AGENDA

REGIONAL TRANSPORTATION COMMITTEE
Tuesday, March 17, 2020
8:30 a.m.

1001 17th St.
1st Fl. Aspen/Birch Conference Rm.

1. Call to Order

2. Public Comment

3. February 18, 2020 RTC Meeting Summary
(Attachment A)

ACTION ITEMS

4. Discussion on returned Community Mobility Planning and Implementation (CMPI) set-aside of the 2020-2023 Transportation Improvement Program (TIP) funding to projects
(Attachment B) Derrick Webb

5. Discussion Urban arterial multimodal safety improvements set-aside
(Attachment C) Ron Papsdorf

INFORMATIONAL BRIEFINGS

6. Update on Air Quality Planning: *Serious Nonattainment Area*
(Attachment D) Robert Spotts, Amanda Brimmer – RAQC

7. Update on DRCOG Regional Multimodal Freight Plan
(Attachment E) Matthew Helfant

8. Update and information on the draft of *Taking Action on Regional Vision Zero*
(Attachment F) Beth Doliboa

ADMINISTRATIVE ITEMS

9. Member Comment/Other Matters

10. Next Meeting – April 14, 2020

11. Adjournment

ATTACH A

ATTACHMENT A

MEETING SUMMARY
REGIONAL TRANSPORTATION COMMITTEE
Tuesday, February 18, 2020

MEMBERS PRESENT:

Shannon Gifford	Colorado Department of Transportation
Karen Stuart	Colorado Department of Transportation
Don Stanton	Colorado Department of Transportation
Douglas Rex	Denver Regional Council of Governments
Wynne Shaw	Denver Regional Council of Governments
Bob Fifer (Chair)	Denver Regional Council of Governments
John Diak (Vice Chair)	Denver Regional Council of Governments
Jeff Kullman	Michael Baker International
Mike Silverstein	Regional Air Quality Council
Doug Tisdale	Regional Transportation District
Vince Buzek	Regional Transportation District

Others Present:

Eula Adams (Alternate)	Colorado Department of Transportation
Rebecca White (Alternate)	Colorado Department of Transportation
Ron Papsdorf (Alternate)	Denver Regional Council of Governments
Jim Dale (Alternate)	Denver Regional Council of Governments
Bill Van Meter (Alternate)	Regional Transportation District
Kate Williams (Alternate)	Regional Transportation District

Public: Alex Ariniello, Town of Superior; Maureen McCanna, Peter Piccolo, Bicycle Colorado; Jordan Rudel, CDOT R1

DRCOG Staff: Jacob Riger, Todd Cottrell, Steve Cook, Steve Erickson, Emily Lindsey, Greg MacKinnon, Beth Doliboa, Melinda Stevens

Call to Order
Chair Bob Fifer called the meeting to order at 8:33 a.m.

Public Comment
Peter Piccolo, Executive Director of Bicycle Colorado, asked for the committee to reconsider funding an additional project for Bicycle Colorado with remaining funds from the Transportation Demand Management (TDM) set-aside of the 2020-2023 Transportation Improvement Program (TIP). He explained that Bicycle Colorado is a small non-profit that could benefit greatly from having this project funded.

Summary of December 17, 2019 Meeting
The summary was accepted.

ACTION ITEMS

2020-2023 Transportation Improvement Program (TIP) amendments

Todd Cottrell presented proposed 2020-2023 TIP amendments to the committee. The amendments to the TIP have been found to conform with the State Implementation Plan for Air Quality:

TIP Amendments

- **2007-095 Region 4 Surface Treatment Pool**

Add $8.9 million in State surface treatment funds, along with one new pool project

- **2020-080** **CDOT Trust Settlement Pool**
  Remove $8.5 million representing the two RTD pool projects and transfer to new TIP project (below)
- **New Project** **RTD Electric Bus Purchases**
  Create a new $17.69 million-dollar project for electric bus and infrastructure purchases, including transferred state funding (see above), new FTA funding, and RTD match

Doug Tisdale MOVED to recommend to the Board of Directors the attached amendments to the *2020-2023 Transportation Improvement Program* (TIP). The motion was seconded and passed unanimously.

Discussion on amendment to the FY 2019 TIP delayed projects report
Todd Cottrell presented the amendment to the committee. Based on conversations with City of Arvada staff, DRCOG staff has become aware of an additional project that should have been included on the first-year project delay list. Arvada staff are currently working to address ROW compliance issues associated with the project and project design simultaneously. They anticipate being able to advertise the project in October 2020.

Doug Tisdale MOVED to recommend to the Board of Directors the amendment to the approved TIP project delays report for Fiscal Year 2019. The motion was seconded and passed unanimously.

Discussion on recommendation of projects to be funded through the Transportation Demand Management (TDM) set-aside of the 2020-2023 TIP
Steve Erickson, Communications and Marketing Director, presented the proposed projects to the committee. The 2020-2023 TIP Policy established $1.8 million in federal funds for TDM non-infrastructure projects over the four-year period. The purpose of the TDM set-aside is to support marketing, outreach and research projects that reduce traffic congestion and improve air quality. After conducting a workshop for potential applicants, DRCOG issued a call for letters of intent, followed by a call for applications. Staff convened a review panel consisting of two internal and five external participants who first submitted project scores based on approved criteria, then met to review and discuss each project. Separately, DRCOG technical staff scored projects based on data-driven elements.

The review panel recommended the following projects for funding:

Project Sponsor	Project Title	Recommended Award
Transportation Solutions	Commute Trip Reduction Plans and Pilots	$165,580
Bicycle Colorado	Denver Shifts Gears	$198,696
Northeast Transportation Connections	The Colfax Corridor Collaboration	$165,580
Denver Bike Sharing	Bikeshare Innovation & Expansion	$275,691
Denver Regional Mobility Access Council	Metropolitan Area Transit Training (MATT)	$80,800

City of Littleton	Safe Routes to School Wayfinding and SchoolPool Implementation	$108,415
	Recommendation Total	$994,762.06
	Planning Funding Available	$1,136,000.00

At the January 27 Transportation Advisory Committee meeting, TAC members discussed the remaining fund balance of $141,238. While the review panel had recommended moving these funds to the next call for projects, TAC discussed remaining projects and voted unanimously to use the balance to partially fund the following project:

Commuting Solutions	Downtown Superior TDM project	$141,238

The RTC also took into consideration the public comment made by Peter Piccolo of Bicycle Colorado, along with a letter he had written to address the same issue. After a discussion amongst the committee members, it was ultimately decided that they would follow TAC recommendation of awarding partial funding to the Commuting Solutions project. The committee agreed that if additional funds were to become available, Bicycle Colorado should be next on the list to receive them.

> Vince Buzek MOVED to recommend to the Board of Directors the projects above be funded through the TDM Services Set-Aside of the DRCOG *2020–2023 TIP* and to have Bicycle Colorado put on a waitlist, to be funded should additional funds become available. The motion was seconded and passed with 12 in favor and 2 abstentions by Bill Van Meter and Kate Williams.

Appointment of TAC Seniors Interest seat

Jacob Riger explained the recent vacancy of the seniors interest seat on the TAC. Staff conducted a competitive solicitation process to identify a preferred candidate for nomination by Board Chair Bob Fifer. Of three applications received, DRCOG staff recommended, and the Board Chair has nominated, Carol Buchanan, Director of Programs at the Denver Regional Mobility and Access Council (DRMAC). Her appointment would become effective with the first TAC meeting following RTC's confirmation.

> Doug Tisdale MOVED to confirm the Transportation Advisory Committee seniors special interest seat nomination made by Board Chair Bob Fifer. The motion was seconded and passed with 13 in favor and 1 abstention by Kate Williams.

INFORMATIONAL ITEMS

Briefing on the upcoming DRCOG Regional Transportation Operations & Technology (RTO&T) set-aside program Call-for-Projects

Steve Cook and Greg MacKinnon provided an overview of the upcoming call for projects to the committee. The DRCOG Board established the Regional Transportation Operations & Technology (RTO&T) set-aside program at $5 million per year as part of the 2020-2023 Transportation Improvement Program (TIP). Once funds are taken off the top for projects already programmed, DRCOG staff, and consultant services, just over $13 million remains to be allocated for the 2020-2023 period.

Key tasks for the 2020 Call-for-Projects include:

- Define a policy framework defining eligibility rules, priority project types, and other guidance for foundational technology infrastructure (e.g. interoperability of systems, multi-jurisdiction projects, pilot corridors)
- Approve specific project evaluation criteria and process (April RTC)
- Issue a call for Letters of Intent (LOI) from sponsors of specific projects
- After review of the LOIs, invite sponsors to complete the official application form

- Project funding recommendations made by the Evaluation Committee, AMP Working Group, DRCOG TAC, and DRCOG RTC
- DRCOG Board approval of project funding list (September)

CDOT 10-Year Strategic Pipeline

Ron Papsdorf presented this plan to the committee. CDOT is developing its Statewide Transportation Plan. Statewide transportation planning is required by federal and state regulations. One of CDOT's goals is to leverage the Statewide Plan process to develop a 10-Year Strategic Pipeline of Projects, inclusive of all modes, informed by a data-driven needs assessment and public and stakeholder input. The targets for CDOT Region 1 and Region 4 (DRCOG portion) are as follows ($ million):

REGION	REGIONAL TRANSIT	HIGHWAY CAPITAL	TOTAL
1	$150.40	$921.90	$1,072.3
4-DRCOG	$21.18	$141.62	$162.80

Region 1 and Region 4 have somewhat different approaches to developing the pipeline project lists since Region 1 is entirely within the DRCOG region while Region 4 is only partially within the DRCOG region and includes three other MPOs/TPRs (North Front Range MPO, Upper Front Range TPR, and Eastern TPR).

Karen Stuart commented that all these projects are currently unfunded and that this is a list of projects that "could be" funded. CDOT is hoping to have a finalized list by March or April 2020

State Highway urban arterial improvements concept

Ron Papsdorf explained this concept to the committee. The 2020-2023 Transportation Improvement Program (TIP) includes a Waiting Lists Protocol for how additional funds will be allocated if they become available. A discussion took place regarding if DRCOG should consider a one-time exception to the TIP Waiting Lists Protocol, in order to leverage $9 million of unanticipated STBG-Metro funds with $17 million CDOT STBG funds for an urban arterial state highways multimodal and safety improvements program. Additionally, the criteria and process considered for selecting projects within this program were discussed. The committee expressed support for this concept.

Karen Stuart commented that it would be most beneficial to the region if we were to proceed with this concept to improve regional safety versus only a few subregions dividing the amount of $9 million for their select projects.

Member Comment/Other Matters

The meeting ended at 10:05 a.m. The next meeting is scheduled for March 17, 2020.

ATTACH B

ATTACHMENT B

To: Chair and Members of the Regional Transportation Committee

From: Derrick Webb, Planner 303-480-6728 or dwebb@drcog.org

Meeting Date	Agenda Category	Agenda Item #
March 17, 2020	Action	4

SUBJECT

Recommended returned Community Mobility Planning and Implementation (CMPI) set-aside of the *2020-2023 Transportation Improvement Program* (TIP) funding to projects.

PROPOSED ACTION/RECOMMENDATIONS

DRCOG staff and the project review panel recommend fully funding the Thornton Trail Wayfinding Signage project and partially funding the City and County of Denver Mobility Choice Network project as proposed.

ACTION BY OTHERS

February 24, 2020 – TAC Recommended Approval

SUMMARY

The 2020-2023 TIP Policy established $4.8 million in federal funds for the CMPI Set-Aside over the four-year period. For the first two-year period (FY 2020 and 2021) the CMPI Set-Aside contains:

- $1 million for small area planning and/or transportation studies; and
- $1.4 million for small infrastructure projects.

In addition to this commitment, $949,000 from previous calls and returned funds were rolled into the small infrastructure portion, bringing the total available for small infrastructure projects to $2,349,000.

All of the funds available for small infrastructure projects were awarded in October 2019 by the Board of Directors. In late 2019, the City of Centennial returned their $300,000 award.

After reconvening and consulting with the project review panel, staff recommends fully funding the City of Thornton Trail Wayfinding Signage project, adding $52,996. Staff recommends using the remaining $247,004 to partially fund the City and County of Denver's Mobility Choice Network. This project was the next project on the list of high-scoring small infrastructure projects submitted for consideration in the FY 2020-21 CMPI Set-Aside. There are no recommended changes for planning projects.

PREVIOUS DISCUSSIONS/ACTIONS

October 15, 2019 – RTC recommended project funding for the CMPI Set-Aside
May 14, 2019 – RTC recommended approval of the Eligibility Rules and Selection Process for the CMPI Set-Aside
April 16, 2019 – RTC discussed CMPI Set-Aside

PROPOSED MOTION

Move to recommend to the Board of Directors funding through the CMPI Set-Aside of the DRCOG *2020–2023 TIP* for projects as proposed.

