced with increases in transportation fatalities and the requirement to update the SHSP at least every five years, CDOT is now in the process of updating the SHSP to the STSP - Strategic Transportation Safety Plan. CDOT has engaged over 1,000 stakeholders, held over 25 meetings across the state, coordinated with several other pertinent plans (Denver Regional Council of Governments [DRCOG] VZ, Denver VZ, and CDOT SWP), and has now drafted a plan under current review, on schedule to be delivered to FHWA by April of 2020.

4. Highway Safety Improvement Program (HSIP) – In State FY 2019, CDOT delivered $37.3 million in HSIP and state matching funding to the Regions and Local Agencies around the state for 73 projects to address fatal and serious injury crashes related to infrastructure and the driver interaction (run off road, intersections, speed, and pedestrians). These projects are expected to have a safety benefit that has a present value of $110.8 million for an overall benefit cost ratio of 2.97. CDOT also has a state funded FASTER Safety Mitigation program that delivers approximately $70 million annually in safety improvement projects along the state highway system.

   Examples of safety improvement projects include Roundabouts, Intersection Improvements, Guardrail Upgrades, Pedestrian Crossings, Traffic Signal Upgrades, Interchange Ramp Improvements, Wrong Way Driving Treatments, Variable Speed Signing, and Access Improvements. The Branch and Regions are currently programming State FY 2020 HSIP projects while compiling new projects for the State FY 2021 though FY 2024 plan. Included in this planning is meeting the requirements for the High Risk Rural Roads (HRRR) Special Rule to obligate $2.8 million for HRRR in Federal FY 2020.

Table - Obligation Status of HSIP Funds as of 9/30/2019 (end of Federal Fiscal Year 2019)

	Funds Apportioned ($ millions)	FY 2019 Federal Funds Obligated ($ millions)	Total Federal Funds Obligated to date ($ millions)	Percent of Funds Obligated
Highway Safety Improvement Program (Net)	$ 196.0	$ 10.4	$ 139.2	71.00%
High Risk Rural Roads Special Rule	$ 5.6	$ 2.8	$ 4.8	84.40%
Railway-Highway Grade Crossings	$ 24.9	$ 7.6	$ 17.6	70.80%
Highway Safety Improvement Program (Combined)	$ 226.5	$ 20.8	$ 161.6	71.30%

5. Work Zone Safety and Mobility (WZSM) – The bi-annual WZSM Task Force will issue its Process Review report to FHWA in April of 2020. The Task Force found that work is necessary in the areas of training and Smarter Work Zones. Training is focused on creating a new course designed to educate all design and construction stakeholders on CDOT's procedures regarding work zone safety and mobility. Smarter Work Zone strategies are continuing to be developed through partnerships with the Regions. CDOT will create new standards and specifications in reference to this technology, but implementation and public awareness will be required at the project level. Our original goal to upload data and provide real-time information to the traveling public was hindered due to the lack of management support at the software level. CDOT will continue to participate in the national USDOT Joint Program Office (JPO) through the (Work Zone Data Exchange) (WZDX), but will no longer be a lead state due to this same issue. Starting in 2020, the Task Force will send its survey questionnaires out to a much broader and larger audience. This will help better define the Task Forces efforts for the next two years while also creating performance measurements for these efforts. CDOT will soon release its temporary traffic control for planned and unplanned work policy. While FHWA decided in 2018 to conduct its own unannounced WZ compliance reviews, CDOT decided that continued Work Zone Traffic Control Reviews (WZ TCR) are necessary and valuable and will continue performing them.

6. Crash Data – in 2019, the Branch had reduced the average backlog of crash coding records from eight to two months. This reduction is a result of changing the model by increasing the number of staff and hiring staff with more technical backgrounds. This allowed CDOT to address the large backlog created by the Department of Revenue (DOR) "Colorado Driver License, Record, Identification and Vehicle Enterprise Solution" (Colorado DRIVES) rollout, delays in City of Denver and Colorado State Patrol data, and CDOT's system shutdown due to ransomware attacks.

   It should be noted that while CDOT has reduced the backlog of records in the CDOT coding process, the actual publication of data lags due to the statewide crash data process in Colorado. Officers are required by statute to submit crash records to DOR within five days of the completion of the investigation. For serious or fatal crashes and those requiring more complex

investigations, the record may not be completed for months. Additionally, approximately one-half of the crash records received by DOR are still paper records which DOR manually enters into the DRIVES database. An analysis of the data has shown that CDOT receives about 90% of the records within 90 days from DOR. The CDOT coding process includes a duplicate record removal, merging amended records, adding the crash type field, populating location data for highway crashes, Quality Assessment/Quality Control (QA/QC) of the data, and normalization. Due to delays in obtaining records, ransomware, and missing records, the data release has been delayed in previous years. 2017 crash data was released in January 2019, and 2018 was released in September 2019. With the current backlog of 2019 data, a publication is anticipated before July 2020.

Table - Summary of Crash Data

Data Year	Average CDOT Coding Backlog (months)	Average Crash Date to Data Release (months)
2019 (Anticipated)	3.1	5.7
2018	4.5	9.7
2017	7.8	13.0
2016	1.2	11.2
2015	2.5	7.3

Ongoing data quality and completeness efforts will continue to be evaluated to identify anomalies indicating missing or miscoded records and steps taken to address these issues.

CDOT started the development of the Behavioral and Engineering Safety Data for Transportation (BESDT) application. This system is designed to create a new database to include the new DR3447 crash form and new data fields, automate the transfer of records from DOR to CDOT, automate crash coding processes where feasible, provide query and reporting tools, and incorporate historical crash data into the new database. Completion of the project will improve the speed and accuracy of crash record coding processes, increase the tools for data analyses, and make data more readily available for internal and external customers upon completion. The project includes a new electronic "fatal blotter" or early fatal notification form, allowing officers to remotely fill out the form. Additionally, an electronic data entry form is being developed for law enforcement to complete the new crash form electronically. Voluntary use of this form will improve timeliness and accuracy of crash data being transmitted to DOR and therefore the data to CDOT will also be improved. The new crash form includes the ability to capture more accurate location information, which will then be available to CDOT and partner agencies for mapping and analyses. The BESDT project is currently scheduled for completion in 2020. The next phase of the BESDT will be to develop dashboards for internal and external customers to improve accessibility to the data. CDOT is also exploring a project to develop an application to geocode older, off system crash data which will then be available to geocode incoming records that lack location data.

The most important accomplishment of 2019 was the Branch's coordination with DOR in addressing the cumulative backlog caused by the DOR DRIVES rollout, CDOT ransomware attack, and missing records from CSP and Denver. The development of the new DR3447 crash form

required significant coordination with DOR, CSP, and law enforcement. The new form was required to meet the federal requirement to update the injury level definitions on the crash form. Additional fields were added or updated based on customer feedback to include autonomous vehicle information, operations, and emergency vehicle information. It is anticipated that once the existing backlogs are further reduced and the BESDT application is fully operational, CDOT will greatly improve customer service for both internal and external customers and partner agencies as well as provide improved analyses.

7. Rail Highway Grade Crossing Program – During FY 2019, CDOT apportioned Federal safety funds to approximately 15 individual safety projects entailing improvements to at-grade highway crossings. The program is responsible for maintaining a database of all active public railroad crossings within the State of Colorado. CDOT has developed a data collection tool to allow for more accurate and consistent data collection efforts along with the creation of a geo-database to host the data. This tool incorporates CDOT's hazard index calculation as identified by staff.

   There are two Class I railroads: Burlington Northern Santa Fe (BNSF) Railway and Union Pacific (UP) Railroad and there are no Class II railroads operating in Colorado. Additionally, there are 15 shortline railroads that provide local service with connections to the Class I railroads. Colorado has 9 tourist railroad lines, which showcase Colorado's history and offer trips through Colorado's scenic outdoors. The two percent support funds used from the annual apportionment was utilized to maintain the inventory of all public railway-highway crossings in Colorado including the Hazard Index formula calculations.

8. Colorado Safety Legislation and Statutes
   - Primary Seat Belt: Colorado does not have a primary seat-belt law.
   - Repeat Offender Law: Colorado is not in compliance.
   - Zero Tolerance Law: Colorado is in compliance.

9. Colorado Repeat Intoxicated Driver Requirements of 23 U.S.C. Section 164 – Due to changes in Colorado State Statutes, Colorado does not meet requirements of 23 U.S.C. Section 164 for mandatory minimum sentencing of imprisonment.

PERFORMANCE MEASURES

Nearly all of the applicable safety performance measures are now reported in the HSIP Annual Report through FHWA's web reporting system, including the recently required FHWA and NHTSA national safety performance measures in FAST: fatalities, fatality rate, serious injuries, serious injury rate, and non-motorized fatalities and serious injuries. All of these measures, targets, and actuals may be obtained upon request to David Swenka at 303.512.5103.

Measures not specifically in the HSIP Annual Report and still pertinent to the Stewardship Agreement are listed below.

Table - Performance/ Compliance Measures (Traffic and Safety Engineering)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	Past Years	2018 Actual[1]
336	**Reduce alcohol-related fatal crashes**	Alcohol-related fatal crashes as a percentage of overall fatal crashes	Colorado Highway Safety Program Annual Report	Calendar Year	Less than 45%	2017:254 2016:249 2015:207	207

376	**Reduce crash data processing time**	Number of months crash data from crash to publication	Colorado Highway Safety Program Annual Report	Calendar Year	Less than 6 months	2017:13.0 2016:11.2 2015: 7.3	9.7

[1] Data is not official for a year after the end of the calendar year. Therefore, this is 2018 data.

KEY LEARNINGS

No key learnings were identified.

NEXT STEPS

No next steps were identified.

2.10. FINANCIAL MANAGEMENT

INTRODUCTION

CDOT Manager: Bethany Nicholas
FHWA Manager: Andre Compton

The Financial Management Program encompasses the entire Federal-aid program from the authorization of a project through expenditure, billing, and final closure. This includes all phases (right of way, utilities, preliminary engineering, and construction) of a capital project as well as non-infrastructure projects such as planning and research. Oversight is performed at Headquarters, Regional business offices, and during project site visits to ensure eligibility of Federal-aid funds.

QUALITY/RESULTS

- CDOT continued to perform well in the overall obligation of federal funds as compared to the state's Statewide Transportation Improvement Program (STIP) (PM# 1215). In addition to obligating 100% of its current funding, CDOT qualified for a large amount of "redistribution" in Federal Fiscal Year 2019. Due to sustained success it is determined this metric will be retired in 2019 and will no longer be reported.

- In recent years CDOT has undertaken a practice of using state funds for preliminary engineering/design projects and dedicating more federal funds toward construction activities. As such PM# 155 is being suspended as a performance measure for the coming fiscal year. CDOT will evaluate whether similar measure should be conducted in the future.

- CDOT continues to outperform the goal of less than 2% of its annual apportionment value being inactive at any given time, however due to the importance of this metric it is being adopted in 2020 as an official Performance Measure. This NEW metric will be calculated quarterly as it is an ongoing performance expectation that must be resolved throughout the year if ever in violation.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Financial Management Program:

Table - Performance/Compliance Measures (Financial Management)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
1444	Federal Funds Inactive Relative to Annual Apportionment	Federal funds inactive should be no more than 1-2%. 2% is the official FHWA target and 1% is the Colorado target.	PM	Quarterly using Federal Fiscal Year	Less than 1% = Excellent, Less than 2% = Good, Greater than 2% = Poor	Q4: 0.36%	Q1: 0.15%; Q2: 0.33%; Q3: 0.20%; Q4: 0.51%
120	Determine if there is a trend of the local agencies using a larger share of federal funds or if the local agencies are construction an increased number of projects	Percent of projects authorized for construction this year executed by local agencies or sub-grantees	PM	State FY **Quarterly Reporting**	Track Trend	37%	42% (61 of 145)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
1215	Amount of all state and federal funds authorized versus total STIP'd per fiscal year.	Percent of STIP Projects authorized in the same year promised	STIP Reconciliation Report	State FY	Track Trend	93%	93%
155	Number of Design and/or Right-of-Way (ROW) projects that were paid for with federal funds and have not advanced to the construction phase within the time limits in CFR 620.112(c) 1 and 2 (Design 10 yr., ROW 20 yr.)		FMIS	State FY	Less than 5%	< 1%	<1%

KEY LEARNINGS

In 2018 and 2019, CDOT has taken a more aggressive approach to deploying Toll Credits to maximize federal participation in certain projects. The following programs have seen the greatest benefit from using Toll Credits: Highway Safety Improvement, Planning and Research, National Highway Freight, and Railroad Crossings. CDOT plans to continue to implement Toll Credits for these types of projects in both FY2020 and FY2021, in so much that in FY2021 the use of Toll Credits has directly influenced the amount of discretionary state funds given to these programs.

NEXT STEPS

- In response to the Office of State Auditor's Performance Audit for compliance with Senate Bill 16-122, as well as to comply with federal project closure mandates per CFR200, the state is undertaking a deeper analytical and data driven approach to evaluating project closure. The Performance Measure (PM) being proposed for 2020 is that no more than 5% of closures should exceed 365 days.

- The annual percentage of local projects as a function of total construction phase authorizations (PM# 120) grew to 42% which may signify improvement on delivery local agency backlog of projects as well as concentrating federal funds into fewer state administered construction projects. The subject of local agency projects in the overall financial performance of CDOT is being reevaluated in larger context and may be revisited in 2021 under different performance measures. As such PM# 120 is being retired beginning in 2020 and will revisit the topic at another time.

- CDOT's "advance construction" balance has been between $1B and $1.7B for over 10 years. In recent years the balance has decreased to $1B to $1.2B. Secondarily, the "accrued unbilled" balance has decreased since the virtual completion of the Responsible Acceleration of Maintenance and Partnerships (RAMP) program. The Division of Accounting and Finance (DAF) is evaluating whether these values can have a target range established that may be a key indicator to the amount of federal funds leveraged to deliver projects and whether these values have relationship to the state's cash flow and established anticipated cash targets.

2.11. MAINTENANCE AND OPERATIONS: HIGHWAY MAINTENANCE

INTRODUCTION

CDOT Manager: Braporh Jacobs
FHWA Manager: Shaun Cutting

CDOT has within its Central Office a Division of Maintenance and Operations (DMO), and Information Management Services (IMS) Unit. The Division of Maintenance and Operations has two primary functions:

- Providing policy and guidance for the state maintenance program; and
- Maintaining operational oversight for the administration of the maintenance program for the eight maintenance sections and five traffic sections. The Division provides a liaison contact that assists and oversees the successful completion of the Methods of Operations and Maintenance.

QUALITY/RESULTS

In FY 2019, the IMS Unit coordinated the review of 17,000 road survey segments, post-storm surveys, and night inspections. In addition, the Pavement Management and Staff Bridge divisions provided data on pavement and bridge condition to determine the levels of service provided. The target and achieved levels of service were:

Table - FY 2019 MPA Performance

MPA	2019 LOS Target	2018 LOS Achieved	2019 LOS Achieved
100 - Planning, Training & Scheduling	N/A	N/A	N/A
150 - Roadway Surface	B-	B+	B+
200 - Roadside Facilities	B-	B+	B+
250 - Roadside Appearance	B-	B-	C+
300 - Traffic Services	C+	B	A-
350 - Structure Maintenance	C	B+	B+
400 - Snow and Ice Control	B	B	B
450 - Rest Areas, Buildings and Grounds	N/A	N/A	N/A
500 - Tunnel Maintenance	N/A	N/A	N/A
Overall	B-	B	B

This year, CDOT was able to exceed its overall targeted Levels of Service (LOS), but did not meet the targeted LOS for Roadside Appearance.

PERFORMANCE/COMPLIANCE MEASURES

The following performance measures demonstrate the health of the Highway Maintenance Program:

Table - Performance/Compliance Measures (Highway Maintenance)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
271	**Maintain the transportation system at the adopted annual MLOS grade**	Annual MLOS adopted target grades for Maintenance Program Areas 150, 200, 250, 300, and 350	MLOS actual grades from annual survey	State FY	B-	B	B
270	**Maintain the annual LOS snow mapping grade at the adopted annual grade**	Annual LOS grade for snow and ice removal	MLOS reporting	State FY	B	B	B

KEY LEARNINGS

The Highway Maintenance Program is operating effectively. There are no key lessons learned.

NEXT STEPS

The Highway Maintenance Program is operating effectively. There are no focus areas that require further exploration or significant areas for improvement.

2.12. MAINTENANCE AND OPERATIONS: INTELLIGENT TRANSPORTATION SYSTEM (ITS)

INTRODUCTION

CDOT Manager: Bob Fifer
FHWA Manager: Tricia Sergeson

The overall purpose of the ITS/Technology program is to use innovative technology and strategies to enhance and improve operations of the transportation system by implementing advanced traveler information, advanced traffic and incident management, and other applications that improve mobility and safety of the system for all travelers. Over the last decade, rapidly changing technology has impacted the implementation of operational applications and how technology can be used to improve operational effectiveness. Advances in wireless communications, Digital Short Range Radio (DSRC) & Cellular to Vehicle (C2X), connected vehicles, higher quality and higher volume of transportation data (a.k.a. "Big Data"), traveler information, and smarter roadways have significantly improved the capability of ITS to impact operations on a greater level and at the same time the ability to deliver more sophisticated, focused, and real-time operational services. Some examples of these services and applications are: Adaptive Traffic Signal Control, Dynamic and Integrated Ramp Metering Access System Control, Freeway to Freeway Ramp Metering, Personalized Traveler Information using geo-fencing and targeted information, Active Traffic Management, Managed Lanes, Peak Period Shoulder Lanes, Variable Speed Limits (VSL), real-time video analytics cameras, weather stations, incident detection software, unmanned aerial systems, and others. ITS is one of the primary, if not the foremost, transportation tools that can provide high-levels of quantifiable and visible operational benefits on the entire transportation system more rapidly and at a lower cost than other traditional transportation applications, while providing a force multiplier on resource productivity. The goals are to improve safety, reduce traffic delays and congestion, and increase system reliability so that the transportation system can operate as effectively and efficiently as possible.

QUALITY/RESULTS

To accomplish the elements identified above, the ITS Branch works with numerous stakeholders, both within and outside of the Department, to engage broad-based and representative participation. Working with these stakeholders the ITS Branch participated in the development of the Smart Mobility Plan. The ITS Branch has been updating the ITS Statewide Architecture in Fiscal Year 2018-19 and continuing into Fiscal Year 2019-2020, which will provide direction and identify priorities to ensure systematic implementation, technological integration and jurisdictional coordination. The ITS architecture is not yet complete. It still needs to be communicated to stakeholders and posted for staff and stakeholders to access. The ITS Branch has also developed, and is in the process of implementing performance measures to evaluate and quantify specific activities and applications to ensure optimum effectiveness and applicability to similar operational situations.

To ensure continuous success and improve the level of technical advancements within CDOT, we continue to reinforce the Systems Engineering Analysis (SEA). Low risk SEA assessments are delegated to CDOT, while FHWA provides oversight on medium to high risk SEA assessments.

In 2020, ITS will be working with stakeholders and Region staff to improve the SEA process while empowering Regions to make low risk assessment, while ITS provides the tools, information and support for such decisions. The goal is to expedite low risk projects, that routine in nature, while

focusing on the more complex systems engineering to ensure smooth and efficient integration into the overall architecture.

Figure - ITS Corridor-Specific Congestion and Incident Data in Governor's Vision 2019 Dashboard (in Minutes)

Corridor	Direction	Time Frame	Measure Type	Goal for Calendar Year 2019	Time (minutes)												
					Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	Jul 2019	Aug 2019	Sep 2019	Oct 2019	Nov 2019	Dec 2019	2019 Average
I-25 Metro Denver (C-470 to E-470)	Northbound	Weekday AM & PM peak hours	Lag	Achieve an actual average travel time of 49 minutes.	48	49	47	49	49	51	49	50	49	50	50	47	49
			Lead	Reduce the average incident clearance time to 15 minutes.	19	18	19	16	19	18	22	21	16	23	24	20	20
	Southbound	Weekday AM & PM peak hours	Lag	Achieve an actual average travel time of 49 minutes.	49	49	46	49	51	52	52	50	50	52	53	48	50
			Lead	Reduce the average incident clearance time to 15 minutes.	20	19	20	16	18	17	19	19	15	26	22	22	19
I-70 Mountain Corridor (Vail to C-470)	Eastbound	Sunday peak hours	Lag	Achieve an actual average travel time of 95 minutes.	94	116	95	92	93	97	119	115	102	90	82	103	100
			Lead	Reduce the average incident clearance time to 31 minutes.	39	40	63	19	26	25	19	22	20	34	30	40	31
	Westbound	Saturday peak hours	Lag	Achieve an actual average travel time of 93 minutes.	94	106	96	92	91	87	94	101	89	80	86	104	93
			Lead	Reduce the average incident clearance time to 24 minutes.	36	42	36	47	30	23	33	37	28	20	38	64	36
Corridor	Direction	Time Frame	Measure Type	Goal for Fiscal Year 2019	First Responders Trained in Traffic Incident Management (%)												
					Jul 2018	Aug 2018	Sep 2018	Oct 2018	Nov 2018	Dec 2018	Jan 2019	Feb 2019	Mar 2019	Apr 2019	May 2019	Jun 2019	2019 Average
Statewide	All	All	Lead	Increase the percent of first responders trained in traffic incident management (TIM Training) to 50% by the end of fiscal year 2019.	39.2%	40.3%	41.2%	42.9%	43.1%	44.0%	44.1%	44.3%	44.9%	45.5%	46.5%	46.8%	46.8%

PERFORMANCE/COMPLIANCE MEASURES

The following performance measures demonstrate the health of the ITS Program:

Table - Performance Measures (ITS)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline[1]
1450	**Technology Availability**	Measure the uptime of critical technology and fiber backbone	ITS Work Plan Performance Measures	Calendar FY **Semiannual reporting**	Track Trend
1451	**Mean Time To Restore (MTTR)**	How long it takes to restore the technology	ITS Work Plan Performance Measures	Calendar FY **Semiannual reporting**	Track Trend
489	**Device Useful Life (UL)**	Percentage of Useful Life of the technology	ITS Work Plan Performance Measures	Calendar FY	90%
1446	**SEA Completion**	Percent of projects with an ITS element that have completed a SEA	SEA Tool	Calendar FY	Track Trend

[1] Data will not be available until 2021.

KEY LEARNINGS

The need to provided dedicated resource to support statewide SEA processes, documentation, and tools.

To provide a consistent and harmonious system, consolidation of all ITS and technology, including ramp meters and signals, should not be separated from ITS.

Previous performance measures did not properly reflect the effectiveness of the system. Technology is a force multiplier and can reduce the manual burden on staff, the new performance measures will provide a higher level of service in return providing an improved traveler experience.

NEXT STEPS

CDOT and FHWA are working on a Joint Process Review (JPR) on the System Engineering Analysis Process. CDOT ITS and FHWA are also working with PMO and the Change Management Team to further institutionalize SEA and incoprorate it in project management practices.

Continue to improve tools and process to achieve transparency and clarity to the new performance measures.

2.13. MAINTENANCE AND OPERATIONS: REAL-TIME OPERATIONS

INTRODUCTION

CDOT Manager: Ryan Tyler
FHWA Manager: Eva Ladow

During this past year, this branch was reorganized into the Division of Maintenance and Operations and renamed as the Real-time Operations Services Branch. The Real-time Operations Services Branch facilitates the Department's commitment to place a higher strategic emphasis on delivering statewide operations and to align and consolidate critical traffic incident, event, and Regional operations functions with other traffic and traveler operational activities. The two primary program areas within this branch are the Statewide Operations Center and Traffic Incident Management programs.

The Real-time Operation Services Branch directly oversees the Golden (Statewide) Operation Center, and Statewide Program Management for the Operation Center, and Traffic Incident Management programs. Some CDOT Regions also have an operation center for local dispatch and public messaging.

QUALITY/RESULTS

Not including the day-to-day operations work, some of the key program accomplishments this past year include:

Operation Centers Program:

- Decentralized Regional Operation Centers from reporting to Real-time Operations Services (HQ), to now report to Regions. Specifically, Eisenhower Johnson Memorial Tunnel (EJMT) reports to Region 1, Hanging Lake Tunnel to Region 3, and Pueblo to Region 2.
- Started Maintenance Dispatch for Sections 4 (Pueblo – southeast), Section 5 (Golden – Denver Metro) and Section 9 (EJMT – I-70 Mountain Corridor).
- Advertised a Request for Information for a new Active Traffic Management System (e.g. ATMS system) for all operation centers.

Traffic Incident Management (TIM) Program:

- 1st Statewide Strategic TIM Implementation Plan developed as part of Governor's Task Force on Responder Safety.
- Formally stood up statewide Local TIM Teams/Coalitions.
- Ongoing training at TIM Track - All CDOT maintenance personnel have been trained and several joint training scenarios were held.
- Held 3rd Annual TIM Conference
- New "one stop shop" TIM Website stood up.
- Enhanced Safety Patrol mission to include Debris plows.
- Enhanced Heavy Tow coverage in Metro/Monument hill areas.
- Revised HazMat response guidance.

PERFORMANCE MEASURES

The following performance measure demonstrates the health of the Real-Time Operations Program:

Table - Performance Measures (Real-Time Operations)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	Past Data	2019 Data
815	**Interstate Level of Travel Time Reliability (LOTTR)**	Percent of person-miles traveled on the Interstate that are reliable per federal requirements	Highway Performance Monitoring System (HPMS)	Calendar Year	National Performance Measure Targets: 2020: 81% 2022: 81%	2018: 78.2% 2017: 80.7% 2016: 81.0% 2015: 79.3%	78.3%
816	**Non-Interstate NHS Level of Travel Time Reliability (LOTTR)**	Percent of person-miles traveled on the Non-Interstate NHS that are reliable per federal requirements	Highway Performance Monitoring System (HPMS)	Calendar Year	National Performance Measure Targets: 2020: 64% 2022: 64%	2018: 86.5% 2017: 86.2% 2016: 64.3% 2015: 64.2%	87.7%
386	**CDOT Safety Patrol Assists**[1]	Measure the number of CDOT Courtesy Patrol Assists	CTMS Software	Calendar Year	Track trend	2018: 29,452 2017: 30,071 2016: 20,640 2015: 17,190	30,187 (end of Nov)
665	**Non-CDOT Safety Patrol Assists**[2]	Measure the number of non-CDOT Courtesy Patrol Assists on E-470	E-470 Highway Group Data	Calendar Year	Track trend	2018: 12,920 2017: 13,116 2016: 12,400 2015: 10,330	No data provided[3]
666	**Hits for CDOT Traveler Tools**	Measure the number of hits for CDOT traveler tools that customers have accessed on CoTrip in order to identify trends to improve information consumption by the public	Google Analytics CoTrip Site	Calendar Year	Track trend	2018: 9,794,945 2017: 2,741,671 2016: 3,116,098 2015: 2,647,327	5,647,068
667	**Number of CDOT Push Notifications**	Measure the number of CDOT communications pushed out (i.e., public email/text alerts) in order to identify trends to improve information consumption by the public	511 Data collection (Prior to 2019) CARS (2019 and after)	Calendar Year	Track trend	2018: 15,668 2017: 18,035 2016: 18,251 2015: 13,423	23,633
1404	**Number of Lane Miles Covered by TIMS Coalitions**	In coordination with Department of Public Safety and Colorado State Patrol, increase the number of lane miles covered by TIM coalitions	TIMS Website	State Fiscal Year	2020: 8,928 2022: 10,000	2018: 5,846	2019 (Dec): 8,796

[1] The CDOT Courtesy Patrol operates on selected routes such as: US 6, I-25, US 36, I-70 and C 470, Monday through Friday during morning and afternoon peak periods. The assists include, but not limited to, the following services: accident, flat tire, fuel transfer, jump start, passenger transfer, and tow to drop site, used phone and water transfer.

[2] The non-CDOT Courtesy Patrol includes the E-470 Highway Group's courtesy patrol for the 470 highway network. The assists include, but not limited to, the following services: abandoned, customer resting, air, secure load, directions, telephone, drive off, flat tire, fluid, fuel, GOA (gone on arrival-a vehicle subject to a tow request that has been moved prior to first responder arrival), wave off, overheat, jump, mechanical, other, accident, incident, plaza security check and litter. There is not currently data available for Northwest Parkway.

[3] The E-470 and CSP 1B (E470 Troop) were unable to provide data.

KEY LEARNINGS

The following are some key takeaways from the program this past year:

1. Safety Patrol/Heavy Tow remain high value programs.
2. Maintenance Dispatch is highly valuable for field crews, and in linking the operations communications with public messaging strategies.
3. TIM Program Initiatives (e.g. website, conference) were well received by First Responders.
4. Operation Center Request for Information showed there are enhanced systems on the market that could increase efficiencies/effectiveness of operation centers, should funding be available.