ATTACHMENT

1. List of CMPI Set-Aside Projects

ADDITIONAL INFORMATION

If you need additional information, please contact Derrick Webb, Planner, at 303-480-6728 or dwebb@drcog.org.

Small Infrastructure Projects Submitted				
Sponsor	**Application Name**	**Requested Amount**	**Recommended Award**	**Score**
RTD	RTD Multi-Modal Wayfinding System	$ 240,000	$ 240,000	82.0
Lakewood	Alameda Corridor Shared Use Path	$ 336,000	$ 336,000	81.2
Denver	Denver Passenger Amenity Program	$ 200,000	$ 200,000	80.2
Westminster	US36/Church Ranch Station Multimodal Access Improvements	$ 82,790	$ 82,790	79.0
Sheridan	Safe Stops Through Sheridan	$ 158,046	$ 158,046	78.0
Centennial	Orchard Road Trail	$ 300,000	$0 RETURNED	76.7
Littleton	Downtown Littleton Raised Pedestrian Crossings	$ 214,160	$ 214,160	76.5
Boulder	Boulder Enhanced Pedestrain/Bicyclist Crossings	$ 230,000	$ 230,000	75.3
Aurora	25th Avenue Pedestrian Improvements	$ 391,000	$ 391,000	75.3
Thornton	Trail Wayfinding Signage*	$ 250,000	$ 250,000	74.8
Denver	Mobility Choice Network**	$ 400,000	$ 247,004	74.2
Aurora	Aurora Arts District - E. Colfax Corridor Streetscape Improvements	$ 420,000	$ -	68.7
Boulder	Boulder Junction Secure Bike and Ride Storage	$ 162,000	$ -	67.3
Aurora	Transit Orientated, On-demand Bicycle Lockers Pilot	$ 45,534	$ -	63.8
Littleton	Prince St. and Church Ave. Intersection Reconstruction	$ 245,448	$ -	58.7
Castle Rock	Castle Rock Alley Master Plan Implementation - Phase 1	$ 535,000	$ -	56.3
Superior	76th St/Sycamore St. Intersection Enhanced Pedestrian Protection	$ 165,580	$ -	56.0
Commerce City	Brighton Road Improvements between E14th Ave and E112th Ave	$ 350,000	$ -	48.0
	Total Small Infrastructure Awards		***$ 2,349,000***	

shaded green denotes funded project
shaded yellow denotes recommended award changed from 10/2019 award
*recommend increasing awarded funds by $52,996 to fully fund project
**recommend remaining funds to partially fund project

ATTACH C

ATTACHMENT C

To: Chair and Members of the Regional Transportation Committee

From: Ron Papsdorf, Director, Transportation Planning & Operations
(303) 480-6747 or rpapsdorf@drcog.org

Meeting Date	Agenda Category	Agenda Item #
March 17, 2020	Action	5

SUBJECT

Urban arterial multimodal safety improvements set-aside.

PROPOSED ACTION/RECOMMENDATIONS

DRCOG staff recommend a one-time exception to the 2020-2023 Transportation Improvement Program (TIP) Waiting Lists Protocol in order to leverage $9 million of unanticipated DRCOG-directed Surface Transportation Block Grant (STBG) funds with $17 million of CDOT-directed STBG funds to create a $26 million Urban Arterial Multimodal Safety Improvements set-aside program.

ACTION BY OTHERS

February 24, 2020 – TAC Recommended Approval

SUMMARY

CDOT has previously allocated $476 million of state highway funds to seven projects/programs and $101 million of transit funds to eleven projects/programs in the DRCOG region (Attachment 1) from SB17-267, SB 18-001, and SB19-262.

Of the CDOT Region 1 allocations, $25 million was allocated to Urban Arterial Safety Improvements (highway funds) and $26 million for Denver Area Arterial Street Pre-BRT and BRT Elements (transit funds). The allocation of these programmatic funds to specific projects is still being discussed.

In addition to these state funds, CDOT has been notified of a supplemental apportionment of federal Surface Transportation Block Grant (STBG) funds totaling approximately $37 million. Of that total, DRCOG would normally direct approximately $9 million (STBG-Metro), while approximately $17 million would be available for CDOT to obligate anywhere in the state.

CDOT staff has approached DRCOG staff regarding a funding concept that would leverage the DRCOG-directed STBG-Metro funds ($9m) with the CDOT statewide STBG funds ($17m) to create a $26m program focused on multimodal and safety enhancements on urban arterials in the Denver region.

Combined with the CDOT Region 1 allocations to Urban Arterial Safety Improvements ($25 million) and Denver Area Arterial Street Pre-BRT and BRT Elements ($26 million), there is an opportunity to invest $77 million total in the region on urban arterial corridors.

Goals for the STBG funding program would include improving safety for all modes, especially vulnerable users; improving transit connectivity; and improving multimodal mobility.

Possible Considerations for selecting projects could include:

- Facilities with a high crash history or on the High Injury Network

- Routes with existing transit service and/or future BRT corridors
- Corridors that serve Urban Center(s)/Active Transportation Plan Pedestrian Focus Areas
- Collaboration between jurisdictions
- Public Support
- Readiness
- Local match

A project selection process could consist of:

- Project requests submitted through DRCOG Subregions
- Selection panel: CDOT, RTD, DRCOG, Subregion representative

The 2020-2023 Transportation Improvement Program (TIP) includes a Waiting Lists Protocol for how additional funds will be managed if they become available (Attachment 2). This proposal requires Board action for an exception to the TIP Waiting Lists Protocol. Creating the program will also require Transportation Commission approval.

PREVIOUS DISCUSSIONS/ACTIONS

February 18, 2020 – RTC discussed the pros and cons of creating an urban arterial multimodal safety improvements set-aside program with unanticipated STBG funds.

PROPOSED MOTION

Move to recommend to the Board of Directors a one-time exception to the 2020-2023 TIP Waiting Lists Protocol in order to leverage $9 million of unanticipated DRCOG-directed Surface Transportation Block Grant (STBG) funds with $17 million of CDOT-directed STBG funds to create a $26 million Urban Arterial Multimodal Safety Improvements set-aside program.

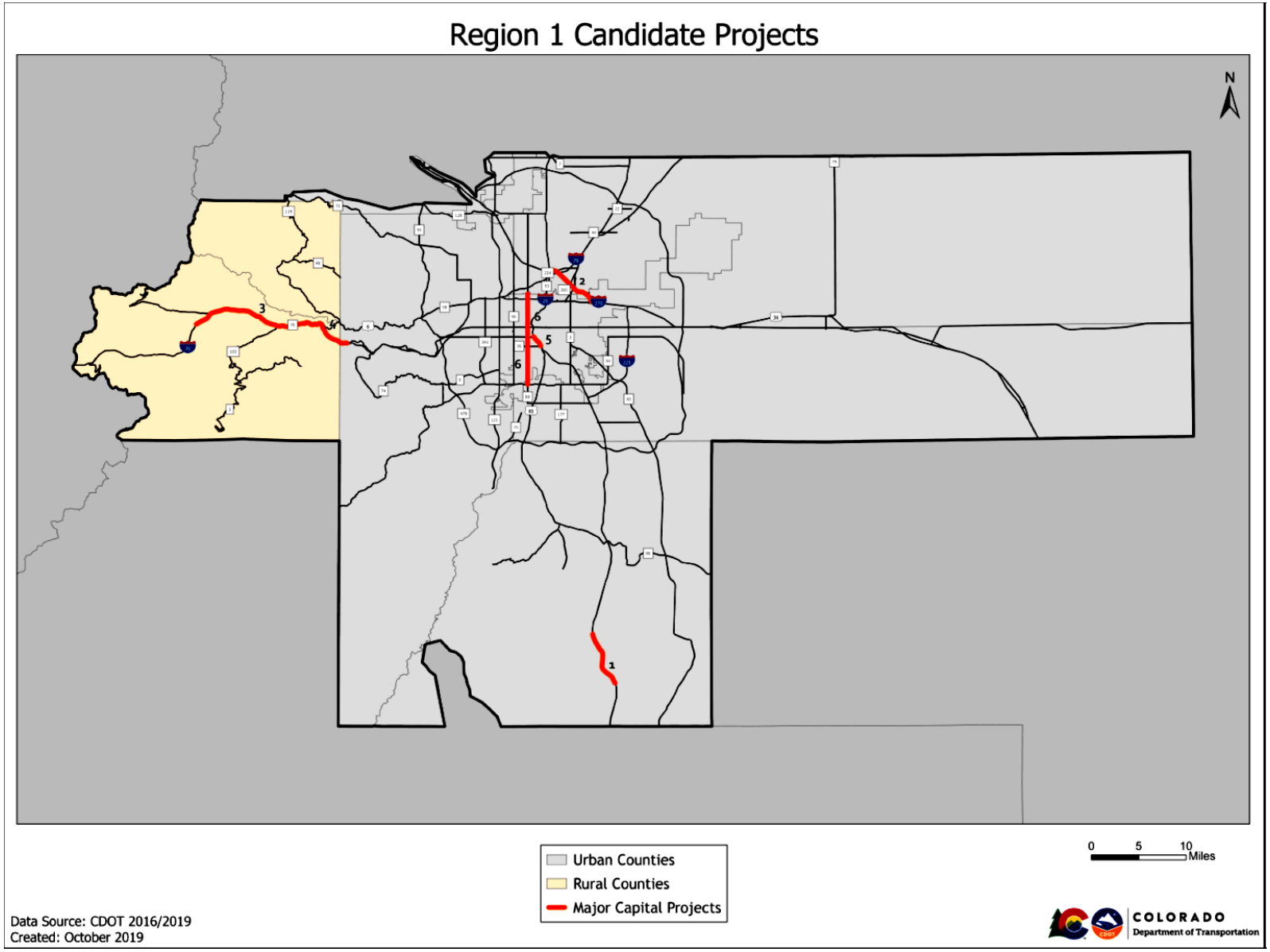
ATTACHMENTS

1. CDOT SB17-267, SB18-001, and SB19-262 allocations
2. Eligible Projects for Waiting List for the 2020-2023 TIP (Annotated)
3. 2020-2023 TIP Waiting Lists Protocol
4. Staff presentation

ADDITIONAL INFORMATION

For additional information, please contact Ron Papsdorf, Director, Transportation Planning & Operations, at 303-480-6747 or rpapsdorf@drcog.org.

Proposed Project List (Highway) – Region 1



Proposed Project List (Highway) – Region 1

Region 1					
Project Name	Project Narrative	Corridor Designation (Colorado Freight Corridor, High Freight Volume, High Demand Bike, High Criticality, LOSS)	Project Cost		
			Capital	Asset Management	Total
I-25 S Gap Package 3	Interstate 25 South Gap (from Monument to Castlerock) in construction - project costs will cover newly discovered unsuitable materials needing to be removed for roadway completion.	Colorado Freight Corridor, High Freight Volume, High Criticalilty, LOSS	$ 17,200,000	$ 8,800,000	$ 26,000,000
I-270: Widening from I-76 to I-70	NEPA Study will evaluate new lane capacity with roadway widening & shoulders along I-270 between I-76 and I-70. Project would include full roadway reconstruction and widening of I-270. Includes bridge replacement and interchange ramp improvements.	Colorado Freight Corridor, High Freight Volume, High Criticalilty, LOSS	$ 55,000,000	$ 145,000,000	$ 200,000,000
I-25 Valley Highway PH 3 & 4	Valley Highway Phase 3 and 4 improvements would consolidate heavy and light rail tracks away from I-25 and provide space to improve safety with highway geometric and access improvements.	Colorado Freight Corridor, High Freight Volume, High Criticalilty, LOSS	$ 60,000,000	$ -	$ 60,000,000
I-70 West: Floyd Hill	NEPA Study would lead this project to consider expanding West Bound Floyd Hill from two lanes to three along Interstate 70 West.	Colorado Freight Corridor, High Criticalilty, LOSS	$ 55,000,000	$ 45,000,000	$ 100,000,000
I-70 PPSL - Year Two 267 Commitment	The project is in construction to complete a peak period shoulder lane along I70 West from the Veterans Memorial Tunnels westward to Empire Junction.		$ 30,000,000	$ 5,000,000	$ 35,000,000
Urban Arterial Safety Improvements (SH88/SH287-Federal Blvd)	Urban arterial safety investments along SH 88/ SH 287 (Federal Blvd) will focus on bike/ped mobility, shoulders, striping, medians, signals, access, and safe crossings that align with DRCOG Vision Zero elements.		$ 15,000,000	$ 10,000,000	$ 25,000,000
		Region 1 Total	$ 232,200,000	$ 213,800,000	$ 446,000,000

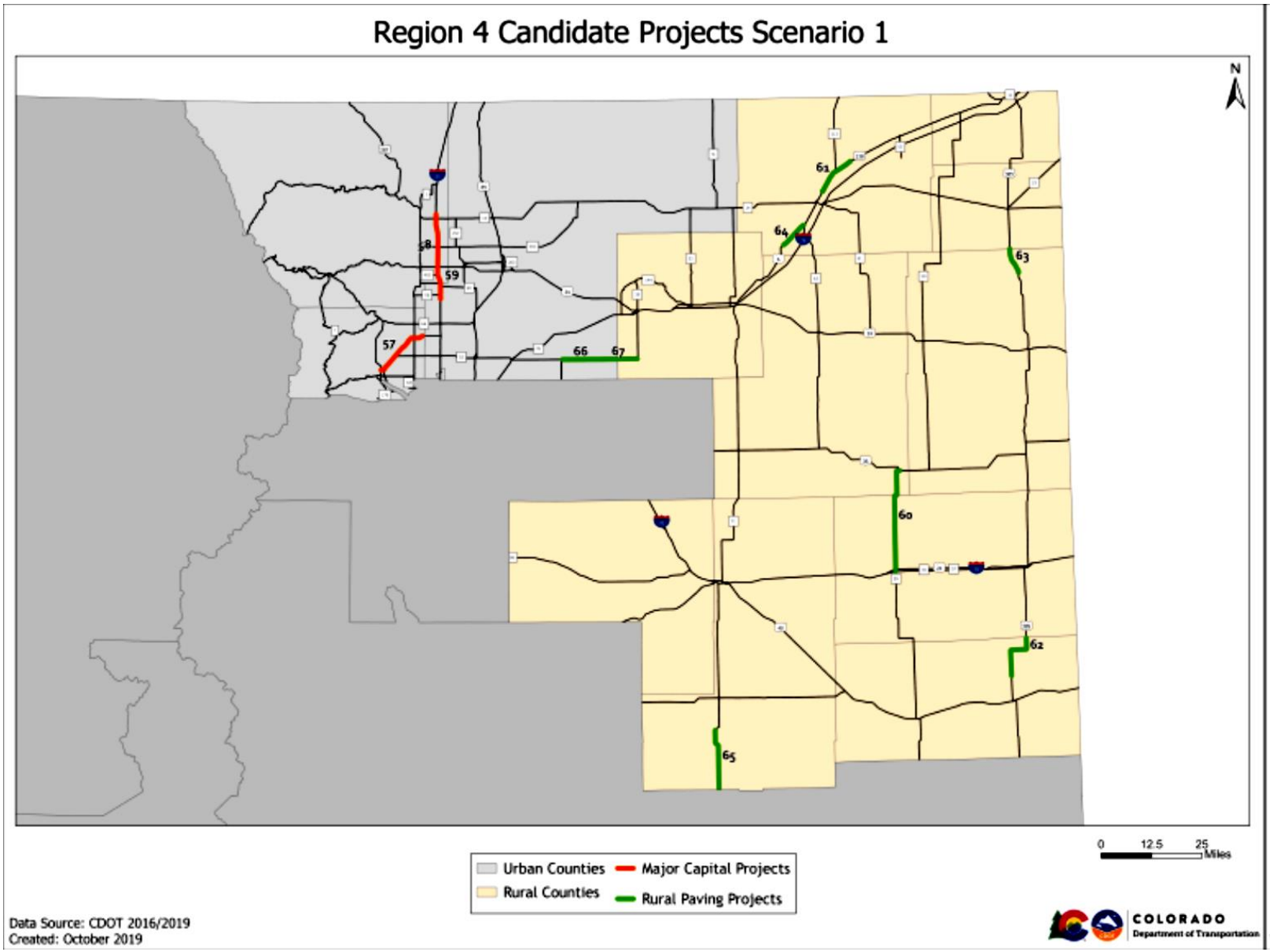
Proposed Transit Project List – Region 1

Project	Description	Program Year(s)	Project Type	Region	Est. Cost
Denver Area Arterial Street Pre-BRT and BRT Elements	Contribution for design and construction of (pre-) BRT elements (intersection and stop improvements/bike ped elements) emphasis on 9 corridors: Federal Blvd, North I-25, South Broadway, Park Ave/38th Ave, Speer Blvd/Leetsdale Dr/Parker Rd, Havana, Colorado Blvd, Alameda, and E. Colfax. Other arterial corridors possible. Synch with Highway.	1, 2 & 3	Partner	1	$26M
Castle Rock and/or Ridgegate Transit Station	Site selection, design and construction of a new transit station near Castle Rock and/or Ridgegate	1 & 4	Partner	1	$22.5M
Denver Heavy Maintenance Facility	Design and construction of heavy maintenance equipment facility near 72nd St. and Sheridan; shared by Bustang and Region 1's maintenance fleet	1 & 3	CDOT	1	$7M

Proposed Transit Project List – Region 1 Cont.

Project	Description	Program Year(s)	Project Type	Region	Est. Cost
Burnham Yard	DTR contribution (10% of bid) towards Burnham Yard (preserves option for realignment of freight and passenger rail lines)	1	CDOT	1	$5M
Idaho Springs PnR	Design and construction of expanded Park-n-Ride in Idaho Springs	1	Partner	1	$2M
Bustang Fleet Purchases	To support service at Castle Rock, Ridgegate and Longmont/Firestone	2 & 3	CDOT	1/4	$5M
Partner/Capital Call Remaining		2, 3 & 4	TBD	1/4	$17.62M
					$85.12M

Proposed Project List (Highway) – Region 4



Proposed Project List (Highway) – Region 4

Region 4					
Project Name	Project Narrative	Corridor Designation (Colorado Freight Corridor, High Freight Volume, High Demand Bike, High Criticality, LOSS)	Project Cost		
			Capital	Asset Management	Total
I-25 North: Segment 7 & 8	Bridge replacement and widening; roadway reconstruction includes walls and utilities. Project provides access to regional transit, bus slip ramps, and bike/pedestrian improvements.	Colorado Freight Corridor, High Freight Volume, High Criticality	$ 100,500,000	$ 119,500,000	$ 220,000,000
I-25 North: Segment 5 & 6 - Year Two 267 Commitment	Bridge replacement and widening and roadway reconstruction.	ColoradoFreight Corridor, High Criticality	$ 20,000,000	$ -	$ 20,000,000
SH119 Safety / Mobility Improvements	Project will improve drivability, mobility and safety.		$ 30,000,000	$ -	$ 30,000,000
		Subtotal	$ 150,500,000	$ 119,500,000	$ 270,000,000

Proposed Transit Project List – Region 4

Project/Location	Description	Program Year(s)	Project Type	Region	Est. Cost
Longmont/Firestone /Weld County Mobility Hub	Design of interim configuration at SH 119 and I-25 to expand the existing Park-n-Ride from 116 existing spaces to 414 proposed spaces; Land purchase for ultimate center-median configuration to be constructed as part of North I-25 Segment 4	Approved	CDOT	4	$3.1M
Longmont/Firestone /Weld County Mobility Hub	Construction of interim configuration at SH 119 and I-25 to expand the existing Park-n-Ride from 116 existing spaces to 414 proposed spaces	1, 2 & 4	Partner	4	$2.7M
SH119 BRT Elements	Contribution in support of RTD's commitment to provide BRT between Boulder and Longmont	4	Partner	4	$10M
Bus Stop Improvements	Stop and shelter improvements at Lochbuie	1	CDOT	4	$0.08M
Fleet Purchases	Bustang and Outrider fleet purchases	2, 3 & 4	CDOT	4	$2.5M
Partner/Capital Call Remaining	See Region 1				
					$18.38M

Previously Approved Project

Proposed Transit Project List – Region 4 Cont.

Project/Location	Description	Program Year(s)	Project Type	Region	Est. Cost
Centerra-Loveland Transit Station	Center-loading express Bustang station constructed as part of North I-25 Segment 7	Approved	Partner	4	$6M
Berthoud Transit Station	Design for a center-loading express Bustang station constructed as part of North I-25 Segment 6 (to be fully built at a later date)	Approved	CDOT	4	$0.7M
Berthoud Transit Station	Minimum construction for a center-loading express Bustang station constructed as part of North I-25 Segment 6 (to be fully built at a later date)	2	Partner	4	$4.3M
Northern Colorado Maintenance Facility	Design and construction of new Bustang storage and maintenance facility in northern Colorado	1 & 4	CDOT	4	$3.0M
Harmony Rd. PnR	Design to expand the existing Park-n-Ride at I-25 and Harmony in Fort Collins	1	CDOT	4	$0.5M
Partner/Capital Call Remaining		2, 3 & 4	TBD	4	$0
					$14.5M

Previously Approved Project

Proposed Transit Project List – Region 4 Cont.

Project/Location	Description	Program Year(s)	Project Type	Region	Est. Cost
Bus Stop Improvements	Stops and shelter improvements at Sterling	1	CDOT	4	$0.08M
Partner/Capital Call Remaining		2, 3 & 4	TBD	4	$3.12M
					$3.20M

Upper Front Range TPR

Project/Location	Description	Program Year(s)	Project Type	Region	Est. Cost
Bus Stop Improvements	Stops and shelter improvements at 3 locations: Brush, Fort Morgan, and Hudson	1	CDOT	4	$0.24M
Partner/Capital Call Remaining		2, 3 & 4	TBD	4	$4.39M
					$4.63M

Table 5. Eligible Projects for Waiting List for the 2020-2023 TIP ($9 m STBG)

DRCOG Regional Share Waiting List						20% = $1.80m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-3)**	**Project Activity**	**Waiting List Ranking**
Denver	Denver	Broadway Station and I-25 Safety & Access Improvements	$ 12,000	2.4	Construction	1
Boulder	Boulder County	US-287 BRT Feasibility and Corridor Safety Study	$ 250	1.9	Study	2
Broomfield	Broomfield	US-36 Bikeway Realignment and Safety Improvements	$ 1,234	1.9	Construction	3

Subregional Share: Adams County Forum Waiting List						15.17% = $1.09m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-5)**	**Project Activity**	**Waiting List Ranking**
Adams	Northglenn	120th Ave. Improvements: Washington St. to York St. (remaining amount)	$ 9,763	3.2	Construction	1
Adams	Aurora	Fulton St. Bicycle Boulevard and Pedestrian Enhancements (Phase 2)	$ 1,911	3.0	Construction	2
Adams	Aurora	Bicycle and Pedestrian Improvements: Havana St. and Iola St.	$ 917	2.9	Construction	3

Subregional Share: Arapahoe County Forum Waiting List						19.37% = $1.39m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-3)**	**Project Activity**	**Waiting List Ranking**
Arapahoe	Littleton	Santa Fe Dr. and Mineral Ave. Operational Improvements (remaining amount)	$ 6,048	1.9	Construction	1
Arapahoe	Centennial	Havana St. and Easter Ave. Intersection Operational Improvements	$ 5,000	2.0	Construction	2
Arapahoe	Littleton	Broadway Corridor Study	$ 800	1.9	Study	3
Arapahoe	Littleton	Federal Blvd. and Bowles Ave. Intersection Operational Improvements	$ 3,400	1.9	Construction	4
Arapahoe	Arapahoe County	Peoria St. and Easter Ave. Intersection Operational Improvements	$ 5,194	1.8	Construction	5

Subregional Share: Boulder County Forum Waiting List 9.7% = $0.70m

Subregional Forum	Project Sponsor	Project Name	Funding Request ($1,000's)	Score (1-3)	Project Activity	Waiting List Ranking
Boulder	Boulder County	US-287 BRT Feasibility and Corridor Safety Study	$ 250	2.4	Study	1
Boulder	Lyons	US-36 Multimodal Improvements in Lyons	$ 1,966	2.3	Construction	2
Boulder	Lyons	St. Vrain Trail Extension: Lyons	$ 1,048	2.3	Construction	3
Boulder	Boulder	30th St. Corridor Improvements: Boulder Creel to Arapahoe	$ 2,580	2.1	Construction	4
Boulder	Longmont	SH-119 Operational Improvements: Nelson to Pratt	$ 3,000	2.1	Construction	5
Boulder	Boulder	SH-7 and Arapahoe Bridge Replacement	$ 4,200	2.0	Construction	6
Boulder	Longmont	County Line Rd. Shoulder Improvements: 17th to SH-66	$ 225	1.9	Design	7
Boulder	Superior	Marshall Rd. Underpass	$ 1,440	1.5	Construction	8
Boulder	Boulder County	Multimodal Intersection Improvements: SH-7 and 95th Ave.	$ 5,200	1.2	Construction	9