NEXT STEPS

The following are some possible next steps for the program:

1. Implement Section 1 maintenance dispatch into Golden operation center.
2. Implement Section 2, 3, and 6 maintenance dispatch into Hanging Lake Tunnel.
3. Coordinate with High Performance Transportation Enterprise (HPTE) for the operation of the managed lane program, especially since more of these facilities will be coming on line in the upcoming years.
4. Continue to support local TIM teams/coalitions which will lead to more effective incident clearance times.
5. Explore opportunities for a Request for Proposal (RFP) for a new ATMS system for Operation Centers, which will provide enhanced functionality for today (e.g. dispatch) and for tomorrow (e.g. connected vehicles).

2.14. TRANSPORTATION DEVELOPMENT: APPLIED RESEARCH AND INNOVATION

INTRODUCTION

CDOT Manager: David Reeves
FHWA Manager: Aaron Bustow

The Research Development and Technology Transfer Program at CDOT aims to save Colorado money, time, and lives. The program strives to improve the state's quality of life and environment by developing and deploying new or innovative methods, products or materials in the planning, design, construction and operation of transportation. To meet this purpose, research must be timely, relevant, and valid when applied to priority real-world problems, as well as cost-effective and accurately documented and disseminated. Technology must be appropriately transferred to practitioners to be effectively used.

QUALITY/RESULTS

Five (5) research reports were published in State FY2019 (https://www.codot.gov/programs/research/pdfs).

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Research Program:

Table - Performance/Compliance Measures (Research)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018 Actual	2019 Actual
97	**Percent of recommendations implemented**	Percent of recommendations implemented or adopted within two years of final research report, using 5 years of data The research findings and recommendations will impact one or more of the following: improve design and construction methods, improve design and construction specifications, improve planning processes, impact maintenance practice, update manuals, initiate new programs, and provide new technology	Research Work Plan and Report	State FY	50%	60%	57%
412	**Number of projects completed on schedule**	The number of projects completed in the fiscal year on schedule	Research Work Plan and Report	State FY	10	17	9

KEY LEARNINGS

The Research Program is continuing its track record of bringing innovative solutions to CDOT, although in FY19 the number of reports is slightly below typical performance. This can partly be attributed to having vacancies that will be filled in the coming year.

The Colorado Local Technical Assistance Program (LTAP) performance has been consistent in recent years. CDOT will monitor performance to see whether transition to a new consultant to run the program will affect results.

NEXT STEPS

- Continue working on completing active projects and delivering a final report.
- Hire full-time program managers in the PE series for the vacant positions in the Pavement & Materials Program and the Structures/Geotech/Hydraulic Program areas.
- Consider using other staffing types to manage research program areas such as an emerging trends.

2.15. TRANSPORTATION DEVELOPMENT: ASSET MANAGEMENT

INTRODUCTION

CDOT Managers: Manjari Bhat (interim) and Toby Manthey
FHWA Manager: Aaron Bustow

CDOT's Performance and Asset Management Branch (PAMB) coordinates with FHWA, the Department's asset-program managers, CDOT Regions, and other agencies to manage 12 asset classes. PAMB empowers CDOT's strategic planning and decision-making by providing tools to measure, analyze, forecast and communicate to staff and transportation stakeholders the performance of asset programs and investment decisions.

The Department's 12 asset classes are pavement, bridges, culverts, walls, traffic signals, intelligent transportation systems, tunnels, geohazards, fleet, buildings, rest areas, and maintenance.

QUALITY/RESULTS

CDOT, in June 2019, published its *Risk-Based Asset Management Plan Version 2.0 (RB-AMP 2.0),* which describes the Department's current processes and plans for managing pavement and bridges, including those on the National Highway System (NHS). FHWA determined in August 2019 that the plan was consistent with requirements for asset management plans established by 23 U.S.C. 119 and 23 CFR part 515.

The 2019 plan was CDOT's third asset management plan. In 2018, CDOT published its "Initial" Asset Management Plan. The initial plan contained "development" processes that were certified by FHWA for meeting asset management plan requirements. And in 2013, CDOT voluntarily published one of the first asset management plans for a state DOT.

The Department employs a multi-level organizational structure to support asset management. At the highest level, the Transportation Commission formulates general transportation policy and makes recommendations to the Governor and General Assembly on issues related to transportation policy and CDOT's budgets and programs. At the middle level, the Transportation Asset Management Oversight Committee includes the Deputy Director, Chief Engineer, Chief Financial Officer, Director of the Division of Transportation Development, the Director of Project Support and a Regional Transportation Director, who make decisions on asset management strategy, goals, and objectives. Lastly, a Working Committee includes asset managers and Regional and Division staff. The Working Committee and the Oversight Committee work together on the Risk-Based Asset Management Plan (RB-AMP), asset management implementation, and emerging issues.

The Department's infrastructure objective for all asset categories is "to preserve the transportation infrastructure condition to ensure safety and mobility at a least life cycle cost."

PERFORMANCE MEASURES

The Department has developed statewide targets for "national performance measures" for pavements and bridges on the Interstate and National Highway System. This process included working collaboratively with MPOs in support of their target-setting activities. The Department is currently revising its near-term targets for pavement and bridge assets, which will be submitted to FHWA in

May 2020. CDOT also has long maintained internal metrics for all its asset classes, which are contained in the Department's Policy Directive 14.

KEY LEARNINGS

- CDOT in 2019 created the first iteration of a model to forecast pavement condition according to National Performance Measures (i.e., Good, Fair and Poor), gaining an understanding of possible trends under current funding levels. This model remains a work in progress.
- The Department collected new annual condition data for pavement and bridges under the national measures. This data will inform target-setting, provide inputs to emerging models, and help inform investment strategies.
- CDOT developed a 10-year pipeline of asset management treatments, which provided a clearer picture of the Department's long-term asset management needs.
- The Department added rest areas as an asset class, which included refining condition assessments for rest-area structures and developing a model for the asset class.

NEXT STEPS

- CDOT in 2020 will implement its *Risk-Based Asset Management Plan 2.0*, including demonstrating implementation for FHWA's annual "consistency reviews," which determine whether or not state DOTs have and are implementing an asset management plan that aligns with 23 U.S.C. 119. To help demonstrate implementation, CDOT will continue efforts to track and forecast investment according to FHWA's five categories of work types (e.g., maintenance, preservation, rehabilitation, reconstruction and new construction).
- The Department will refine its emerging model for forecasting pavement conditions according to national performance measures (i.e., Good, Fair and Poor pavement).
- Asset managers will refine and update the Department's 10-year "pipeline" of asset management treatments.
- The Department continues to refine its risk and resilience processes, including refining processes to evaluate mitigation treatments and establish a database for assets damaged in emergency events.

2.16. TRANSPORTATION DEVELOPMENT: ENVIRONMENT

INTRODUCTION

CDOT Manager: Jane Hann and David Singer
FHWA Manager: Stephanie Gibson

The FHWA/CDOT Environment Program is focused on avoiding, minimizing, and mitigating potential adverse impacts of the transportation system on the people and the environment of Colorado in accordance with the National Environmental Protection Act (NEPA) and other applicable environmental legislation, regulations, and policy direction. This is accomplished by ensuring:

1. Environmental issues are identified early;
2. Appropriate impact analyses are performed in a timely manner;
3. Adequate documentation is submitted and reviewed as scheduled;
4. Required authorizations are received from the governing entities for all projects and maintenance activities in accordance with the laws, environmental policies, letters of agreement and rules governing the environment; and
5. Mitigation tracking is conducted.

Timely compliance with environmental requirements is critical for advancing projects. The Regions, with assistance from the Project Development Branch and the Division of Transportation Development (DTD), are charged with the responsibility of project development, construction, and maintenance of the Colorado transportation system in a manner that will preserve the social and natural environment.

QUALITY/RESULTS

1. Updates to Performance Tracking Measures
   - Completion time for environmental documents will be broken into three categories: Environmental Assessments (EA), Environmental Impact Statements (EIS), and Planning and Environmental Linkages (PEL) for 2020 documentation.
   - Active and completed environmental documents will be broken into four categories: PEL, Categorical Exclusions (CatEx), EA, and EIS for 2020 documentation.
   - A graph tracking 5 year averages of active EA, EIS, and PEL studies is added to further display workload.
   - The US Environmental Protection Agency (EPA) no longer assigns ratings to draft EISs in its comment letters. EPA discontinued the use of its rating system on October 22, 2018.
   - Wetland impact and replacement ratios will be eliminated for 2020 documentation.
   - Water quality measures will be changed next year to track recalcitrant and chronic findings, and associated contractors, on CDOT construction projects.

2. Completion Time for Environmental Documents
   The completion time for major environmental documents completed in 2019 is displayed in the table below: **NEPA and PEL Projects Completed in 2019**. Additionally, **Appendix B** contains all major NEPA projects that have occurred since 1999, and lists the length of time for each project.

Table - NEPA & PEL Projects Completed in 2019

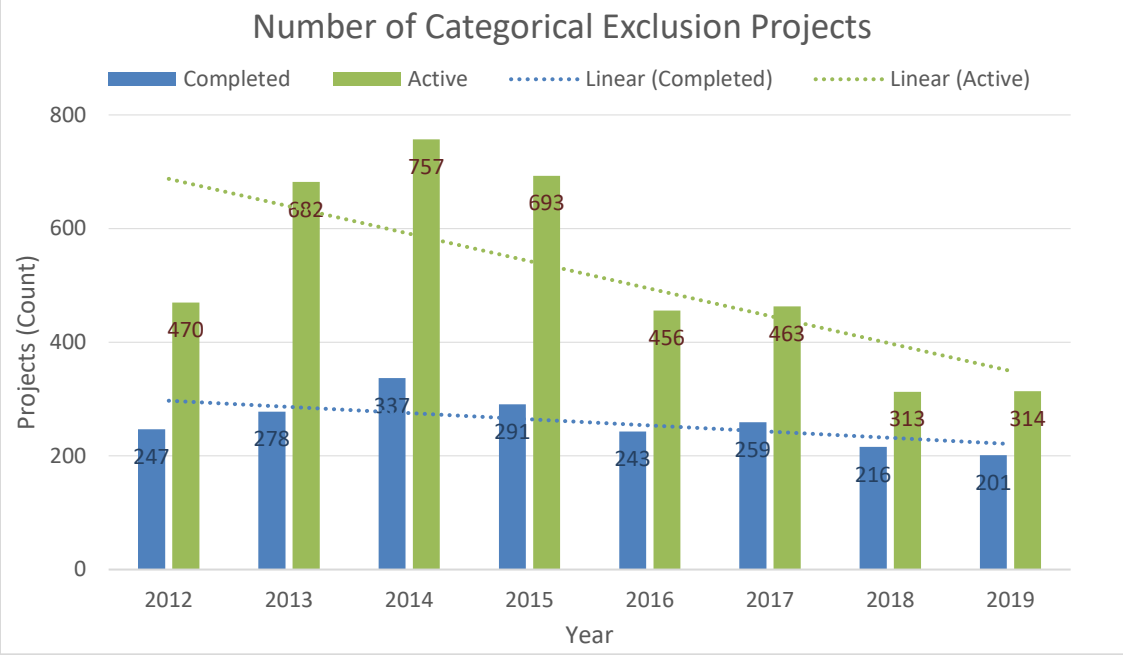
Document Type	Title of Document	Time to Complete
PEL	SH 119	*
PEL	I-25 PEL: Colorado Springs Denver South Connection	+
PEL	US 34, from Glade Road in Loveland to CR 49 east of Greeley	24 months
PEL Average Completion Time	Did not include unusual PELs, and averaged this with the past 5 years	18 months (average)
EIS Average Completion Time	No EISs were completed in 2019 so using the five years previous data for average calculation	86 months (average)
Template EA	I-70 Kipling Interchange	28 months
Template EA	Wadsworth Widening Project	34 months
Template EA Average Completion Time	Includes data from 5 prior years	15 months (average)
Standard EA Average Completion Time	No Standard EAs were completed in 2019 so using 5 years previous data for average calculation	37 months (average)

*This PEL began as an EA and was converted to a PEL towards the end of the process, and therefore has an unusual timeline.
+ This PEL was shelved for a large amount of time during the completion of the EA/FONSI, and therefore has an unusual timeline.

3. NEPA Workload

Each year, CDOT tracks the number of active and completed CatExs, EA/EISs and PELs. The following figures display the number of active and completed CatEx and Major NEPA Projects (EA, EIS, and PEL) for a given year.

Figure - Number of Active and Completed Categorical Exclusions



During the 2019 calendar year, there were 201 CatExs completed. Five of those were Non Programmatic CatExs. This is approximately 47 less than the statistical average of 248 per year.

This is likely due to the completion of the RAMP program and significant funding draw down for capital improvement projects. RAMP funding contributed to the high level of active CatEx projects in 2013, 2014, and 2015. In addition to 201 completed CatExs, there were 314 active (federal and non-federal) projects statewide.

Figure - Environmental Documentation Workload – Number of EA/EIS/PEL Projects Worked On

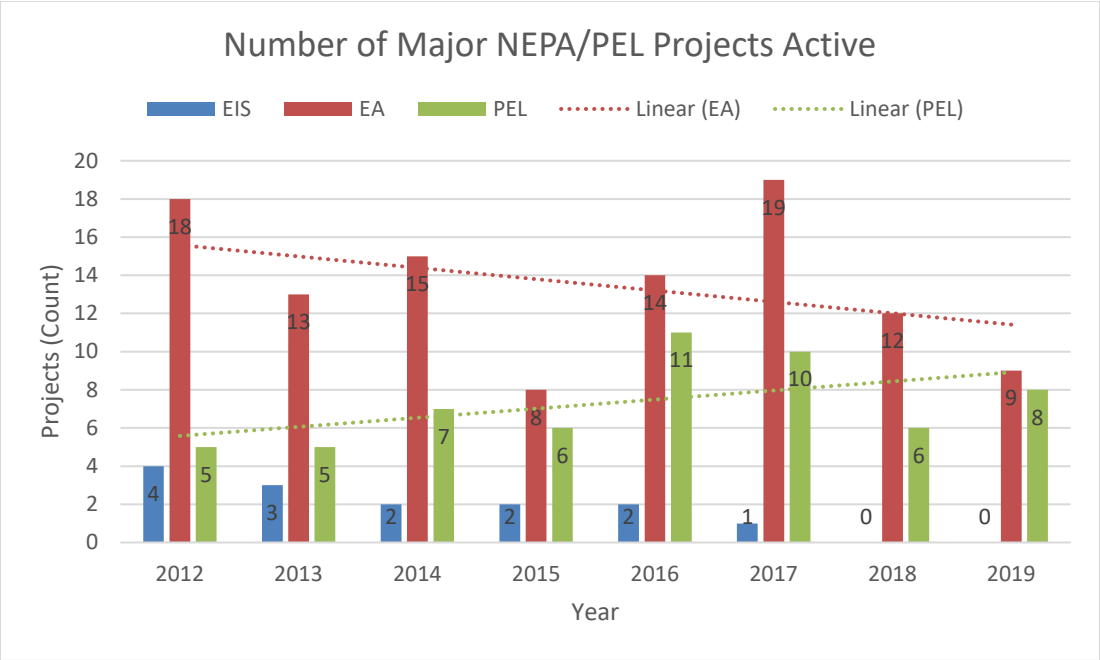


Figure - Environmental Documentation Workload – Number of EA/EIS/PEL Projects Completed

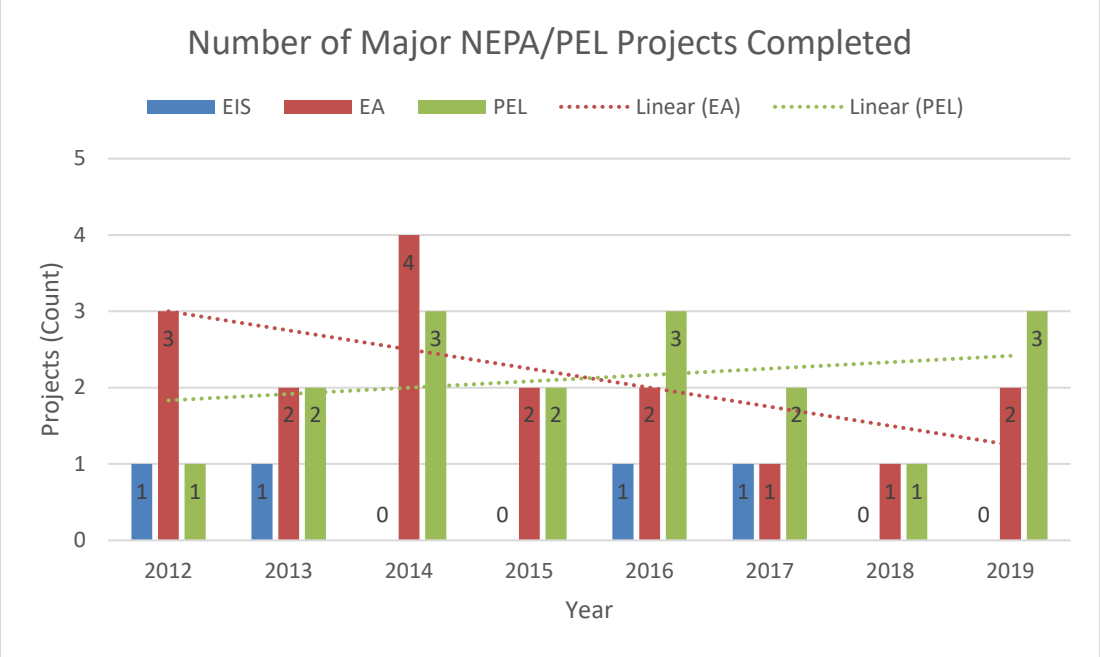
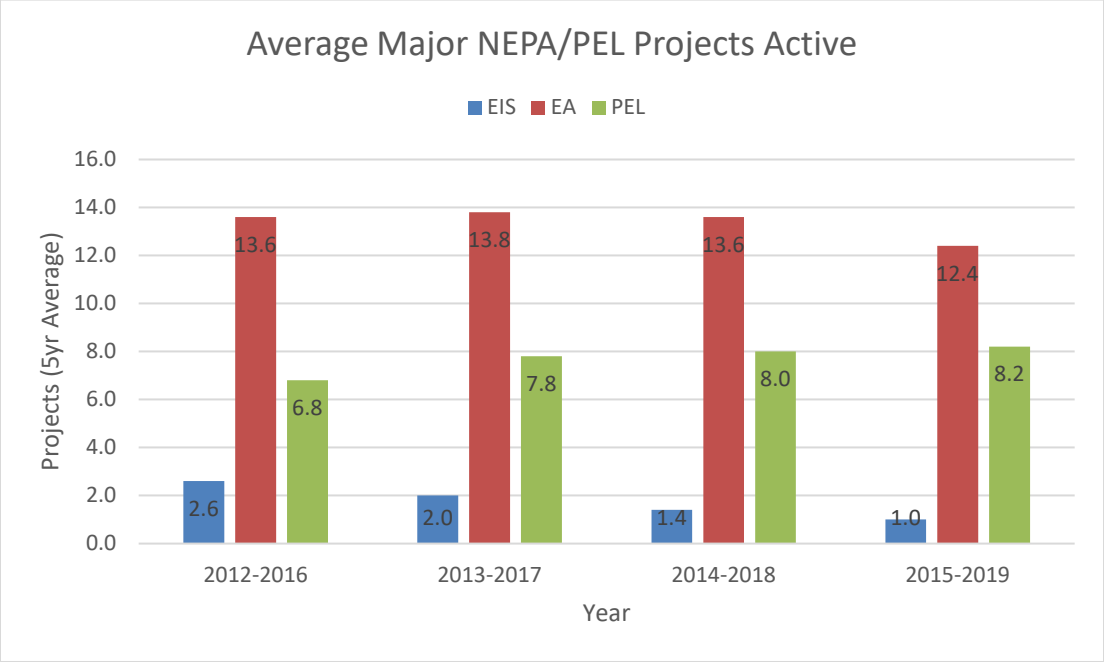


Figure - Environmental Documentation Workload – Five Year Average of EA/EIS/PEL Projects Worked On



EIS/ROD
No EIS documents were completed in 2019. No new EIS documents have been started since 2007. Part of this has to do with the Planning and Environmental Linkage (PEL) documents that are being used at a corridor planning level instead of Tier 1 EISs. Tier 2 EISs that were active in the past 5 years included I-70 East, I-25 North, and I-25 thru Pueblo.

EA
During the 2019 calendar year, there were 9 active EA projects. Two EAs were completed. There is a downward trend for both EA projects active and completed. Similarly, the CatEx graph showed an uptick of projects between 2014 and 2017; therefore, there were fewer active and completed projects. The 5-year average saw one fewer active EA projects than the 5-year average from 2014 to 2018.

PEL
There were eight active PEL studies in 2019. While the amount year to year fluctuates, PEL projects have been trending upward. The 5-year average saw an increase of active PEL studies.

Appendix A: Environment Section, Other Notable Regulations and Accomplishments to Compare for Track Trends contains more information on other accomplishments such as the timeline for when the NEPA Manual guidance was available, politics such as governors and their campaign platforms, and policies such as going after grants and partnerships that require NEPA documentation up front that could also affect the length of a NEPA document.

4. Wetland impact and replacement ratios
CDOT has consistently achieved, and occasionally exceeded, the target of 100% replacement of wetlands impacted by its projects. This number includes jurisdictional as well as non-jurisdictional wetland impact replacement acres. Technically speaking, the Department is exceeding the minimum requirements imposed by the US Army Corps of Engineers (USACE) due to FHWA guidance to mitigate for all wetlands, not just the USACE jurisdictional wetlands per

Executive Order (EO) 11990. This performance measure will be removed in 2020 because CDOT always achieves this goal so this is not a risk factor to track.

5. Water Quality Measure

CDOT's Executive Director tracks this measure throughout the year due to the importance of this measure in overall compliance with stormwater permits. This year, 95.3 % of CDOT project findings were resolved within 48 hours, a 1 % improvement from 2018, not counting one chronic project that brings the total percent of finding responses within 48 hours to 53.2%. As of mid-year, CDOT has moved to an increased specification-based escalation process that more accurately reflects compliance because of the identification of chronic and recalcitrant issues (Specification 208.09 – Failure to Perform Erosion Control). In conjunction, the water quality program also released a new version of the Erosion and Sediment Control Assessment Notebook (ESCAN) (CDOT's construction program compliance software) to implement and track the new specification changes. With the new software and specification release, CDOT will continue to conduct statewide trainings for Water Pollution Control Managers and PEs to diminish data entry errors and ensure statewide consistency.

This 48-hour performance measure will be replaced with a performance measure tracking the number of findings of recalcitrant and chronic water quality violations and number of contractors receiving recalcitrant or chronic violations for the 2020 reporting. Tracking recalcitrant and chronic trends will help CDOT address the compliance risks better than simply tracking response times to findings.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Environment Program:

Table - Performance/Compliance Measures (Environment)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
625	**Completion time for major environmental documents**	Major environmental documents are defined as an EA, EIS, or PEL	A list of all EAs, EISs, and PELs completed in the calendar year, identifying the length of time along with a project description as added to previous years' data	Calendar Year	Track trend	CDOT completed one EA/FONSI. It took seven months to complete.	CDOT completed two EA documents which were completed in 28 and 34 months, and three PEL documents which had abnormal scheduling concerns, but were completed in 24 months. No EISs were completed this year.

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	2018	2019
104, 381-382	**Active and completed NEPA documents**	Projects that were active at any point in the year, and projects for which NEPA actions were completed	A list or table indicating number of active and completed NEPA documents in the calendar year divided by class of action (Categorical Exclusion [CE], EA, EIS) as added to previous years' data	Calendar Year	Track trend	In 2018, CDOT completed 232 Catex projects and have an additional 313 active projects. EA/EIS documents completed were 2, and 12 were active this year.	In 2019, CDOT had 314 active projects, and completed 201 Catex projects, . two EAs, and three PELs.
103	**Wetland impact and replacement ratios**	Ratio of replacement area to impacted area (statewide aggregate)	Identify and document replacement ratio by calendar year	Calendar Year	A minimum of 1:1 wetland replacement	1.03: 1 replacement ratio in 2018. (6.8 acres of mitigation, 6.6 acres of impacts)	1.0: 0.87 replacement ratio in 2019. (0.81 acres of mitigation, 0.93 acres of impacts)[1]
99	**Water quality measure**	Percentage of construction storm-water inspection findings responded to within 48 hours, or as this measure is modified/tracked for CDOT's 2015 Municipal Separate Storm Sewer System (MS4) Permit and CDOT Specification 208.09	Chief Engineer Objective	State FY	95%	94.3%	53.2%[2]

[1]This number is lower than usual because it includes local agency led projects which are not enforced as strictly as CDOT led projects

[2]There was one outlier project in 2019, the annual percentage resolved within 48 hours excluding this outlier was 95.3%

KEY LEARNINGS

The Environmental Program continued to see workload and completion time for environmental documents as beneficial performance trackers. In 2019, CDOT had 314 active projects, and completed 201 CatEx projects, two EAs, and three PELs.

One Federal Decision (OFD), EO 13807, sets a government-wide goal of completing environmental reviews and authorizations within two years. It also outlines page limits to environmental documents and records all major infrastructure projects in a database that contains and a timeline of the project milestones.

NEXT STEPS

The Environmental Program has outlined several goals for the upcoming year that will help with environmental review:

- EA Template Update: This update is responding to both OFD page limits and increased accessibility and visuals.
- Project Initiation Form: This new form will document and identify key milestones to prepare projects to be tracked in the national OFD database.

2.17. TRANSPORTATION DEVELOPMENT: TRANSPORTATION PLANNING

INTRODUCTION

CDOT Manager: Timothy Kirby, Erik Sabina, Darius Pakbaz
FHWA Manager: Bill Haas

Three branches within the Division of Transportation Development (DTD) directly contribute to performance-based planning and programming as outlined in MAP-21 and the FAST Act: The Multimodal Planning Branch (MPB), the Information Management Branch (IMB), and the Performance and Asset Management Branch (PAMB). Other DTD branches include the Environmental Programs Branch (EPB) and Applied Research and Innovation Branch (ARIB).

QUALITY/RESULTS

For state fiscal year 2019, DTD accomplished the objectives/projects within its work program, spanning topics including statewide and Regional planning, transportation research, environmental sustainability, and improving information about our roadway network.

One of the major efforts within the Division is to report the current state of the transportation network and other important transportation statistics through the Highway Performance Monitoring System (HPMS). For the 2019 submittal, the Division was praised by FHWA for completing the annual HPMS submittal on time and accurate, rating 138 out of 140 points on the annual HPMS report card, one of the best rated states in the nation.

MPB undertook the most expansive and inclusive transportation planning effort in CDOT history, seeking input on the state's transportation needs and priorities for the 2045 statewide and Regional plans at community events and festivals, key stakeholders, county fairs, grocery stores, elected officials, and online telephone town halls. This effort in the spring and summer of 2019 resulted in 9,079 completed online surveys, 17,305 comments on online maps, 16,201 participants in online telephone town halls, and more than 15,000 web views.

The Division also formed a Congestion Mitigation and Air Quality (CMAQ) Work Group composed of planning partners including Metropolitan Planning Organizations / Transportation Planning Regions in ozone non-attainment, the Regional Air Quality Council, and FHWA. The desired outcomes of the Work Group include the standardization for project level air quality benefit calculations to aid in project selection. This will help the department better set, track, report on, and meet the "On-Road Mobile Source Emissions Reduction Benefit from CMAQ-funded Projects" Performance Measure target.