Subregional Share: City/County Broomfield Forum Waiting List 2.33% = $0.17m

Subregional Forum	Project Sponsor	Project Name	Funding Request ($1,000's)	Score (1-3)	Project Activity	Waiting List Ranking
Broomfield	Broomfield	Industrial Lane Bikeway Phase 2 (remaining amount)	$ 186	2.1	Construction	1
Broomfield	Broomfield	Industrial Ln. & Nickel/Commerce Intersection Improvements (remaining amount)	$ 1,600	1.8	Construction	2

Subregional Share: City/County Denver Forum Waiting List 24.29% = $1.75m

Subregional Forum	Project Sponsor	Project Name	Funding Request ($1,000's)	Score (1-3)	Project Activity	Waiting List Ranking
Denver	Denver	Strategic Transportation Plan Update	$ 4,000	2.4	Study	1
Denver	Denver	Broadway Station and I-25 Safety & Access Improvements (remaining amount)	$ 3,755	2.4	Construction	2
Denver	Denver	Transit Speed & Reliability (remaining amount)	$ 6,100	2.4	Construction	3
Denver	Denver	N. Broadway Multimodal Improvements: 7th Ave. to 16th St.	$ 9,183	2.2	Construction	4
Denver	Denver	South Platte Regional Trail Improvements	$ 17,504	2.1	Construction	5
Denver	Denver	Buchtel Trail Multimodal Network Improvements	$ 12,838	2.2	Construction	6
Denver	Denver	Peoria St. Multi-Modal Improvements: 37th Ave. to 56th Ave.	$ 6,589	2.1	Construction	7
Denver	Denver	Alameda Ave. Multimodal Improvements: Santa Fe Dr. to Cherokee St.	$ 7,600	1.9	Preconstruction	8
Denver	Denver	Park Ave. West Viaduct Rehab Phase 3: Wazee to I-25	$ 9,600	1.8	Construction	9
Denver	Denver	Sand Creek Regional Trail Improvements	$ 7,077	2.1	Construction	10
Denver	Evergreen	Evergreen Lake Trail Improvements	$ 200	1.8	Construction	11

Subregional Share: Douglas County Forum Waiting List						10.04% = $0.72m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-3)**	**Project Activity**	**Waiting List Ranking**
Douglas	Castle Rock	Fifth St. Roadway Operational Improvements	$ 3,900	2.3	Construction	1
Douglas	Castle Rock	Wolfensberger Rd. Roadway Operational Improvements	$ 3,300	2.2	Construction	2
Douglas	Douglas County	Broadway & Highlands Ranch Pkwy. Intersection Improvements	$ 2,500	1.6	Construction	3
Douglas	Parker	Parker Rd. Adaptive Traffic Signal System	$ 1,000	2	Construction	4

Subregional Share: Jefferson County Forum Waiting List						16.44% = $1.18m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-3)**	**Project Activity**	**Waiting List Ranking**
Jefferson	Jefferson County	W. 32nd Ave. Bike Lanes: Ford St. to Eldridge St.	$ 4,000	1.8	Construction	1

Subregional Share: SW Weld County Forum Waiting List						2.66% = $0.19m
Subregional Forum	**Project Sponsor**	**Project Name**	**Funding Request ($1,000's)**	**Score (1-3)**	**Project Activity**	**Waiting List Ranking**
SW Weld	Mead	SH-66 and WCR-7 Pedestrian Underpass (remaining amount)	$ 825	1.8	Construction	1
SW Weld	CDOT R4	SH-52 PEL (remaining amount)	$ 750	2.3	Study	2

WAITING LISTS PROTOCOL

If additional funds become available in FY2020-2022, DRCOG staff will initiate the process to allocate funds to waiting list projects as described below. Additional funding that becomes available in FY2023 (October 1, 2022) will be rolled over and included with the Calls for Projects in the FY2024-2027 TIP. This protocol does not apply to any TIP set-asides, pool programs, or projects not on the waiting list.

Additional funding can come from two sources:

- Project cancellations by project sponsors or project savings. Funding from these methods will be returned to where it was originally programmed (Regional Share or each individual Subregional Share forum). TIP Set-Asides project cancellations or savings will be returned to their respective set-aside and are not listed in Table 5.
- New revenues. Funding from this method will be split according to the established funding split; 20% to the Regional Share and 80% to the Subregional Share processes. Subregional funds will be further broken down and targeted according to the established breakdown:
    - Adams County: 15.17%
    - Arapahoe County: 19.37%
    - Boulder County: 9.70%
    - City/County of Broomfield: 2.33%
    - City/County of Denver: 24.29%
    - Douglas County: 10.04%
    - Jefferson County: 16.44%
    - SW Weld County: 2.66%

When DRCOG staff is notified of additional funds, the following steps will be followed:

1. Obtain official verification from CDOT of availability of funds.

2. When either a) $2 million is accrued or b) an amount equal to 100% of the next-in-line (top-ranked) project funding request is accrued for any one of the individual waiting lists (Regional Share, or any of the Subregional Share forums), staff will first contact sponsors of projects to try to advance project phases and/or adjust funding types already identified in the TIP. Staff will then select projects in order from the appropriate waiting lists included in preceding page (Appendix D, Table 5) of the 2020-2023 TIP to the limit of applicable funds available.

    a. Contact the sponsor of the top ranked project on the specific waiting list to determine the sponsor's interest in being selected. If the amount of funds available is less than the requested

cost of that project, the sponsor will be asked if it would be willing to complete the entire project as submitted for the amount of funds available. Projects that accept partial funding will be removed from the list. If the response is no, or if all the available funds have not been fully allocated, DRCOG staff will proceed to the next project on the waiting list. Sponsors that request to be passed over on the funding opportunity will remain on the waiting list. DRCOG staff will make every attempt to adjust and swap funding types between projects in order to fund the top ranked project with the appropriate available funding.

b. At the end of FY2022 (September 30, 2022), even if less than $2 million has accrued within a funding category, staff will go down each specific waiting list in accordance with section 2.a. above to allocate available funds.

3. Recommend projects to be programmed and take them through the committee process to the Board as TIP Amendments.

Urban Arterial Multimodal Safety Improvements Set-Aside

Presented by:

Ron Papsdorf

March 17, 2020

Crash History: A Call to Action

regional vision zero

SAFER STREETS FOR METRO DENVER

In 2017, **266 people were killed** in crashes on the Denver region's streets and highways

There were nearly **8,700 crashes** between 2013 and 2017 that resulted in a fatality or severe injury

1,149 people died on Denver region roadways during that five year period

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Opportunity for Action

CDOT Region 1 SB 267 Allocation

- $25 million – Urban Arterial Safety Improvements
- $26 million – Arterial Street Pre-BRT and BRT Elements
- **Total - $51 million**

Surface Transportation Block Grant Supplemental Apportionment

- ~$37 million to Colorado
  - $9 million DRCOG (STBG-Metro)
  - $3 million other MPOs (STBG-Metro)
  - $7 million for small urban & rural areas
  - $17 million available statewide

Proposal: Leverage $9 million of unanticipated STBG-Metro funds with $17 million STBG statewide funds to create a $26 million urban arterial multimodal safety improvements set-aside program in the DRCOG MPO area.

Requires an exception to the 2020-2023 TIP Waiting Lists Protocol

Pros:

- Opportunity to focus investments to address identified safety and mobility needs with a focus on locations of highest injury/crashes
- Opportunity to leverage funds nearly 2 to 1
- Allows use of STBG funds throughout the region

Cons:

- Funds not targeted by regional/ subregional share

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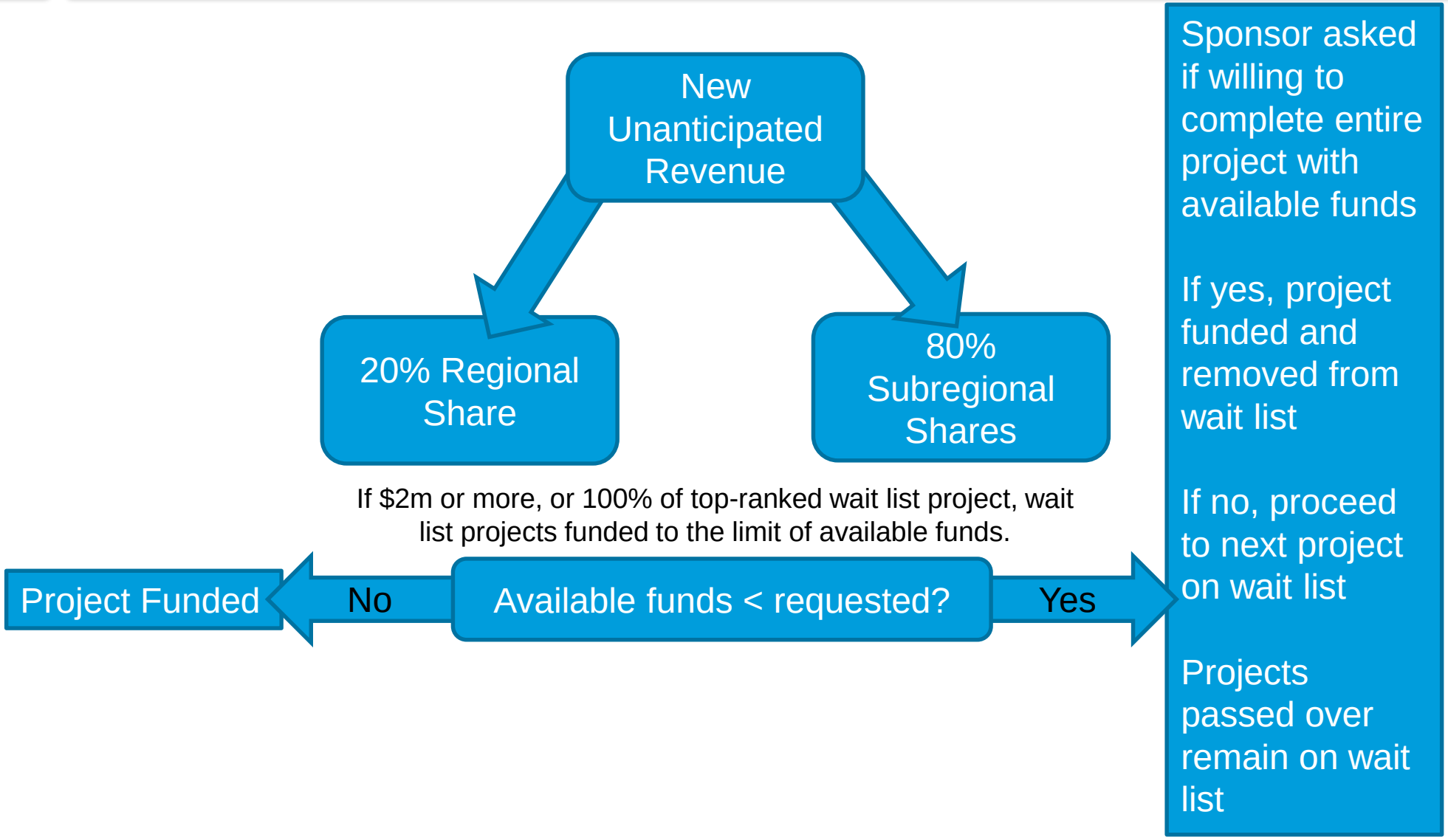
2020-2023 TIP Waiting Lists Protocol



Program Concept

Goals:

- Improve Safety for all modes (especially vulnerable users)
    - Improve Transit Connectivity
    - Improve Multi-modal mobility

Possible Considerations for selecting projects:

- Facilities with a high crash history or on the High Injury Network
- Routes with existing transit service and/or future BRT corridors
- Corridors that serve Urban Center(s)/Active Transportation Plan Pedestrian Focus Areas
- Collaboration between jurisdictions
- Public Support
- Readiness
- Local match

Selection Process:

- Project requests submitted through DRCOG Subregions
- Selection panel: CDOT, RTD, DRCOG, Subregion representative

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Recommendation

Move to recommend to the Board of Directors a one-time exception to the 2020-2023 TIP Waiting Lists Protocol in order to leverage $9 million of unanticipated DRCOG-directed Surface Transportation Block Grant (STBG) funds with $17 million of CDOT-directed STBG funds to create a $26 million Urban Arterial Multimodal Safety Improvements set-aside program.

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ATTACH D

ATTACHMENT D

To: Chair and Members of the Regional Transportation Committee

From: Robert Spotts, Planning Supervisor, Air Quality and Mobility Analytics
303 480-5626 or rspotts@drcog.org

Meeting Date	Agenda Category	Agenda Item #
March 17, 2020	Informational Briefing	6

SUBJECT

Regional Air Quality Council (RAQC) recap of the most recent ozone season and the regulatory requirements of the Denver Metro/North Front Range ozone nonattainment area being reclassified from Moderate to Serious.

PROPOSED ACTION/RECOMMENDATIONS

No action requested. This item is for information only.