PERFORMANCE MEASURES

The following performance measures demonstrate the health of the Planni”ng Program:

Table - Performance/Compliance Measures (Planning)

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	Past Years	2019 Actual
738	**Percentage of FY DTD Budget Expended and Encumbered by End of SFY**	Percent of funds encumbered or expended compared to the estimate for the fiscal year	Feedback on annual review and tracking of percent complete on projects Progress on the work program is in the FY Accomplishments Report	State FY	70% of planned amount	79.81%	79.64%
630	**Accuracy and Timeliness of HPMS and Other Transportation Data Submitted**	Annual HPMS Report Card Score from FHWA HPMS Review	Annual HPMS Report Card Score	State FY	120	135	138
817	**Truck Travel Time Reliability (TTTR) Index**	The sum of maximum TTTR for each reporting segment divided by the total Interstate system miles per federal requirements	Highway Performance Monitoring System (HPMS)	Calendar Year	National Performance Measure Targets: 2020: 1.5 2022: 1.5	2018: 1.38 2017: 1.37 2016: 1.68 2015: 1.51	1.45
818	**Peak Hours of Excessive Delay (PHED)**	Annual hours of Peak Hour Excessive Delay (PHED) per capita for the Denver-Aurora Urbanized Area per federal requirements	Highway Performance Monitoring System (HPMS)	Calendar Year	National Performance Measure Targets: 2020: 52 2022: 54	2018: 18.7 2017: 17.9 2016: 15.7 2015: 16.5 2014: 16.7	16.7
819	**Non-SOV Travel**	Percent of Non-Single Occupancy Vehicle (SOV) Travel for the Denver-Aurora Urbanized Area per federal requirements	American Community Survey (United States Census Bureau)	Calendar Year	National Performance Measure Targets: 2020: 24% 2022: 25%	2018: 24.2% 2017: 24.1% 2016: 23.8%	N/A[1]

PM #	Measure	Description	Reporting Mechanism	Reporting Frequency	Target/ Baseline	Past Years	2019 Actual
820-823	**On-Road Mobile Source Emissions Reduction Benefit from CMAQ-funded Projects**	Total Emissions Reduction Benefit per federal requirements from the following pollutants and precursors in kg/day: VOC, PM10, CO, & NOX	CMAQ Public Access System	Federal FY	National Performance Measure Targets: VOC 2020: 86 VOC 2022: 105 PM10 2020: 31 PM10 2022: 152 CO 2020: 1,152 CO 2022: 1,426 NOX 2020: 86 NOX 2022: 105	2018: VOC – 100.09 CO – 1152.51 NOx – 289.63 PM10 – 34.13 2017: VOC – 463.62 CO – 6720.58 NOx – 652.63 PM10 – 3.19	N/A[2]

[1]American Community Survey data for 2019 will not be available until November 2020.
[2] 2019 data not available until after the submission deadline in May 2020.

KEY LEARNINGS

1. Division is consistently allocating over 70 percent of its funds towards work program and projects over the past few years, to gauge the health of the program.

2. In the three CMAQ Work Group meetings to date, the group has discussed CMAQ funding distribution, MPO/TPR project selection processes, and looked at best practices for CMAQ benefits calculations and project selection from other states and MPOs. The findings from these discussions will yield final recommendations to improve the health of the CMAQ program and associated performance measures.

3. The key learnings from the Statewide Plan public outreach have been summarized and documented in a midpoint report titled *"Where We've Been & What We've Heard: Your Transportation Plan Midpoint Report"*. The midpoint report is available on the CDOT website: https://www.codot.gov/programs/colorado-transportation-matters/your-transportation-plan.

NEXT STEPS

1. For the next update cycle, the Division will investigate ways to report completion progress on the work program, taking into account multi-year initiatives. This will replace the current metric of reporting the amount of funds that were expended/encumbered each fiscal year.

2. The CMAQ Work Group meetings will conclude in the spring. Recommendations will be made to help the department better set, track, report on, and meet the "On-Road Mobile Source Emissions Reduction Benefit from CMAQ-funded Projects" Performance Measure target.

3. The 2045 Statewide Plan will be released for public comment in the spring, with anticipated final adoption in June 2020.

4. The Division will help facilitate the potential adjustments to National Performance Measure targets as listed above and for pavement, bridge, and percent of person-miles traveled that are reliable metrics.

SECTION 3. RISK RESPONSE STRATEGIES

Overview of the Risk Response Process

One of the most important roles of the Quality Improvement Council (QIC) is evaluating and seeking improvements to existing Federal-Aid Highway Program (FAHP) related processes. By focusing on continual improvement, CDOT and FHWA can achieve strategic goals, better meet customer's needs and expectations, lead systemic improvement, assist with the deployment of innovative technologies, and provide a more focused technical assistance.

Each year, the QIC compiles a list of risks to implementing the FAHP, as well as opportunities to improve results or streamline processes. The QIC prioritizes which risks and opportunities to focus on based on the potential impact, likelihood and resources available. The QIC typically works on at least three Joint Process Reviews (JPR) per year. Beginning in October 2019, Staff from CDOT's Office of Process Improvement have been helping each JPR team refine a charter to ensure the effort has leadership support and an effective approach that is consistent with business improvement standards.

CDOT and FHWA leads explore the risks and make recommendations on how to address them. Each August, JPR teams develop a final report that summarizes: 1) overview of risk, 2) general methodology (including project team), 3) key findings, and 4) specific recommendations for implementation. The recommendations need to be clear and discreet enough that that the QIC can easily track until they are completed. Final reports and are added to the QIC SharePoint Process Review Library, and QIC champions share the implementation status of these recommendations approximately every 6 months. Completed recommendations are saved in the SharePoint Process Review Status List.

The remainder of this section includes:

- Overview of ongoing JPRs.
- JPR recommendations finalized in 2019.
- Recommendations from 2011-2018 in which implementation is underway or completed in 2019.

Ongoing - CDOT/FHWA Joint Process Reviews (JPRs)

Several of the ongoing Joint Process Reviews are still being refined.

Work Zone Safety and Mobility Process Review (WZSM)

Approach: A programmatic Work Zone Safety and Mobility (WZSM) Process Review is required by FHWA every two-years. The typical process is to convene a leadership team to refine the approach, conduct data collection via a survey and obtain input from the Regional Transportation Directors and Executive Management Team (RTDs/EMT), and then convene small group work groups to refine and recommendations for improvement. The CDOT Office of Improvement is not involved with this JPR since it is a programmatic review. However, the JPR team should coordinate with the Office of Process Improvement with any recommendations that come out of the required WZSM process review to ensure efforts are consistent with business improvement standards.

Contacts: Project Leader: Tom Dinardo; QIC Champions: Charles Meyer and Bill Haas

Work Zone Training

Risk Statement: Traffic and Safety Engineering staff consistently receive feedback during their WZSM Process Reviews that training is needed.

Approach: Work zone training is currently being developed by the Project Development and Traffic & Safety Engineering Branches. This training is in the development phase and CDOT is working with Regis University to develop the course materials. This training will focus on knowledge of the work zone safety and mobility regulations (23 CFR 630 subpart J & K) and practical application of the regulations, MUTCD, and CDOT's work zone related specifications and standards in the field. Participants will include: CDOT designers, construction managers and engineers, and maintenance, as well as consultants, contractors, and local agencies. The training will include both instructional materials as well as hands on work sessions and practical applications and sharing of experiences. This training will become a requirement for all those involved in desinging, developing, implementing, and monitoring work zones and institutionalized at CDOT through CDOT's LMS and TETP.

Contacts: Project Leader: Tom DiNardo; QIC Champions: Charles Meyer and Bill Haas

Improve Project Specific Safety Recommendations in the Operations Evaluation

Risk Statement: Currently at CDOT, each Region has the discretion to conduct the Safety Analysis on projects independently. This has resulted in different levels of analysis and recommendations which may not sufficiently address potential safety issues that exist along the state highway system. It is necessary to have the current safety evaluation procedures reviewed and evaluated to provide more definition and clarity to the process. Specifically, there needs to be a clear understanding of the thresholds that determine a Level 1 or Level 2 Safety Analysis. Additionally, training and standard resources should be provided to the Regions. Since this effort would be creating consistent behavior for this process, change management should also be integrated into the delivery and implementation of this project.

Objective #1: Create consistency in the completion of the Safety Analysis in the Regions.

Objective #2: Develop a user friendly and clear methodology to determine if a Safety Analysis needs to be a Level 1 or Level 2.

Approach: This project is anticipated to be a business process improvement project and Lean Methodology and Change Management should be applied.

Contacts: Project Leader: David Swenka; QIC Champions: Neil Lacey, Charles Meyer, and Shaun Cutting

Construction Contract Management of Complex Tolling Projects (Alternative Contracting, CM/GC and DB)

Risk Statement: CDOT's recent experience with Projects Delivered using Alternative Methods (Design- Build, CM/GC) has presented some weakness in the Request for Proposal and in the administration of the Contract. Requests for Proposals have not included essential contract language that has exposed CDOT/HPTE to a credit risk that could limit or jeopardize the loan

amounts in current and future projects, and also has had a negative impact to Cost/Schedule Certainty.

Without a uniform understanding of the structure of an Alternative Delivery Contract and how authority is expressed in that contract, CDOT will continue to be ill-equipped to manage an alternative delivery project. The result is a general loss of value for the taxpayer investment, and uncertainty in cost and schedule impacts. All of these impacts adversely impact the delivery of our Construction program, and these impacts erode our credibility with the Taxpayers of Colorado and our Federal partners.

Approach: The project team agreed to first do a discovery phase (e.g., survey and facilitated discussions with key stakeholders) in order to better understand the challenges associated with contract management of alternative delivery projects. The core group can then prioritize which component(s) to prioritize first for problem-solving. For QIC purposes, the final JPR report could be findings from this discovery phase and recommended areas to focus on in the future. The JPR report could also be findings and recommendations related to problem-solving on a specific component (i.e., phase 2).

Contacts: Project Leader: Matt Pacheco; QIC Champions: Matt Pacheco, Shaun Cutting

System Engineering Analysis

Risk Statement: If projects do not have adequate Systems Engineering Analysis, then projects may not function and operate as intended, the impact of Federal-aid funds may not be maximized, and the benefits of projects to the traveling public may be compromised.

Approach TBD: The Systems Engineering Analysis process is business program with multiple, potential improvement projects related to timeliness, quality, ownership, and other issues. The team is refining a business improvement project.

Contacts: Project Leader: Emma Boff and Allie Ashley, QIC Champions: Bob Fifer, Jane Fisher, Bill Haas

ON HOLD: Process for Locally-Owned (Non-CDOT) Off-System NHS Bridge/Pavement

This JPR is on hold while William Johnson (the original Project Leader) is on work detail outside of CDOT.

Risk Statement: The Moving Ahead for Progress in the 21st Century Act (Pub.L. 112-141), a.k.a. MAP-21, requires that state DOTs develop and implement a Transportation Asset Management Plan that, in part, defines the context for how performance target will be achieved for bridges and pavement on the National Highway System (NHS). The NHS in Colorado is approximately 90% CDOT owned (on-system) and 10% local agency owned (off-system). Performance is now being monitored at the state and MPO level, and there is a need to better understand the policy and investment decision making to ensure that performance targets are met at the state and MPO level.

Approach: Clarify risk and develop recommendations to fix it. CDOT will have an updated Risk-Based Asset Management Plan in June 2019, including a refined approach for working with local partners. CDOT will also have MOUs with the MPO's for data sharing and reporting.

Contacts: Project Manager: William Johnson; QIC Champions: William Johnson and Shaun Cutting

Joint Process Review Completed in 2018 - Recommendations

Subcontractor Prompt Payment Processes

1. Take CDOT's B2G prompt payment audit process from being driven by manually entered payment information (self-reported by primes) to initiating each audit cycle with payment information generated directly (real-time) from CDOT accounting system (PM). *[NOTE: Success of effort #1 & #2 are contingent on larger CDOT e-invoicing initiative with the Office of Information Technology (OIT) and CDOT HQ Business Office.]*
2. Integrate CDOT's B2G prompt payment audit process with larger CDOT e-invoicing initiative to move from a calendar-based reporting process to an invoice-based audit cycle *[NOTE: Success of effort #1 & #2 are contingent on larger CDOT e-invoicing initiative with OIT and CDOT HQ Business Office.]*

3a. Institute a Quality Assurance Review (QAR) process for key prompt payment compliance roles and responsibilities by delivering process-based and system-level procedure resources to stakeholders through the CDOT Civil Rights statewide training portal.

3b. Reinforce ongoing training effort through a semi-annual QAR process with responsible parties (project engineers, civil rights officers etc.)

Risk Response Recommendations to be Implemented (2015-2017)

Highway Performance Monitoring System (HPMS) Data Review (2018)

1. CDOT to move to a single Run-Length LRS rather than continuing to maintain two separate Linear Reference Systems (LRS).

3a. Implement REST Services/APIs to facilitate data integration with other business units.

3b. Implement the Web Portal editing functionality.

3c. Train and support data editors in other business units.

Work Zone Safety and Mobility Process Review (2018)

1. Develop and roll out refresher training about the Work Zone Safety & Mobility program statewide. (Responsible Party: CDOT Work Zone Task Force and Safety and Traffic Engineering Branch)
2. Identify funding to support the pilot of smarter work zone strategies on CDOT projects statewide. (Responsible Party: CDOT Division of Maintenance & Operations
3. Develop a multi-tiered work zone safety training program tailored to address the differing needs of project personnel. (Responsible Party: CDOT Work Zone Task Force)
4. Review processes in place to document work zone crashes, and make revisions where necessary. (Responsible Party: CDOT Work Zone Task Force and Project Development Branch)

Local Public Agency (LPA) Program Review (2017)

2. Create a process that requires a minimum level of training prior to allowing the LPA to administer the federal aid project.
4. Improve communication with LPAs and CDOT, between CDOT Regions and HQ, and between each Region, initially through a broad, inclusive approach to updating the Local Agency (LA) Manual.

Permanent Water Quality (PWQ) Mitigation Fund (2017)

2. PWQ Program Manager review project invoices and track expenditures and compare to the original application approvals. Recommendation will be considered completed for QIC documentation purposes after one year of tracking. (80% complete)

Improving the Process for Retention of CDOT's Core Documents (2015)

3. Standardize the retention process by clarifying and updating Procedure Directives 51.1 (Retention of Documents) 21.1 (Central Files Construction Project Filing System).

SECTION 4. ADDITIONAL ACCOMPLISHMENTS INFORMATION

4.1. EVERY DAY COUNTS ACCOMPLISHMENTS

Every Day Counts (EDC) is a Federal Highway Administration program that works in partnership with the American Association of State Highway and Transportation Officials, State Department of Transportations and other transportation stakeholders to foster a culture of innovation. Through this State-based effort, the goal is to facilitate rapid deployment of proven strategies and technologies to shorten the project delivery process, enhance roadway safety, reduce congestion, and improve environmental outcomes.

Every 2 years, FHWA works with State departments of transportation, local governments, tribes, private industry, and other stakeholders to identify a new set of innovative technologies and practices that merit widespread deployment through EDC. The selected innovations share common goals of shortening project delivery, enhancing the safety and durability of roads and bridges, cutting traffic congestion, and improving environmental sustainability.

CDOT and the FHWA CO Division have been active participants in EDC round five (EDC-5), which promoted the adoption of the following 10 innovations in 2019 and 2020. See https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/ for more.

1. Advanced Geotechnical Methods in Exploration (A-GaME)
2. Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)
3. Project Bundling
4. Reducing Rural Roadway Departures
5. Safe Transportation for Every Pedestrian (STEP)
6. Unmanned Aerial Systems (UAS)
7. Crowdsourcing for Operations
8. Value Capture: Capitalizing on the Value Created by Transportation
9. Virtual Public Involvement
10. Weather-Responsive Management Strategies

Through this participation CDOT can receive or has received federal funding for peer exchanges, technical workshops, scan tours, and discretionary program awards including assistance through the Statewide Transportation Innovation Council (STIC), Technology Transfer (T^2) and the Accelerated Innovation Deployment (AID) program.

In the previous round, CDOT opted in to a small number of EDC-4 Innovations. This round, CDOT opted in to nine of the ten EDC-5 Innovations listed above. The following summaries outline achievements made by CDOT, FHWA and other transportation partners towards institutionalizing these nine innovations:

Advanced Geotechnical Methods in Exploration – A-GaME
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/geotech_methods.cfm
CDOT Champion: David Thomas

Seismic has been used to evaluate bedrock and subsurface characteristics for three bridges when drilling for piers was not feasible due to difficult terrain and no drill rig access. CDOT also presented at the NW Geotechnical Workshop and participated in an open forum

discussing State DOT's experience with implementing A-GaME. CDOT will be conducting a State Engineering Residency tour and A-GaME will be part of the presentations to educate and introduce the technology applications to Project Managers.

Lessons Learned: The geophysical results are not presented as precise. It is difficult to use geophysical data in AASHTO design when the question to be answered is "where's bedrock" and the answer is "depends". It is understood that the technology displays material properties and not materials. Geophysicists needs to provide specific answers ("this is bedrock") for designers to use, especially when drilling is done in conjunction with the geophysical survey. Geophysical material property interpretation should not be left up to the owner to determine what may or may not be bedrock. There is a burden of risk and liability that needs to be taken by geophysicists to provide the needed result precision to design. CDOT has added CPT and geophysics to its Geotechnical Manual of Practice. Consultants will be more likely to use this technology if the State shows them it is welcomed and accepted within the known limitations of application for each technology.

Collaborative Hydraulics: Advancing to the Next Generation of Engineering (CHANGE)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/change2.cfm
CDOT Champion: Brian Varrella

- CDOT chief engineer Steve Harelson replaced outgoing chief Joshua Laipply as project sponsor.
- Through the efforts Project Leader Varrella, $85,000 of federal STIC funding was received to assist with financing a Project Optimization with 2D Quick Checks initiative to use SMS & SRH-2D on 50 projects statewide during design efforts to improve safety, design efficiency, and construction costs. Effort is supported with $32,000 of matching state funds to help close a remaining funding gap of $183,000, and is intended to integrate 2D analysis into the state's standards of practice by 2021.
- An additional $19,815 of STIC funds has been awarded to this project.
- A telephone peer exchange occurred in September 2019 between EDC-5 Project Leader Varrella and Texas Department of Transportation (TxDOT) colleagues and their consultants to share successes in implementing 2D analysis into project delivery at CDOT Region 4 inlcunding this info:
    - 95 total CDOT Region 4 projects in 3.5-years; 27 include a 2D hydraulic analysis (31%).
    - 95 total CDOT Region 4 projects in 3.5-years; 54 analyses are completed with 2D hydraulic software, and 21 of those (38%) by Region 4 Hydraulic Engineers in-house.
- A Frequently Asked Questions (FAQ) document was prepared and distributed. The document is a compilation of best practices informed by questions compiled over an 11-month period and is distributed to FHWA partners, state agency partners, and private sector end-users for comment and revision prior to posting to a publically visible website.
- 2D Quick Check initiative Technical Advisory Meetings (TAC) have been held to share goals, strategies and logistics to complete 50 Quick Check projects statewide. The TAC includes Project Leaders at CDOT, five Region Hydraulic Engineers, and one representative from each of the six companies helping to complete 50 projects over one year for the 2D Quick Checks initiative.

- A revised CDOT Drainage Design Manual (DDM) is posted to a website for public distribution which includes a discussion of 2D analysis for complex bridge and scour evaluations. This is the first document at CDOT recommending use of a 2D hydraulic analysis, though not necessarily requiring it. Guidance in selecting 2D over 1D is offered based on FHWA's HDS-7 matrix, and allows the user of the Manual to incorporate upcoming guidance from the FHWA Resource Center anticipated for release in 2019.
- Project Leader Varrella has requested $83,000 of CDOT research funds funds to close the gap on the $183,000 funding of the 2D Quick Checks statewide initiative to integrate 2D analysis into the state's standards of practice by 2021.
- In Dec 2019 EDC-5 Project Leaders Varrella & Gross attend the FHWA-sponsored Southwest Peer Exchange in Phoenix, AZ, and share Colorado DOT experiences with implementing 2D hydraulic analysis with USGS, FHWA, and 5 DOTs including NV, UT, WY, NM and AZ.
- 40 individual projects are identified and under screening for the 2D Quick Checks statewide initiative intending to integrate 2D analysis into the state's standards of practice by 2021.
    - 9 projects are yes, 11 are likely, 1 is rated as maybe.
    - 14 projects are unknown (still under screening) and 5 were ineligible for lack of data.
    - Projections; 20 projects (40%) discovered and $132,000 of funds (39%) secured.
    - 2D Quick Check initiative is on budget but about 3 months behind schedule.

Lessons Learned: EDC-5 Project Leader Varrella is available to assist other states with lessons learned and provided material evidence of successes to the FHWA Resource Center for distribution to 6 state and 2 federal partners, including the following materials: Summary of CDOT project types, number, and scale benefiting from 2D hydraulic analysis; Standard operating procedure for incorporating 2D hydraulic analysis into FEMA regulatory floodways and floodplains, vetted through the State Hydraulic Engineer in 2017; Six (6) lessons-learned success stories resulting in $14 million of savings over 3.5 years of CDOT projects.

The largest current obstacle to success is awareness of the types of projects that can benefit from 2D hydraulic analysis. It isn't just bridges and culverts (25% of our total experience).
The second largest obstacle to clear with 2D hydraulic analysis is a problem of business; our workload at CDOT is so high that learning new technical skills and adaptive measures is difficult.

Project Bundling
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/project_bundling.cfm
CDOT Champion: Matt Pacheco and (prior to departing CDOT) Ermias Weldemicael

We have developed a guidance tool that we will use to inform the Region Planners, and Program Engineers. The tool queries the readers to consider the major areas where bundling has historically benefitted projects. The intent is that as projects are being assembled into the regions portfolio the tool would walk the Planners and Program Engineers through a series of thought provoking questions that would encourage them to employ refining iteration to their portfolio. This iteration will ask the Planners and Program Engineers to

analyze their portfolios in consideration of the major areas of bundling and look for inspiration to more efficiently deliver their program. A Planner or Program Engineer may need to several iterations to ensure that each major area is thoroughly explored. For example, one iteration would consider the entire portfolio in light of geographic proximity. The next may look at what bundles with similar contracting methods. Another iteration would look at the portfolio in light of types of construction.

Lessons Learned: There is a general response when mentioning the idea to the region personnel that "We Already do that!". And although "Bundling" does occur at some level, the champions believe that it happens ad hoc and without thoughtful intention. The bundles are assembled only when they organically connect, and potential bundles that may not be apparent do not present themselves as opportunity. Another challenge is that there is a general idea amongst the Regions that their opportunity at funding could be jeopardized if they create too big a project, a parallel is that they will limit competition when projects reach a certain bonding limit. This is another justification for a more "realtime" automated tool that could suggest bundles would encourage CDOT to bundle more.

Reducing Rural Roadway Departures (RwD)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/roadway_departures.cfm
CDOT Champion: David Swenka

CDOT chief engineer Steve Harelson replaced outgoing chief Joshua Laipply as project sponsor.

The Safety Circuit Rider (SCR) - In July, safety circuit rider, which was contracted out, started work. In the first several months, has visited 12 counties, making contacts and presentations. They have assisted one county in conducting a Road Safety Audit (RSA) and assisted another county in developing a local road safety plan (LRSP). The SCR continues to coordinate with CDOT, FHWA and LTAP (local technical assistance program) groups.

https://www.codot.gov/library/traffic/hsip/safety-circuit-rider

Call for HSIP Local Agency Projects - In early December a call for local agency projects was made to Colorado cities and counties for state fiscal year 2023 funding. Local agencies have until January 31, 2020 to submit applications for projects. Call for projects will now occur on an annual basis instead of occurring every 3-4 years. Local agencies are also encouraged to submit systemic safety improvement projects (which is new this year) that focus on vulnerable roadway users or projects along high risk rural roads (HRRR). The SCR is also tasked with supporting local agencies in submitting qualifying safety improvement projects. The will help to effort to address roadway departure crashes that occur along off-system high risk rural roads.

https://www.codot.gov/library/traffic/hsip/docs

CDOT will continue to dedicate its Section 164 penalty funding to safety improving strategies – including cable rail and wider striping (6 inches) statewide. This funding provides an additional $11M+ to statewide installation of cable-rail projects and 6 inch striping to reduce one of Colorado's most common crashes, RWD.

Lessons Learned: Executive sponsorship and direction is necessary in order to provide the best chance of large scale effort to address an issue like roadway departures. It is our hope that the recent CDOT safety initiatives that have been able to set aside funding for strategic safety proves to be successful.

Safe Transportation for Every Pedestrian (STEP)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/step2.cfm
CDOT Champion: Betsy Jacobsen

CDOT held a walking audit with a local advocacy group, Walk Denver, to review aspects of the Colfax viaduct. CDOT leadership, along with local community members developed ideas for improving walking safety along the corridor that will be implemented in the Colfax construction project in the next several years.
CDOT held infrastructure design classes for engineers and planners in late October, 2019. These classes teach all aspects of accommodating pedestrians in design. This is part of CDOT's on-going education program to provide up-to-date information on bicycle and pedestrian design. Participants who completed the evaluation surveys overwhelmingly found the classes to be helpful, that they would recommend them, and that they would use the information in their work. Classes are held every spring and fall.
CDOT partnered with the Dept. of Local Affairs and the Dept. of Public Health and Environment to conduct four workshops in rural areas of Colorado to help improve community main streets for walking and biking. These workshops provide information on how to create a vision for a community's main street; the benefits of slowing traffic and improving pedestrian access; how to develop a plan and how to work with CDOT – particularly when the main street is part of the state highway system.

Unmanned Aerial Systems (UAS)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/uas.cfm
CDOT Champion: Kathi Lyon

1)We have gained a member of the Executive management team to assist with moving this program forward.
2) We have gained a new COA with the FAA, and CDOT is moving forward with creating a UAS coordinator position.
3) The current coordinator (Kathi Lyon) has been seeking the advice with program initiation with the Ohio State Dept. Of Transportation. They have a fantastic program which will assist with the fundamentals of our standard Operating procedures.

Lessons Learned: CDOT is progressing toward acquiring more robust computers and software. This will allow us to be more capable of processing data and to move our program toward a demonstration stage.

Use of Crowdsourcing to Advance Operations
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/crowdsourcing.cfm
CDOT Champion: Ryan Tyler, Jamie Yount, Matt Russmann

Barb Cohn and Chad Ray replaced outgoing Kyle Lester as project sponsor.

CDOT worked with ESRI to develop a traffic operations dashboard that gives users a live feed of Waze and Here Live Traffic data. This dashboard has been extensively tested and

recently was moved from the development and testing platform to implementation/operations platform. Operators in the traffic operations center use this tool on a daily basis and are able to identify incidents 5-10min sooner that convention methods. CDOT sees the value in crowd sourced data and is keen to develop more tools and train more personnel in using it.

Virtual Public Involvement (VPI)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/virtual_public_involvement.cfm
CDOT Champion: Aaron Willis

CDOT has continued to institutionalize the use of Telephone Town Halls as a way to communicate with the public. In August of this year, CDOT hosted six (6) telephone town halls covering every engineering region in the state as a part of a comprehensive public outreach program for the development of the Statewide Transportation Plan. CDOT was able to reach and engage over 16,000 town hall participants between all six telephone town hall events.

EDC-5 Weather-Responsive Management Strategies (WRMS)
https://www.fhwa.dot.gov/innovation/everydaycounts/edc_5/weather_strategies.cfm
CDOT Champion: Jamie Yount, Matt Russmann

Barb Cohn and Chad Ray replaced outgoing Kyle Lester as project sponsor.

CDOT is using Pathfinder pre storm readiness calls as standard operating procedure and all participants are engaged and effective. Excellent support from leadership on WRMS strategies. Post storm analysis with material management could be better but it is improving. New initiatives for proactive response to weather events are being developed by determining thresholds for chain law implementation and problem areas.

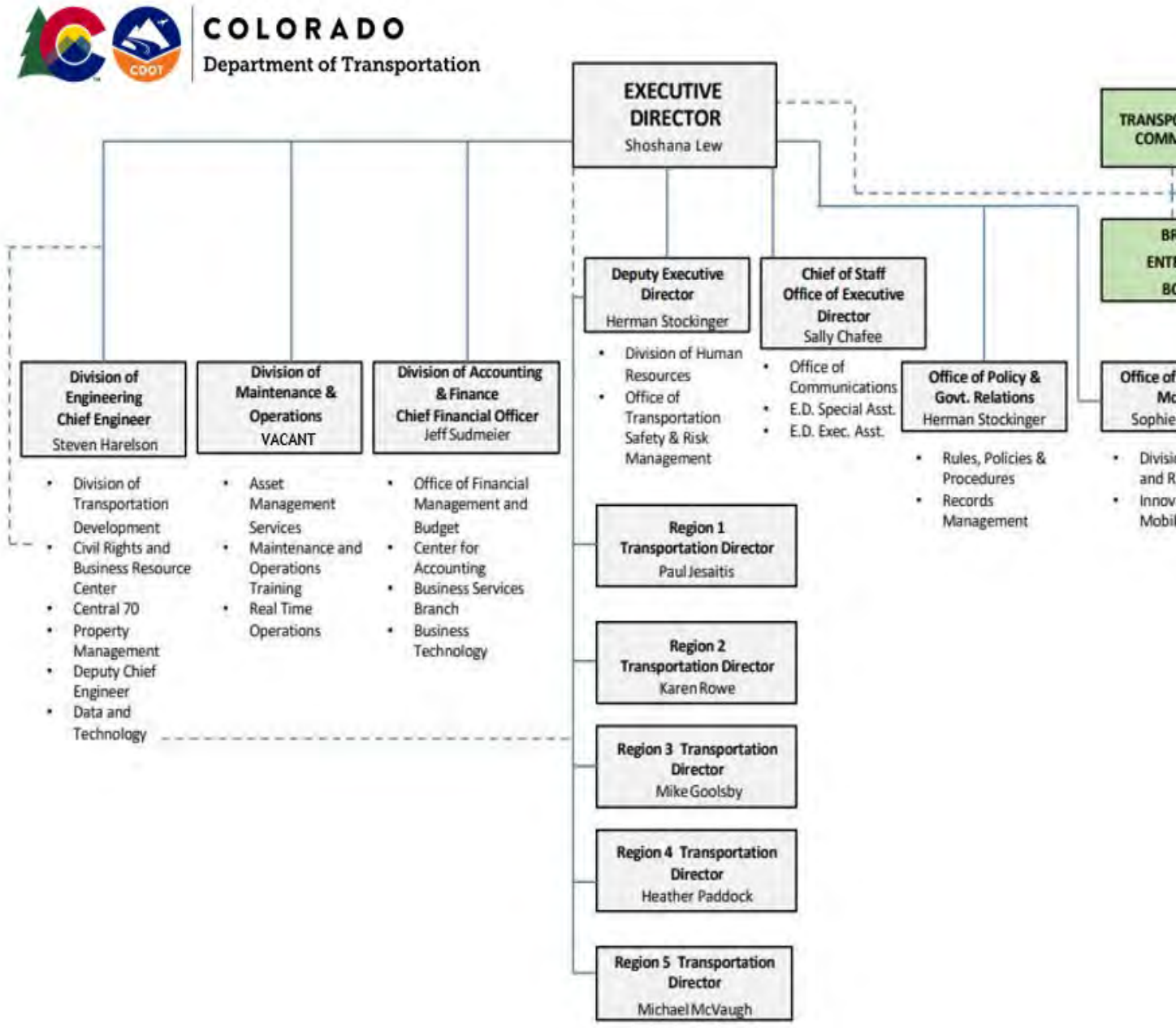
Lessons Learned: EDC initiatives like this can be difficult to get started but after development and implementation the benefits are clear.