ACTION BY OTHERS

N/A

SUMMARY

The RAQC is the lead air quality planning agency for the Denver Metro area and the North Front Range area. The RAQC tracks the region's ozone levels, evaluates and recommends emission control measures to the Colorado Air Quality Control Commission (AQCC), and implements a variety of strategies designed to increase public awareness of strategies to reduce ozone pollution. The RAQC works closely with the Colorado Air Pollution Control Division (APCD). They are also responsible for developing the Denver Metro/North Front Range (DM/NFR) region's air quality attainment plans. Creating an ozone State Implementation Plan (SIP) involves developing emission inventories, evaluating and modeling emission control strategies, and adopting enforceable regulations and control measures. A SIP must be approved by the AQCC and the U.S. Environmental Protection Agency (EPA), with review by the Colorado state legislature.

At ground level, ozone is a health hazard, especially for the young and elderly and people with pre-existing respiratory conditions, such as asthma and Chronic Obstructive Pulmonary Disease (COPD). Those who are active and exercise outdoors may also experience breathing difficulties and eye irritation, and prolonged exposure may result in reduced resistance to lung infections and colds.

Ground-level ozone is formed when emissions of volatile organic compounds (VOCs) and nitrogen oxides (NOx) combine and "cook" in the heat and sunlight. Common sources of these ozone forming emissions include gasoline and diesel-powered vehicles and lawn equipment, local industry, power plants, oil and gas production, and paints, stains, and solvents.

In 2007, under the 1997 National Ambient Air Quality Standard (NAAQS), the 9-county DM/NFR region was designated as Marginal nonattainment for exceeding the ozone standard of 80 parts per billion (ppb). In 2008, the ozone standard was tightened to 75

ppb by the EPA to be more protective of human health. In 2012, the DM/NFR region was designated as Marginal nonattainment under the newer standard, with the 1997 standard eventually being revoked, and in 2016, the region was reclassified to a Moderate nonattainment area for failing to attain by the Clean Air Act mandated deadline. At the conclusion of the 2018 ozone season, the DM/NFR region continued to fail to meet the ozone standard, which resulted in the region being reclassified to Serious nonattainment area in late 2019.

Meanwhile, in 2015, the ozone standard was further tightened by the EPA from 75 ppb to 70 ppb and the region was designated as a Marginal nonattainment area in July 2018 for the 2015 ozone standard. Due to a recent lawsuit, the newly established 2015 ozone standard does not revoke planning requirements associated with the 2008 standard. As a result, the RAQC and the Colorado APCD will be required to develop a Serious nonattainment area SIP for the 2008 standard at the same time as they begin modeling and planning for the 2015 standard.

The RAQC will present a summary of the 2019 ozone season and the regulatory requirements of being nonattainment for multiple ozone standards.

PREVIOUS DISCUSSIONS/ACTIONS

October 28, 2019

PROPOSED MOTION

N/A

ATTACHMENTS

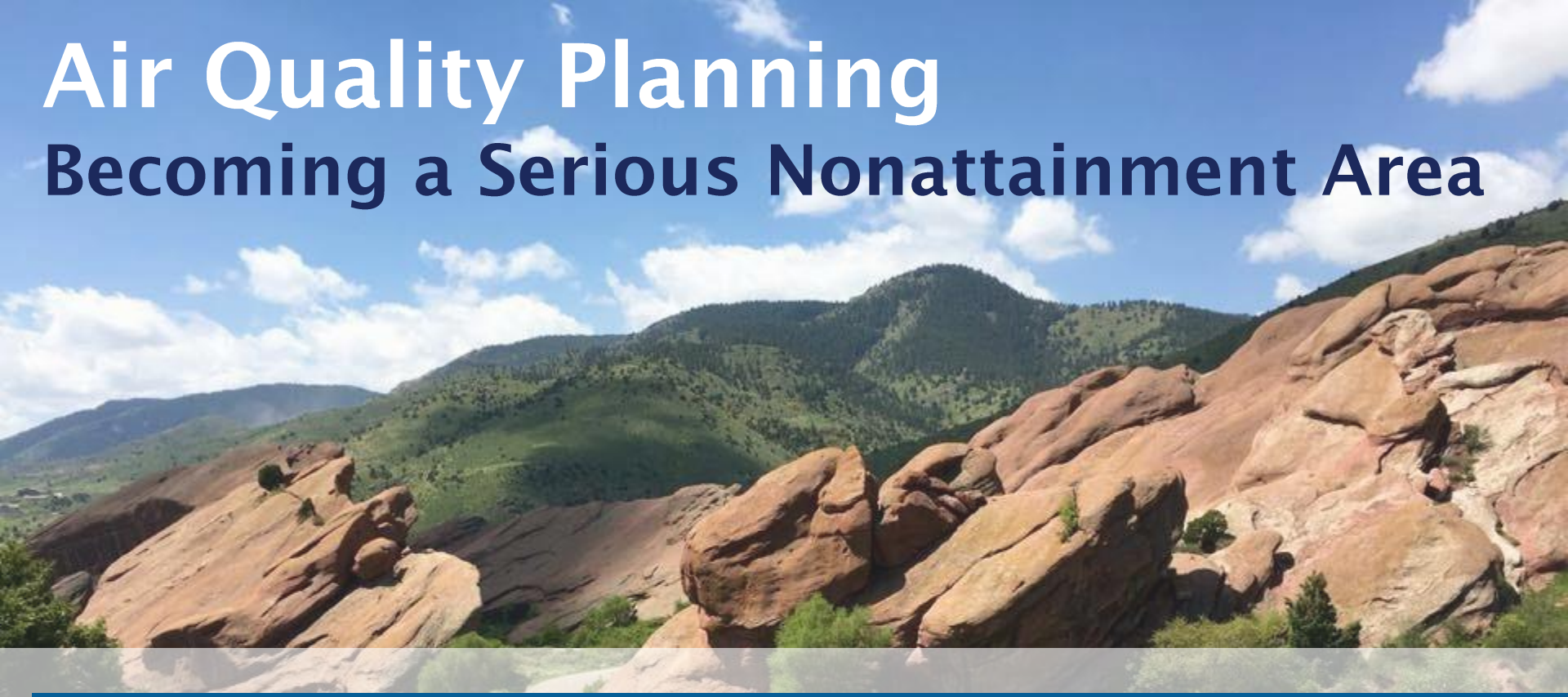
1. RAQC presentation

ADDITIONAL INFORMATION

If you need additional information please contact Robert Spotts, Planning Supervisor, Transportation Planning and Operations, at 303 480-5626 or rspotts@drcog.org.

Air Quality Planning

Becoming a Serious Nonattainment Area



DRCOG - Regional Transportation Committee

March 17, 2020

Amanda Brimmer, E.I.T.
Technical Director

RAQC
Regional Air Quality Council

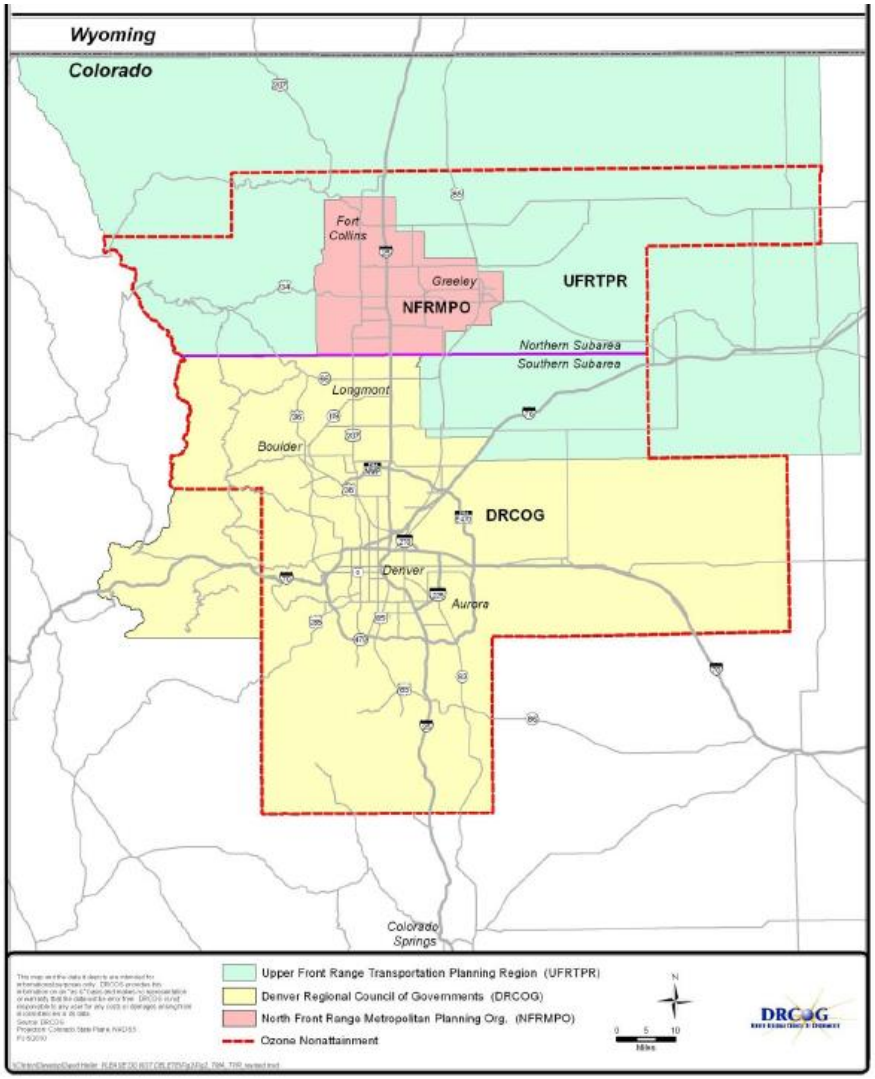
Regional Air Quality Council

Lead air quality/ozone planning agency for the Denver Metro Area and North Front Range

29 Member Board Appointed by Governor via Executive Order

Primary Responsibilities

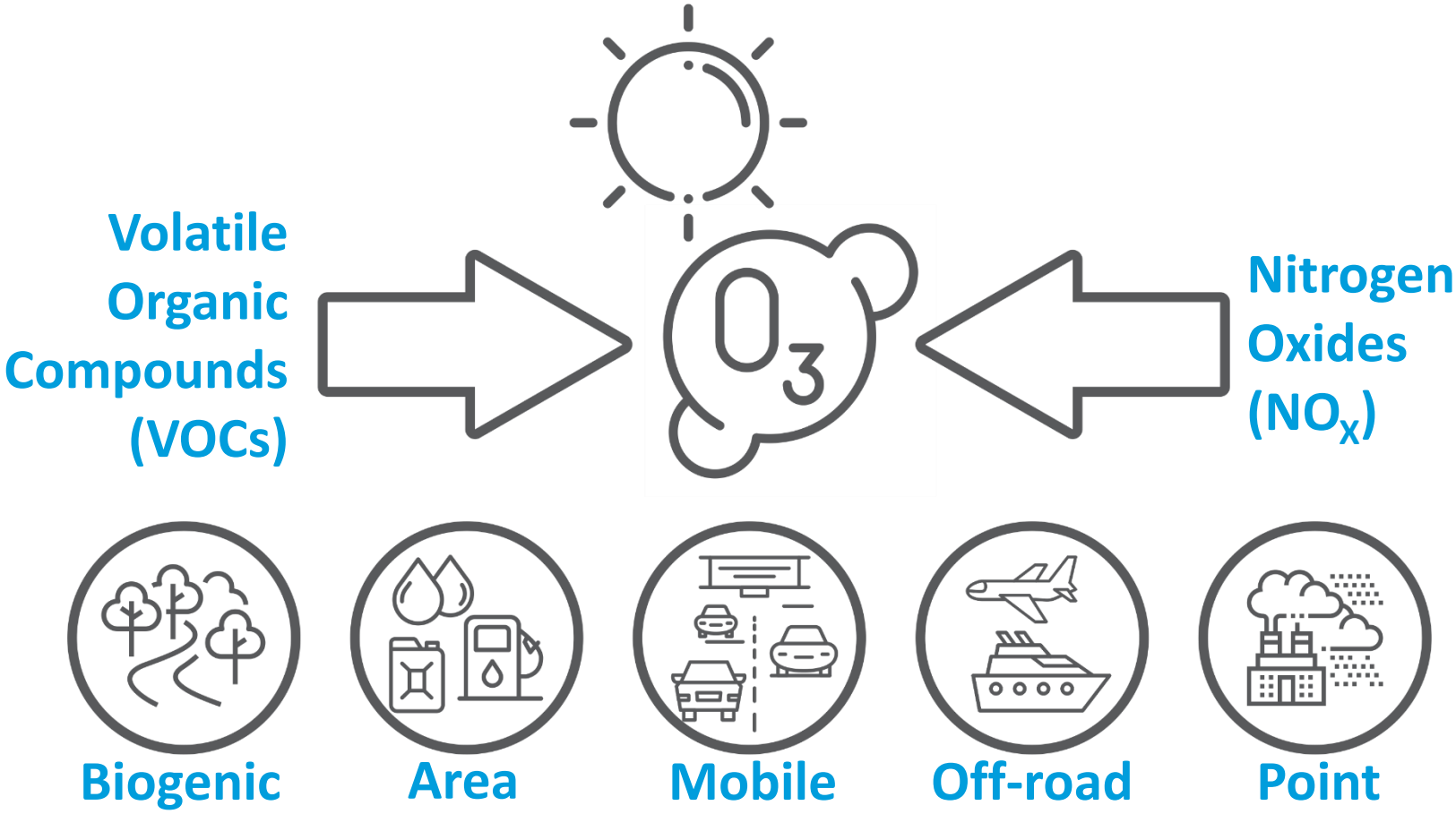
- **Planning and State Implementation Plan (SIP) development to meet federal air quality standards**
- **Evaluating and recommending emissions reduction strategies**
- **Implementing public/private projects to reduce emissions and improve air quality**
- **Conducting programs of public education and awareness**



Denver Metro/North Front Range AQ Status

Fine Particulates ($PM_{2.5}$)	**Attaining**
Nitrogen Dioxide (NO_2)	**Attaining**
Sulfur Dioxide (SO_2)	**Attaining**
Lead (Pb)	**Attaining**
Carbon Monoxide (CO)	**Attained in 1996 – Maintenance Area**
Coarse Particulates (PM_{10})	**Attained in 1993 – Maintenance Area**
Ozone (O_3)	
1979 1-hour standard: 125 ppb	**Attained 1987 (Standard Revoked)**
1997 8-hour standard: 84 ppb	**Attained in 2009 (Standard Revoked)**
2008 8-hour standard: 75 ppb	**Out of compliance**
2015 8-hour standard: 70 ppb	**Out of compliance**

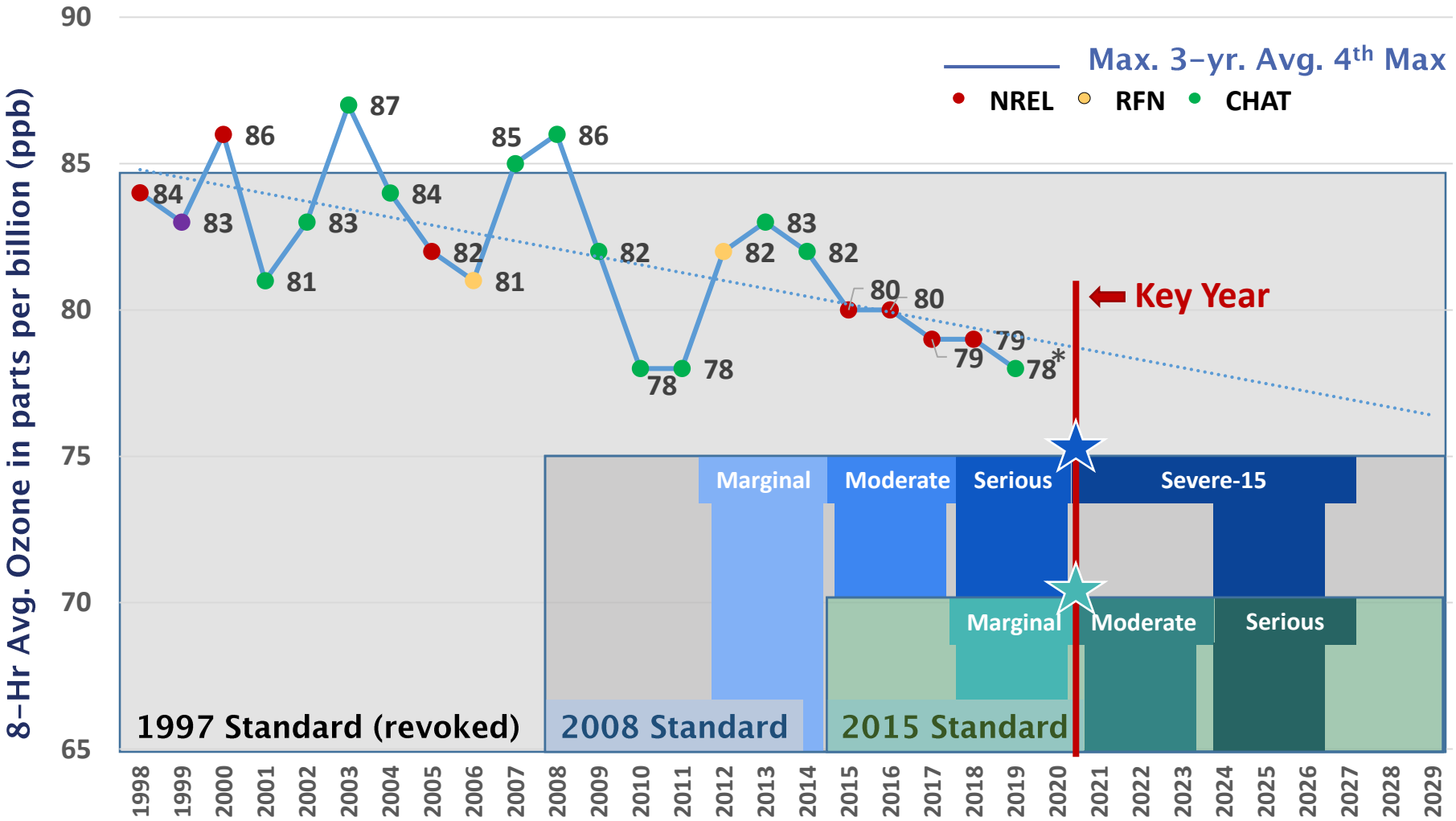
How Ozone Is Formed



Source: www.montgomerycountymd.gov/DEP/Resources/Images/outreach/air/ozoneformation.jpg

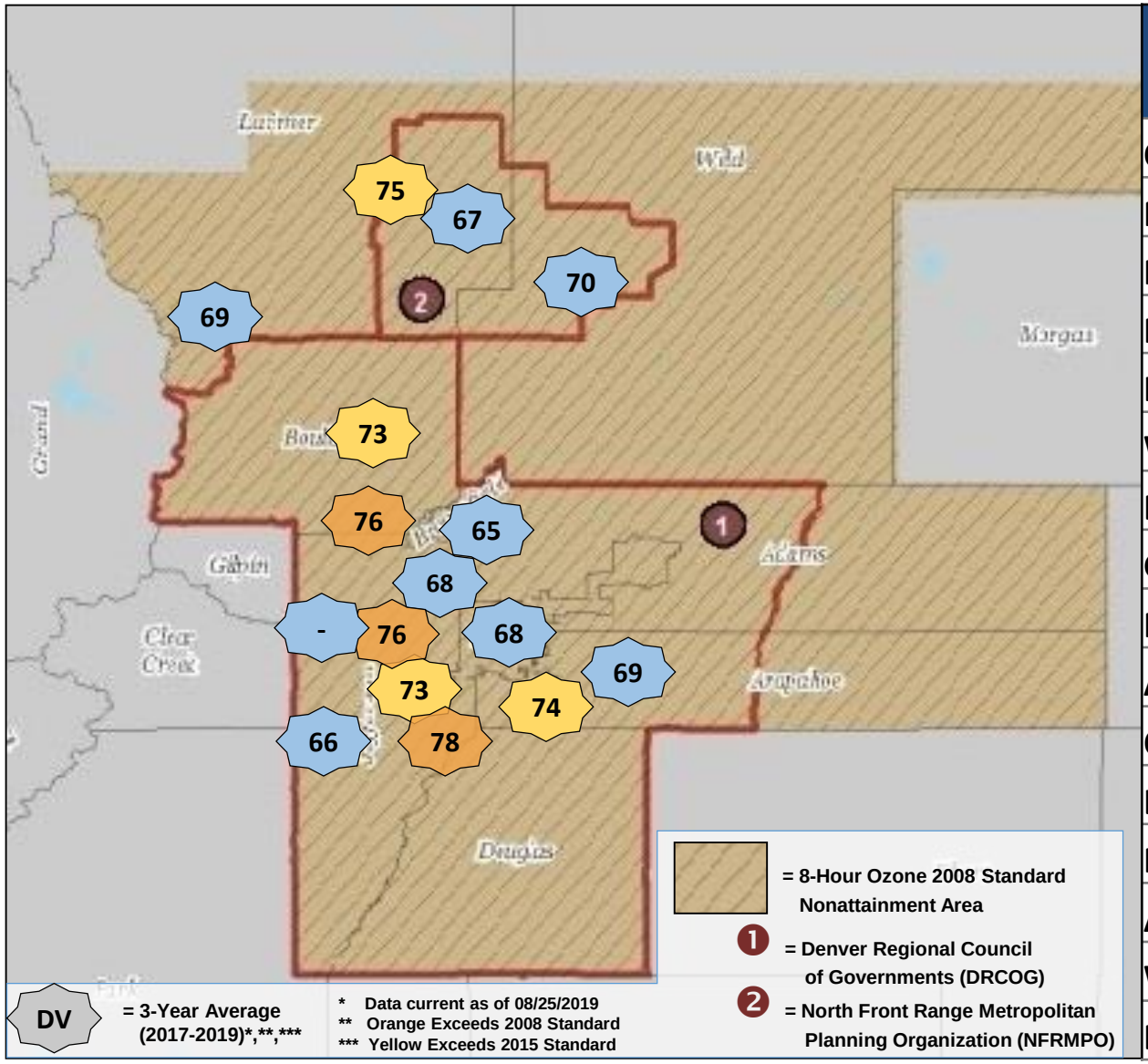
8-Hour Ozone Trends and Federal Standards

3-Year Design Values in the Denver Metro/North Front Range



8-Hour Ozone Standard: Based on a three-year average of the annual forth-highest daily 8-hour maximum ozone concentration.
***Current as of 12/31/19.**

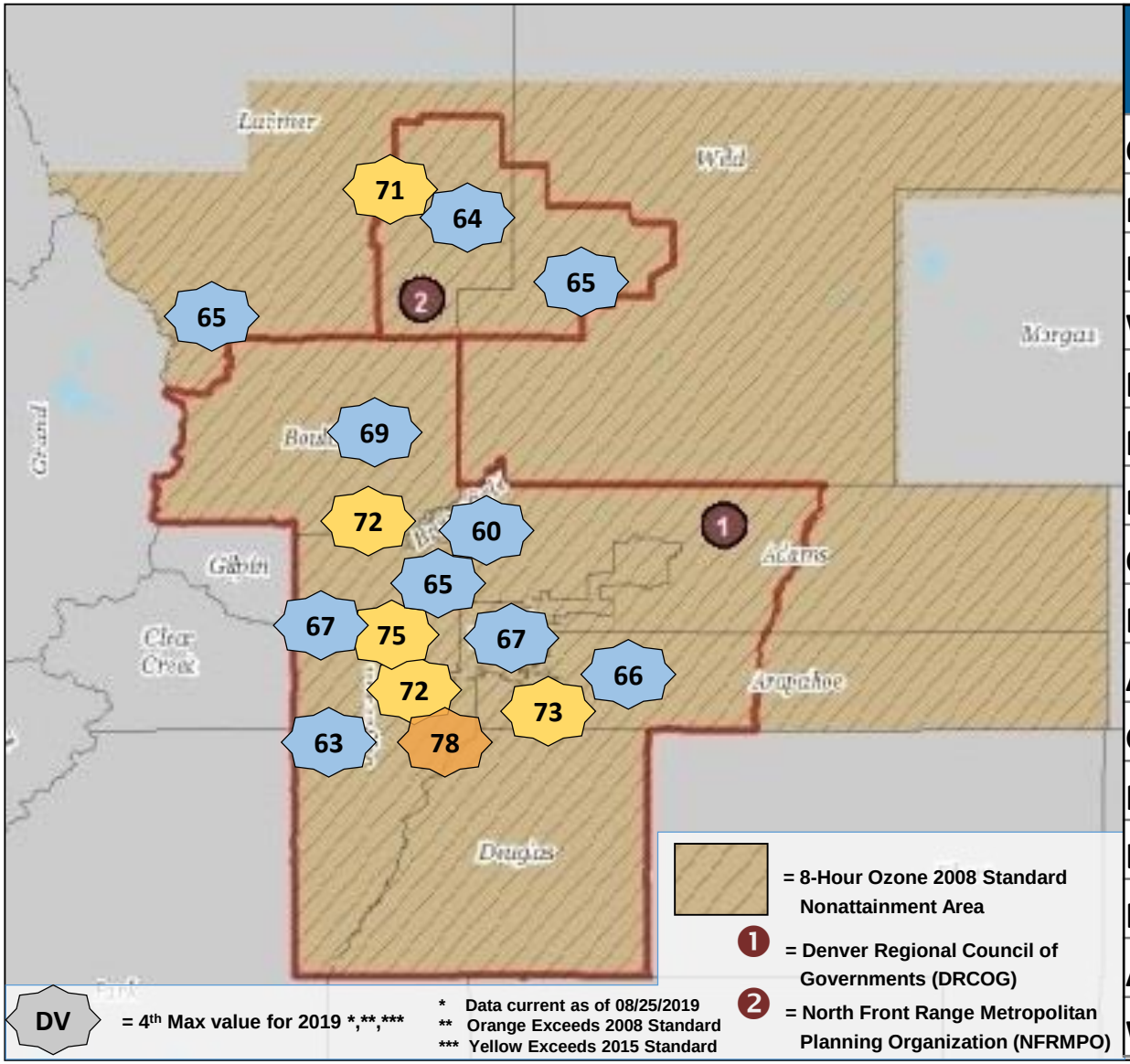
2017-2019 Three-Year Average of 4th Max



Monitor	Design Value (ppb)
Chatfield State Park	78
NREL	76
Rocky Flats	76
Fort Collins - West	75
Highland	74
Welch	73
Boulder Reservoir	73
Greeley - Weld Tower	70
Rocky Mtn. Nat'l Park	69
Aurora East	69
CAMP	68
La Casa	68
Fort Collins - CSU	67
Aspen Park	66
Welby	65
Blackhawk[1]	-