Every Day Counts Next Steps
FHWA, CDOT and if practical, the new CO LTAP vendor (Front Range Community College) are working together to complete deployment of these nine EDC-5 Innovations through November 2020.

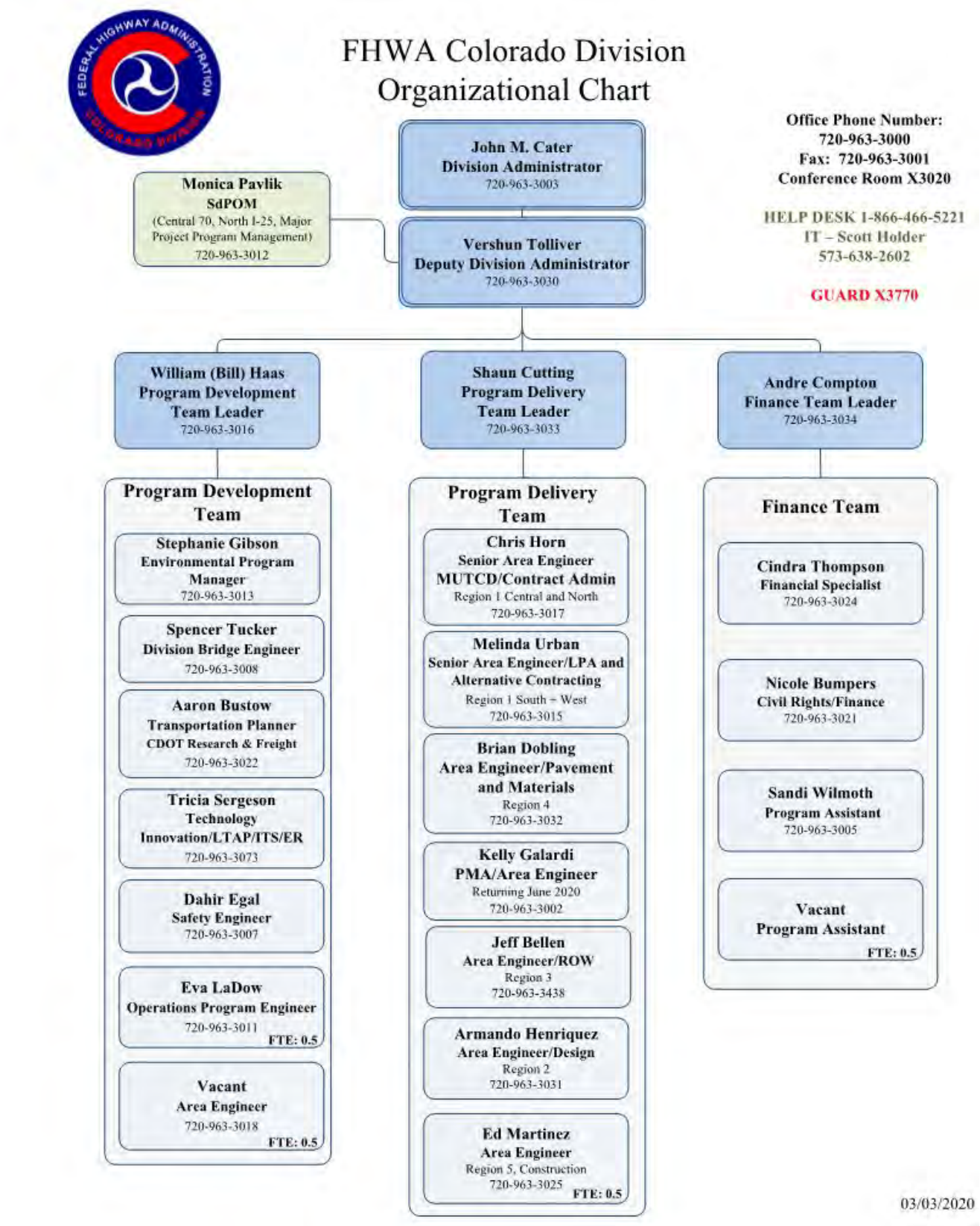
Planning for the 2020 EDC Regional Summits involving the next round of Every Day Counts (EDC 6) has begun. This year, the EDC 6 Regional Summits will coincide with regional STIC leadersship meetings and these have a tentative date of: November 16 (STIC meeting) and November 17-18 (EDC-6 Summit) in Phoenix Arizona.

You can find further information on the FHWA EDC website or contact Tricia Sergeson, FHWA CO DIV EDC Coordinator.

APPENDIX A. CDOT ORGANIZATIONAL CHART



APPENDIX B. FHWA ORGANIZATIONAL CHART



APPENDIX C. ENVIRONMENT SECTION - OTHER NOTABLE REGULATIONS AND ACCOMPLISHMENTS TO COMPARE FOR TRACK TRENDS 2019

Priority projects:

- T-REX construction - driven by Governor Owens/Tom Norton
- SH 85 and 120th extension signed in May 2003 - driven by Tom Norton
- US 36 - Quick Final EIS/ROD driven by Tiger Grant opportunity and Governor Ritter/Russell George
- I-70 Mountain Corridor Programmatic EIS rewrite driven by Governor Ritter/Russell George (finished up by Governor Hickenlooper/Don Hunt)
- Twin Tunnel East-Bound EA - driven by Governor Hickenlooper/Don Hunt
- I-70 East EIS/ROD driven by Governor Hickenlooper/Shailen Bhatt
- I-25 South EA (aka The Gap) driven by Governor Hickenlooper

Dropped projects:

- NW Corridor EIS (became Jefferson Parkway, a private enterprise)
- Gaming Area EIS

Notable Initiatives and Accomplishments:

- First EA/EIS in this analysis started in 1999
- CDOT Environmental Stewardship Guide – 1st version in 2003, revised in 2005, and in 2017
- Desired State Task Force initiated in 2005 (initiated the idea for the NEPA Manual)
- Step-Up (precursor to Planning and Environmental Linkages [PEL]) – 2004-2007
- First PEL document drafted in 2007
- CDOT NEPA Manual – 1st Version in June 2007
- FHWA Non-Programmatic Environmental Review Summary developed in 2008
- CDOT NEPA Manual – 2nd version (total rewrite) in August 2008
- CDOT/FHWA/USACE NEPA/404 Merger Process and Agreement
- CDOT NEPA Manual – 3rd version in March 2013 with many updates and additions
- CDOT NEPA Manual – Version 4 released in October 2014 with many updates and additions
- EA Template was created, tested, and revised and was rolled out for general use after the signature on the SH9 Iron Springs EA in May 2014.
- PEL Handbook and Training Update 2015
- Cat Ex Programmatic Agreement Update - updating the user agreement between FHWA and CDOT for administration of Cat Ex Program.
- Federal Lands MOU – improved communication and NEPA processes for projects taking place on federal land - 2016.
- CDOT NEPA Manual Version 5 2017
- CDOT Environmental Stewardship Guide (updated for the first time in 12 years) 2017
- CDOT NEPA@CDOT Training

Politics and Transportation Priorities:

1987-1999 – Governor Roy Romer was in office (Bill Jones was Executive Director for CDOT) – It was during his term that the idea for T-REX came about. A Major Investment Study (MIS) identifying the need for the later-named "TRansportation EXpansion" dubbed "T-REX" was signed in 1995 and a more refined MIS was signed in 1997. In 1998, the DRCOG 20-year plan was adopted that had T-REX at the top of the priority list.

1999-2007 – Governor Bill Owens was in office (Tom Norton was Executive Director for CDOT): In November 1999, Owens brought his transportation funding initiative to the ballot. Called TRANS, the $1.7 billion bonding initiative accelerated future federal transportation dollars on 28 projects across the state. The keystone project on his campaign platform was the "TRansportation EXpansion" dubbed T-REX in 1999. T-REX combined road funding from TRANS with $460 million of new light rail lines to greatly expand a 19-mile stretch of Interstate 25 through the south Denver Metro Area. Through an innovative (one-of the-first-of-its-kind) design-build concept that greatly reduced construction times, T-REX was finished in less than five years, 2001 - 2006, and came in under budget. Owens was re-elected in 2002 by the largest majority in Colorado history, after making transportation, education, and tax cuts the focus of his governorship.

The passage of Referendum C in 2005 was in large part due to a wide coalition of bi-partisan supporters, including those in the business and transportation sectors. Although Referendum C does not provide direct funds for transportation, it does allow transportation revenue to flow through Senate Bill 1 and House Bill 1310. The year prior to this, Tom Norton supported many corridor EAs and EISs including completing the "beltway" around the greater Denver area.

An early version of Planning and Environmental Linkages called Strategic Transportation, Environmental and Planning Process for Urbanizing Places (STEP UP) ran from approximately 2004 through 2007 and allowed CDOT to witness first-hand how the PEL approach could streamline its transportation planning. CDOT and FHWA-CO incorporated lessons learned from STEP UP to create new PEL tools for the state and to strengthen their relationships with federal and state resources and regulatory agencies. The success of the pilot also became a motivating factor in formalizing the PEL approach for Colorado's statewide transportation planning.

2007-2011 – Governor Bill Ritter was in office (Russell George was Executive Director for CDOT): Governor Ritter's campaign platform was based on the following statement, "As Governor, I will bring a fresh, balanced approach to how we invest in our infrastructure, plan for future growth and protect the environment. Simply stated, the process for funding our transportation system is antiquated and needs a 21st century overhaul." In 2007, he convened a Blue Ribbon Transportation Finance and Implementation Panel to investigate how to better prioritize and implement our infrastructure needs. In 2009, the Transportation Environmental Resources Council, a collection of regulatory and governing agencies, signed a partnering agreement for collaborating on PEL efforts to help streamline the NEPA process on large corridors.

On March 2, 2009 - Gov. Bill Ritter signed into law the Funding Advancements for Surface Transportation and Economic Recovery Act of 2009 (FASTER) transportation bill that put an emphasis on safety and bridge projects. In March through May 2009, Governor Ritter also certified 5 different Transportation Recovery Funds rounds of funding (American Recovery and Reinvestment Act of 2009-ARRA) including one targeting transit projects, bringing multi-modal projects to the front and center of the discussion. He also proposed helping other local ventures handle their aging infrastructure and used the passage of FasTracks in metro Denver and Go 1A in greater Colorado Springs as examples of broad coalitions that were successfully built to win voter support and address Regional needs.

Governor Ritter pointed out the I-70 Mountain Corridor as an example of proper planning with the environment, citing the way I-70 gracefully snakes through Glenwood Canyon. He said that this project and its concerns for our natural settings should serve as a model as we look for 21st century solutions to congestion problems throughout the I-70 mountain corridor. "We must design projects that improve mobility, honor the environment and protect the livability of adjacent communities."

For this reason, he proposed to preserve a transit envelope as part of a long-term I-70 transportation solution. This put a priority on the I-70 Mountain Corridor NEPA process so that work could begin on this corridor.

US 36 improvements became a priority for Governor Ritter, so Colorado submitted for Urban Partnership funding in 2007. They did not get this funding but applied for and later received $10 million in Transportation Investment Generating Economic Recovery (TIGER) Grant funds in 2010. To help position this project for the TIGER Grant after losing the Urban Partnership funding, the Governor put a priority in completing the EIS for this corridor to help position US 36 for this other funding. Tolling is up and running on the corridor and construction continues on stretches near McCaslin Blvd.

2011 to 2015 – Governor John Hickenlooper was in office (Donald Hunt was Executive Director for CDOT): Governor Hickenlooper saw the I-70 West Mountain Corridor as a critical corridor that impacts commerce, tourism, recreation, and overall economic development with year-round congestion problems and began actively looking for funding.

He supported FASTER legislation; there were 178 bridges that were 75 years old, stretches of highways that were 75-100 years old, and expanses of interstate that are approximately 50 years old. He looked to innovative Public Private Partnerships (P3) funding to help with some needed projects as well. On October 17, 2013, 44 partnership projects were selected as part of the Responsible Acceleration of Maintenance and Partnerships (RAMP) program, totaling $580 million, to maximize and expand the statewide transportation system.

The governor put a high priority on the I-70 East (Central) EIS project, which had been ongoing for a number of years due to public controversy. This remains a high-profile corridor for CDOT, in part because of the aging viaduct that needs to be replaced, and a lot of resources and attention were placed on its completion by the Governor.

In September 2013, there was a large flooding event that wiped out many major roadways in northwest Colorado. Governor Hickenlooper worked with CDOT to get access to all the areas isolated by the roadway damage with a promise to open all the damaged and closed highways by December 1st of the same year. This goal was met before Thanksgiving, with the understanding that the emergency repairs were temporary and that the permanent repairs would occur over the next several years. The intensity of this effort pulled resources off of other projects, although the normal course of business was still expected to occur at the same time, just with a lower priority that might have delayed some of the other planning efforts going on around the state.