[1] Blackhawk monitor began operating July 3, 2019, 3 year average not available

2019 4th-Maximum 8-Hour Ozone Values



Monitor	2019 4th Max (ppb)
Chatfield State Park	78
NREL	75
Highland	73
Welch	72
Rocky Flats	72
Fort Collins - West	71
Boulder Reservoir	69
CAMP	67
Blackhawk[1]	67
Aurora East	66
Greeley - Weld Tower	65
Rocky Mtn. Nat'l Park	65
La Casa	65
Fort Collins - CSU	64
Aspen Park	63
Welby	60

[1] Blackhawk monitor began operating July 3, 2019

Highest Allowable 4th Maximum in 2020

>75 ppb

71-75 ppb

<71 ppb

Monitor	2018	2019*	Highest Allowable 4th Maximum in 2020 (75 ppb)	Highest Allowable 4th Maximum in 2020 (70 ppb)
Chatfield State Park	83	78	66	51
Rocky Flats	81	72	74	59
Fort Collins - West	81	71	75	60
NREL	80	75	72	57
Highland	77	73	77	62
Welch	66	72	89	74
Boulder Reservoir	77	69	81	66
Rocky Mtn. Nat'l Park	74	65	88	73
Greeley - Weld Tower	73	65	89	74
Aurora East	72	66	89	74
CAMP	71	67	89	74
La Casa	72	65	90	75
Fort Collins - CSU	72	64	91	76
Aspen Park	71	63	93	78
Welby	69	60	98	83

*as of 12/31/19

Difficult

Possible

Likely

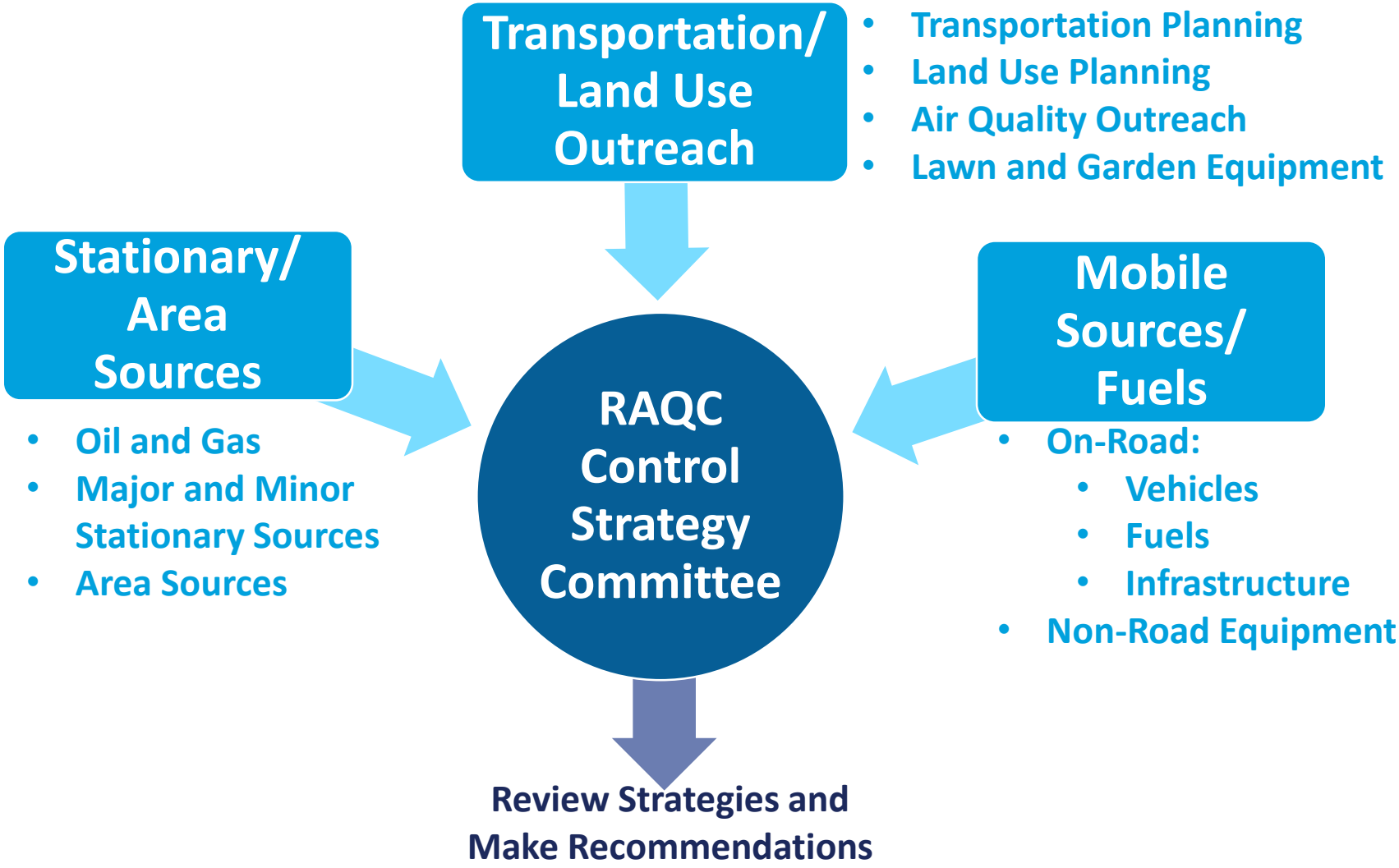
RAQC Regional Air Quality Council

NAAQS Designations & Planning Process

EPA is required by the Clean Air Act to re-evaluate each NAAQS every 5 year and propose revisions if deemed necessary

Action	After NAAQS Promulgation
States submit area designation recommendations	1 year
EPA proposes nonattainment area rules/guidance	1 year
Final designations and classifications	2 years
States submit interstate and transport SIPs	3 years
States submit attainment plans	5-6 years
Nonattainment area attainment dates	5-24 years
Nonattainment Classification	**Years to Attain**
Marginal	3 years
Moderate	6 years
Serious	9 years
Severe (15 or 17)	15 or 17 years
Extreme	20 years

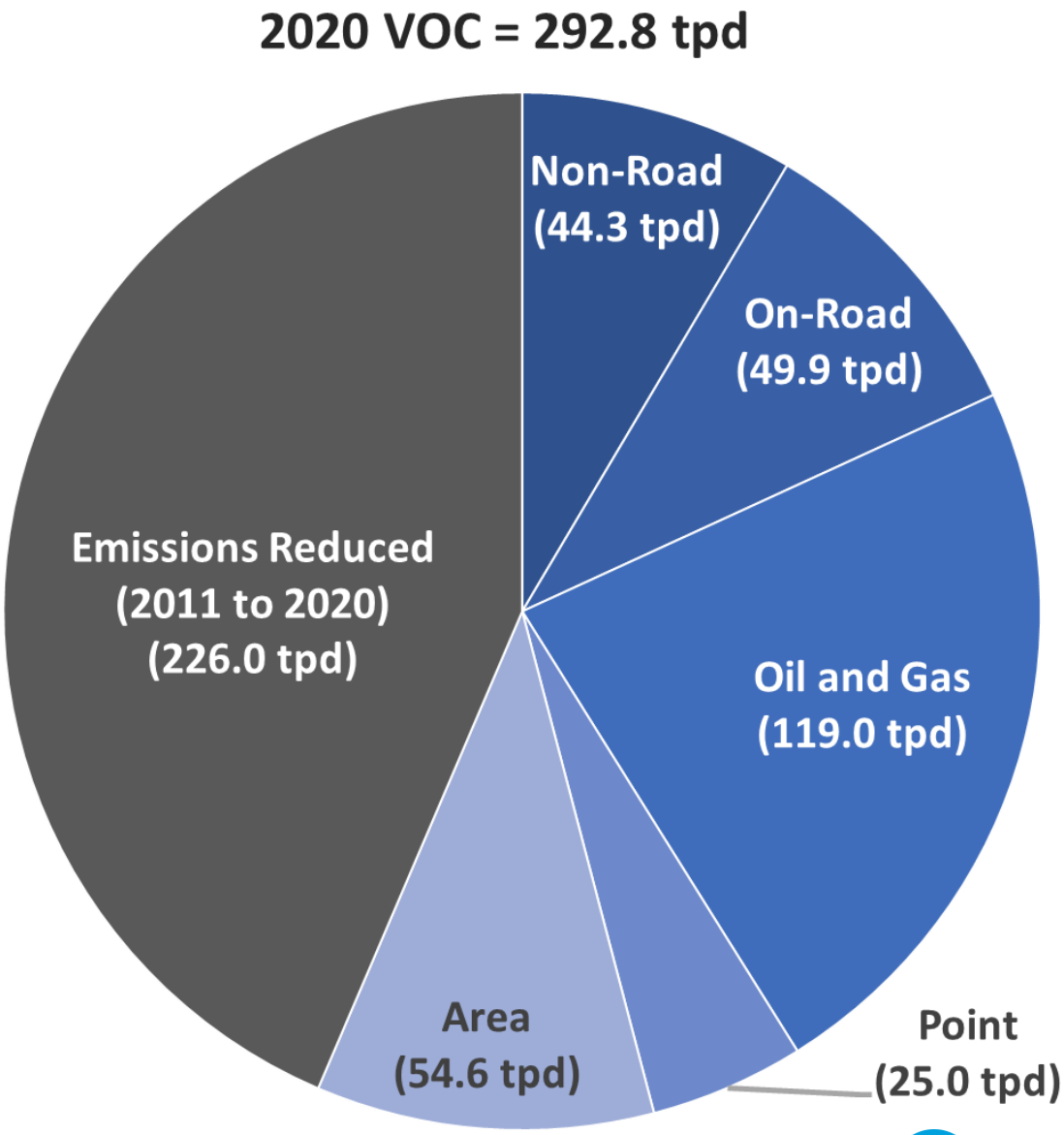
RAQC Control Strategy Committee



Meetings open to the public (3rd Wednesday of the Month)
Sign-up for notifications: raqc.org/email-signup/

Sources of VOC Emissions: What is Being Done?