2015 to 2018 - Governor John Hickenlooper in office second term (Shailen Bhatt/Mike Lewis served as CDOT's Executive Directors: Governor Hickenlooper and FHWA had projects of significant interest. FHWA had Projects of Corporate Interest (POCI). The following projects were FHWA designated POCI:

- I-25: Colorado Springs Denver South Connection (PEL, NEPA, and construction)
- I-25 North (for implementation/construction)
- I-70 East (Procurement/construction)
- C-470 (for procurement/construction)
- US 36 (for financing/construction)

Additional projects on the I-70 Mountain Corridor, including the westbound Peak Period Shoulder Lane and improvements to Floyd Hill were a focus.

CDOT's decision making under NEPA was legally challenged twice in 2017. It was the first time in ten years since this has occurred.

- I-70 East lawsuit: In December 2018, CDOT reached a settlement with project opponents on their legal challenge. CDOT agreed to pay for a community health study and the planting of trees throughout nearby neighborhoods.

- C470 lawsuit: There was a decision for the C470 Kipling to I-25 NEPA challenge. In that case, the courts ruled that CDOT will need to update its noise guidance and reconfirm the model validation used for the C470 project, but the FONSI was not vacated. The judge revisited the Court's decision in late 2018. The court decision was that CDOT should improve it explanation of how it's noise methodology is applied and used. The court remanded the decision back to FHWA and CDOT without a specific deadline. As a result, CDOT is updating the Noise Guidance and Abatement Criteria.

<u>2019 to present - Governor Jared Polis in office first term (Shoshana Lew serves as CDOT's Executive Director):</u>
In 2019, Governor Polis signed two Executive Orders (EO) that relate to EPB's mission:

1. 'Supporting a Transition to Zero Emission Vehicles' that set the tone for an administration that advances the priority of improving air quality through reducing emissions.
2. Conserving Colorado's Big Game Winter Range and Migration Corridors

APPENDIX D. MAJOR NEPA PROJECT – HISTORICAL DATA

Note: "NUM!" refers to times that have not been calculated.

Region	Task Name	Document Type	Start Date	EA or Draft EIS Signature	FEIS Signature Date	Decision Document Date	Total Duration (months)	Project Start to EA or Draft EIS Signature (months)	Draft E Signatur Final E Signatu (month
1	I-225 North of Parker Road to North of 6th Ave	EA/FONSI	1/28/1999	10/17/2000	NA	5/3/2001	27.00	20.00	#N/A
2	I-25 North Colorado Springs	EA/FONSI	2/1/1999	3/29/2004	NA	9/10/2004	67.00	61.00	#N/A
3	SH 9	EIS/ROD	3/23/1999	5/31/2002	3/4/2004	5/24/2004	62.00	38.00	21.00
1	I-70 Mtn Corridor	EIS/ROD	1/25/2000	8/10/2010	2/24/2011	6/16/2011	136.00	126.00	6.00
4	I-25, 136th Ave Interchange	EA/FONSI	2/17/2000	5/15/2002	NA	1/8/2003	34.00	26.00	#N/A
1	Northwest Parkway, I-25 Interchange	EA/FONSI	4/3/2000	2/12/2001	NA	5/23/2001	13.00	10.00	#N/A
3	I-70 Eagle County Airport Interchange	EA/FONSI	4/14/2000	8/30/2004	NA	6/23/2005	62.00	52.00	#N/A
2	Woodmen Road	EA/FONSI	6/14/2000	12/16/2005	NA	12/14/2007	90.00	66.00	#N/A
4	I-25, 144th Ave Interchange, Adams County	EA/FONSI	7/7/2000	1/12/2005	NA	4/15/2005	57.00	54.00	#N/A
1	I-70, Hogback Parking Facility	EA/FONSI	7/19/2000	2/14/2001	NA	8/13/2001	12.00	6.00	#N/A
1	Nottingham Ranch Road (Post Blvd), I-70	EA/FONSI	8/2/2000	1/11/2002	NA	4/25/2003	32.00	17.00	#N/A
1	I-70, SH 58 Interchange	EA/FONSI	9/18/2000	7/3/2002	NA	9/1/2004	47.00	21.00	#N/A
1	South Simms St - US 285 Interchange	EA/FONSI	1/29/2001	9/6/2001	NA	4/1/2002	14.00	7.00	#N/A
1	SH 402, US 287 to I-25 Interchange	EA/FONSI	8/13/2001	7/23/2007	NA	1/14/2008	77.00	71.00	#N/A
2	Powers Blvd	EA/FONSI	10/29/2001	5/4/2010	NA	1/4/2011	110.00	102.00	#N/A
1	I-25, Crystal Valley/Dawson Ridge Pkwy	EA/FONSI	4/2/2002	9/20/2004	NA	2/28/2005	34.00	29.00	#N/A
2	SH 287 Reliever Route in Lamar	EA/FONSI	4/25/2002	8/15/2013	NA	11/10/2014	150.00	135.00	#N/A
1	SH 285, Foxton to Bailey	EA/FONSI	7/12/2002	8/11/2004	NA	6/3/2005	34.00	24.00	#N/A
1	Valley Highway	EIS/ROD	7/23/2002	4/19/2005	12/7/2006	7/5/2007	59.00	32.00	19.00

Region	Task Name	Document Type	Start Date	EA or Draft EIS Signature	FEIS Signature Date	Decision Document Date	Total Duration (months)	Project Start to EA or Draft EIS Signature (months)	Draft E Signatur Final E Signatu (month
1	120th Ave Extension, SH 85 and Quebec	EA/FONSI	8/19/2002	5/27/2003	NA	8/1/2003	11.00	9.00	#N/A
2	US 34 Business Route, SH 257 to 71st Ave	EA/FONSI	10/11/2002	9/13/2005	NA	5/2/2006	42.00	35.00	#N/A
5	US 160 Durango to Bayfield	EIS/ROD	12/24/2002	9/13/2005	5/12/2006	11/7/2006	46.00	32.00	7.00
2	I-25 Through Pueblo	EIS/ROD	1/27/2003	10/21/2011	8/15/2013	4/17/2014	134.00	104.00	21.00
5	US 550, Improvements from State Line to CR 220	EA/FONSI	2/12/2003	7/27/2005	NA	12/21/2005	34.00	29.00	#N/A
1	I-70 East	EIS/ROD	8/19/2003	10/29/2008	12/14/2015	1/19/2017	161.00	62.00	85.00
2	US 24, I-25 West to Manitou	EA/FONSI	8/27/2003	5/16/2012	NA	10/1/2014	133.00	104.00	#N/A
1	US 36	EIS/ROD	10/21/2003	7/23/2007	10/30/2009	12/24/2009	74.00	45.00	27.00
1	SH 121, Wadsworth Blvd/Grand Ave	EA/FONSI	11/28/2003	5/9/2005	NA	8/31/2005	21.00	17.00	#N/A
4	North I-25	EIS/ROD	12/22/2003	10/31/2008	8/19/2011	12/29/2011	96.00	58.00	33.00
4	SH 7, Cherryvale Rd to 75th St	EA/FONSI	3/1/2004	5/30/2008	NA	9/15/2008	54.00	50.00	#N/A
1	I-225, Colfax Avenue Interchange	EA/FONSI	3/9/2004	10/20/2005	NA	3/30/2007	36.00	19.00	#N/A
4	US 34 Madison Ave to Larimer County	EA/FONSI	9/1/2004	4/4/2007	NA	5/4/2007	32.00	31.00	#N/A
1	I-70, E-470 Interchange Complex	EA/FONSI	9/24/2004	11/7/2006	NA	7/10/2007	33.00	25.00	#N/A
2	DAR, US Army Pueblo Chemical Depot	EA/FONSI	10/26/2004	1/16/2007	NA	5/7/2007	30.00	26.00	#N/A
1	I-70/32nd Ave Interchange (Cabela's)	EA/FONSI	2/1/2005	10/23/2006	NA	2/28/2007	24.00	20.00	#N/A
1	South Broadway	EA/FONSI	6/1/2005	3/26/2008	NA	10/8/2008	40.00	33.00	#N/A
1	SH 88, Federal Blvd, Alameda Ave to 6th Ave	EA/FONSI	8/29/2005	11/14/2007	NA	2/28/2008	29.00	26.00	#N/A
2	I-25, SH 16, East Entrance to Fort Carson	EA/FONSI	2/2/2006	7/12/2007	NA	9/20/2007	19.00	17.00	#N/A
2	US 50 East	Combined FEIS/ROD	2/3/2006	8/12/2016	12/15/2017	12/15/2017	142.00	126.00	16.00

Region	Task Name	Document Type	Start Date	EA or Draft EIS Signature	FEIS Signature Date	Decision Document Date	Total Duration (months)	Project Start to EA or Draft EIS Signature (months)	Draft E Signatur Final E Signatu (month
3	I-70 East Eagle Interchange	EA/FONSI	7/18/2006	9/3/2010	NA	5/24/2011	58.00	49.00	#N/A
1	I-70, I-70B West	EA/FONSI	8/8/2006	3/19/2008	NA	8/8/2008	24.00	19.00	#N/A
1	56th Ave Quebec to Havana	EA/FONSI	4/12/2007	9/4/2008	NA	1/15/2009	21.00	16.00	#N/A
1	6th Ave/Wadsworth	EA/FONSI	6/1/2007	6/29/2009	NA	3/12/2010	33.00	24.00	#N/A
1	I-25, North Meadows Extension to US 85 and I-25	EA/FONSI	7/2/2007	3/23/2010	NA	3/17/2011	44.00	32.00	#N/A
3	I-70, Parachute West Interchange	EA/FONSI	8/24/2007	1/5/2010	NA	8/10/2010	35.00	28.00	#N/A
5	US 550/160 Supplemental EIS	EIS/ROD	10/1/2007	10/3/2011	7/3/2012	5/15/2015	91.00	48.00	9.00
3	South Bridge - Glenwood Springs	EA/Ongoing FONSI/REEVAL	12/14/2007	10/8/2013	NA		#NUM!	69.00	#N/A
1	Central Park Blvd	EA/FONSI	7/3/2008	6/4/2009	NA	8/3/2009	13.00	11.00	#N/A
1	I-25 Dillon Drive	EA/FONSI	12/18/2008	1/26/2011	NA	7/28/2011	31.00	25.00	#N/A
1	I-25 Arapahoe Road	EA/FONSI	3/3/2010	8/29/2012	NA	3/15/2013	36.00	29.00	#N/A
1	Martin Luther King Blvd Extension	EA/FONSI	8/16/2010	6/21/2017	NA	10/30/2017	86.00	82.00	#N/A
3	Grand Ave Bridge	EA/FONSI	5/2/2011	10/18/2014	NA	5/28/2015	48.00	41.00	#N/A
1	Twin Tunnels	EA/FONSI	9/1/2011	6/28/2012	NA	10/17/2012	13.00	9.00	#N/A
4	I-25 North Revised ROD 2	Revised ROD	1/2/2012		NA	7/23/2015	42.00	#NUM!	#N/A
4	I-25 North Revised ROD 1	Revised ROD	1/2/2012		NA	10/20/2017	69.00	#NUM!	#N/A
3	SH 9 Iron Springs	Template EA/FONSI	8/1/2012	5/6/2014	NA	12/17/2014	28.00	21.00	7.00
1	C-470 I-25 to Kipling Revised EA	Template EA/FONSI	4/2/2013	7/24/2015	NA	9/1/2015	28.00	27.00	1.00
1	I-76 and Bridge Street	Template EA/FONSI	5/1/2013	1/14/2015	NA	8/13/2015	27.00	20.00	6.00
2	US 50 West, Purcell Blvd. to Willis Blvd.	Template EA/FONSI	12/16/2013	6/4/2014	NA	9/11/2014	8.00	5.00	3.00
1	Federal Blvd, 7th to Howard Place	Template EA/FONSI	2/11/2014	10/8/2014	NA	1/14/2015	11.00	7.00	3.00
1	6th Ave Parkway Extension	Template EA/FONSI	9/19/2014	6/16/2016	NA	12/6/2016	26.00	20.00	5.00
2	US 50 West, Wills Blvd to McCulloch Blvd.	Template EA/FONSI	3/18/2015	6/30/2016	NA	8/30/2016	17.00	15.00	2.00
4	I-25 North ROD 3	Revised ROD	3/7/2016		NA	6/15/2016	3.00	#NUM!	#N/A

Region	Task Name	Document Type	Start Date	EA or Draft EIS Signature	FEIS Signature Date	Decision Document Date	Total Duration (months)	Project Start to EA or Draft EIS Signature (months)	Draft E Signatur Final E Signatu (month
1	104th Ave: Colorado to US85	Ongoing Template EA			NA				
4	I-25 North ROD 5: Vine St. Bridge Replacement	Ongoing ROD	6/1/2016		NA	12/15/2017	18.00	#NUM!	#N/A
1	88th Avenue: I-76 to SH 2	Ongoing Template EA	10/1/2018		NA				
4	I-25 North ROD 4: SH 392 to SH 56	ROD	7/1/2016		NA	4/27/2017	9.00	#NUM!	#N/A
1	Belleview and I-25 widening	Ongoing Template EA	5/15/2017		NA		#NUM!	#NUM!	0.00
1	C470, Kipling to I70	Ongoing Template EA	10/2/2017		NA		#NUM!	#NUM!	0.00
1	I-25 US 36 to 104th	Ongoing Template EA	1/2/2017		NA		#NUM!	#NUM!	0.00
4	North I-25 Segment 5/6	Ongoing ROD	8/1/2017		NA		#NUM!	#NUM!	#N/A
1	I-25, Monument to Plum Creek (Gap Project)	Template EA/FONSI	12/9/2017	4/25/2018	NA	6/27/2018	#NUM!	4.00	2.00
1	I-70 Floyd Hill	Ongoing Template EA	8/1/2017		NA		#NUM!	#NUM!	0.00
3	I-70 Vail Pass Auxiliary Lanes	Ongoing Template EA	1/17/2017		NA		#NUM!	#NUM!	0.00
1	Kipling and I70 Interchange	Template EA/FONSI	7/1/2016	1/01/2019	NA		#NUM!	30.00	0.00
1	US 85 N (I-76 to 124th)	Ongoing Template EA	1/2/2017		NA		#NUM!	#NUM!	0.00
1	Wadsworth Boulevard: 35th - 44th Widening	Template EA/FONSI	5/5/2016	4/01/2019	NA		#NUM!	35.00	0.00