- New car/truck standards
- Cleaner fuels/ Alternative fuels
- Inspection/maintenance programs
- New vehicle technologies
- Transportation/land use policies
- Travel reduction programs
- Oil and Gas (O&G)
  - *New regulations established by Air Quality Control Commission*
- Lawn and garden equipment change-out programs



Source: Draft 2020 inventory for the DM/NFR Serious Area Ozone State Implementation Plan (SIP) for the 2008 National Ambient Air Quality Standard (NAAQS) – under development (spring 2020)

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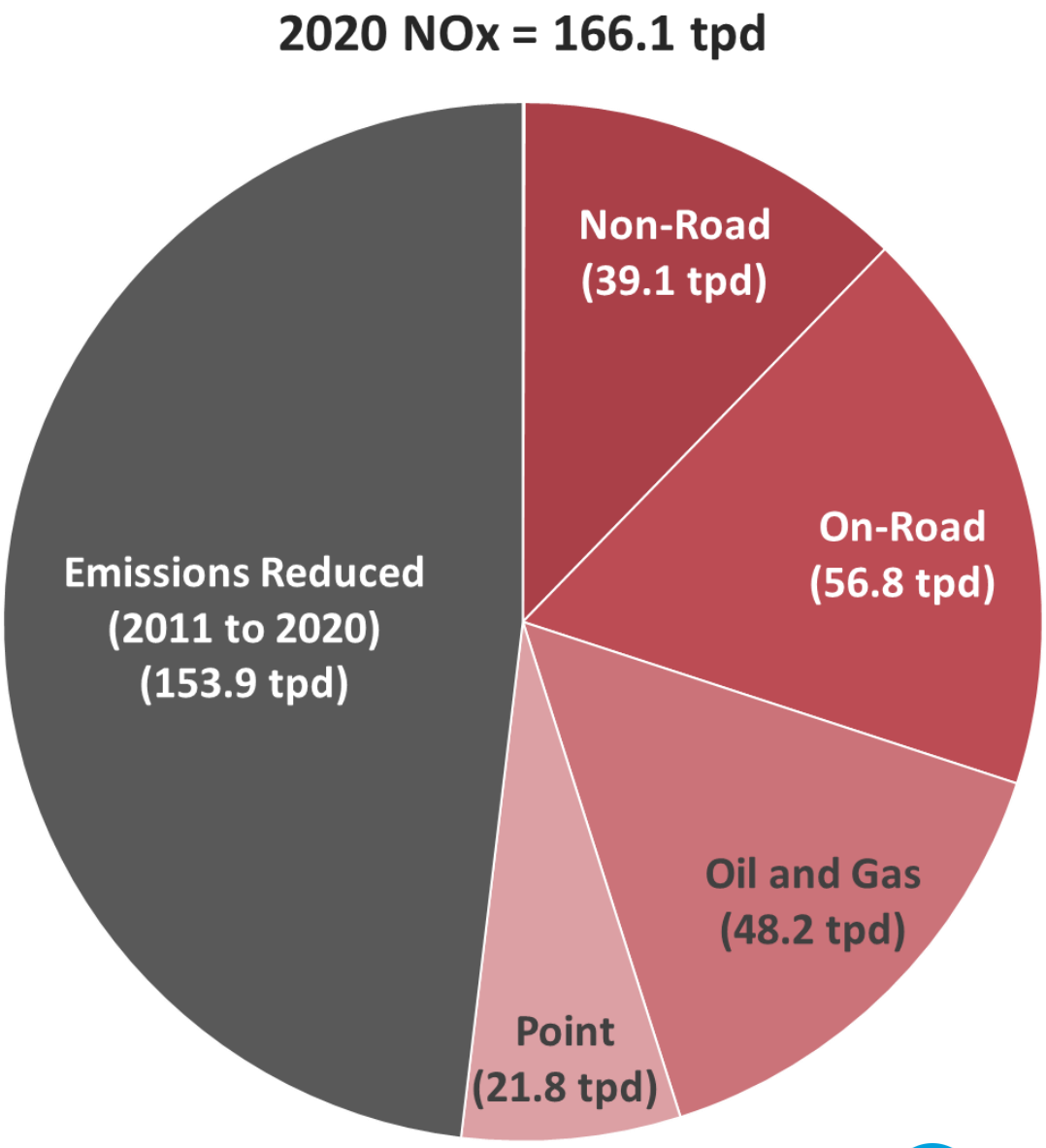
Sources of NOx Emissions: What is Being Done?

- New car/truck standards
- Cleaner fuels/ Alternative fuels
- Inspection/maintenance programs
- Diesel retrofits
- New vehicle technologies
- Transportation/land use policies
- Travel reduction programs
- Power Plants
  - *Clean Air Clean Jobs Act*
  - *Regional Haze program*
  - *Renewable energy/ energy efficiency programs*
- Small engine standards
- Non-road engine standards
- Locomotive engine standards
- Emissions Standards for Large Engines and Boilers



Source: Draft 2020 inventory for the DM/NFR Serious Area Ozone State Implementation Plan (SIP) for the 2008 National Ambient Air Quality Standard (NAAQS) – under development (spring 2020)

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Regional Air Quality Council

Moderate vs. Serious Area SIP Requirements

	Moderate	Serious
Photochemical Modeling	2017 Future Year	2020 Future Year
Reasonable Further Progress (RFP)	15% ↓ VOC 2012-2017	+9% ↓ VOC or NO_X 2018-2020
Reasonably Available Control Technology (RACT SIP)	Major Source = 100 tpy (NO_X or VOC)	Major Source = 50 tpy (NO_X or VOC)
Reasonably Available Control Measures	✓	✓
Inspection/Maintenance Program	Basic	Enhanced
New Source Review (NSR SIP) Emission offset ratio for VOC/NO_X	1.15:1	1.2:1
Contingency Measures 3% reduction in VOC and/or NO_X	✓	✓
Motor Vehicle Emissions Budgets	✓ (set at 2017 levels)	✓ (set at 2020 levels)
Clean Fuel-Vehicle Programs		✓
Transportation Control		✓

RAQC Regional Air Quality Council

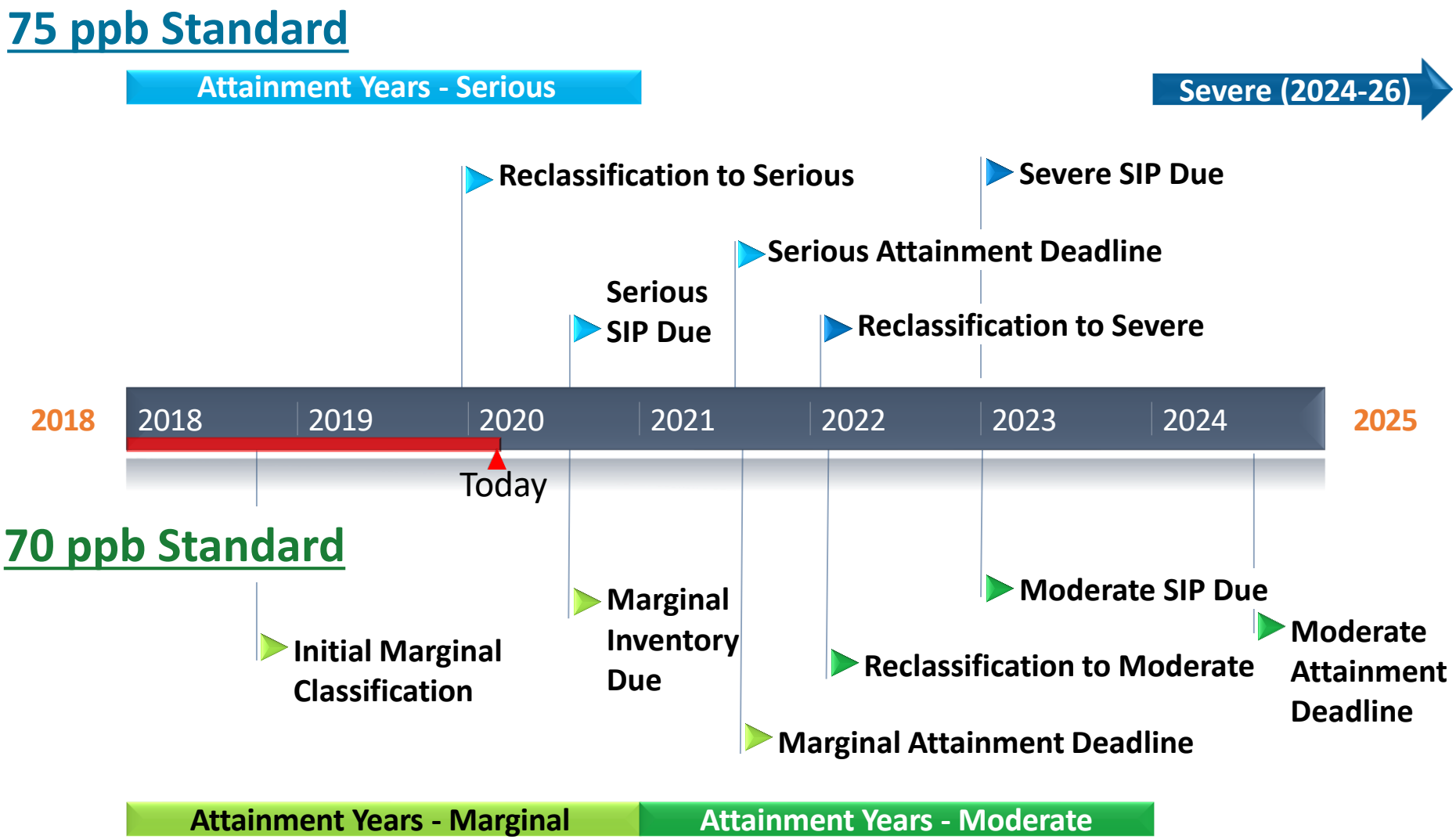
75 ppb Ozone NAAQS Nonattainment Areas

Marginal: Maintenance		
Baton Rouge, LA	Cleveland-Akron-Lorain, OH	Memphis, TN-MS-AR
Charlotte-Rock Hill, NC-SC	Columbus, OH	St. Louis-St. Charles-Farmington, MO-IL
Cincinnati, OH-KY-IN	Knoxville, TN	Washington, DC-MD-VA
Moderate: Maintenance		
Atlanta, GA		
Marginal: Attaining		
Allentown-Bethlehem-Easton, PA	Lancaster, PA	Seaford, DE
Calaveras County, CA	Pittsburgh-Beaver Valley, PA	Tuscan Buttes, CA
Chico (Butte County), CA	Reading, PA	Upper Green River Basin Area, WY
Dukes County, MA	San Francisco Bay Area, CA	
Jamestown, NY	San Luis Obispo (Eastern San Luis Obispo), CA	
Moderate: Attaining		
Baltimore, MD	Pechanga Band of Luiseno Mission Indians of the Pechanga Reservation	
Inland Sheboygan County, WI		
Marginal: Not Attaining		
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE		
Moderate: Not Attaining		
Imperial County, CA	Phoenix-Mesa, AZ	Shoreline Sheboygan County, WI
Mariposa County, CA		
Serious: Not Attaining (Attainment Date: July 2021)		
Chicago-Naperville, IL-IN-WI	Houston-Galveston-Brazoria, TX	New York-N. New Jersey-Long Island, NY-NJ-CT
Dallas-Fort Worth, TX	Kern Co (Eastern Kern), CA	
Denver-Boulder-Greeley-Ft. Collins, CO	Morongo Band of Mission Indians	San Diego County, CA
Greater Connecticut, CT	Nevada Co. (Western part), CA	Ventura County, CA
Severe 15/Extreme: Not Attaining		
Los Angeles-San Bernardino Counties (West Mojave Desert), CA		San Joaquin Valley, CA
Los Angeles-South Coast Air Basin, CA	Riverside Co, (Coachella Valley), CA	Sacramento Metro, CA

Serious Area SIP Timeline

Action	Date
EPA Finalizes Reclassification to Serious	Dec. 26, 2019
Effective Date	Jan. 27, 2020
RAQC Review of SIP Elements	Dec. 2019 – Spring 2020
2020 Photochemical Modeling Results	May/June 2020
RAQC Endorsement	Summer 2020
Serious SIP Due	Aug. 2020
AQCC Public Hearing and Approval	Dec. 2020
Colorado Legislative Review	Jan. 2021
Submit to EPA	Feb. 2021

Ozone Planning Timeline



RAQC Regional Air Quality Council

Simple Steps. Better Air. (SSBA)

Rebranded public education and outreach campaign in 2017

SSBA Communication Strategies

- Paid Media and Digital
  - Out of Home, Radio, Social Media, Website
- Stakeholder Partnerships
  - Community/Municipal Partners, TV Meteorologist Advisory Group
- Community Outreach & Sponsorships
- Digital tool kit/marketing catalog
  - Logos, graphics, stickers, tattoos, lollipops, hats, Kids Activity Book

Ozone Action Alerts

- Email Alerts
- CDOT Highway Signs
- Social Media (Facebook, Twitter)
- Digital and Mobile

Contact Information

Amanda Brimmer, E.I.T.
Technical Director
abrimmer@raqc.org
(303) 629-5450 x 240

www.raqc.org

RAQC
Regional Air Quality Council

ATTACH E

ATTACHMENT E

To: Chair and Members of the Regional Transportation Committee

From: Matthew Helfant, Senior Transportation Planner
303-480-6731 mhelfant@drcog.org

Meeting Date	Agenda Category	Agenda Item #
March 17, 2020	Informational Briefing	7

SUBJECT

Update on DRCOG Regional Multimodal Freight Plan.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

DRCOG's current regional freight component was last updated in 2016 as part of the 2040 MVRTP. Working with DRCOG staff and an advisory committee that includes industry representatives and jurisdictional staff, Cambridge Systematics has completed a draft of the updated component: the DRCOG Regional Multimodal Freight Plan.

The DRCOG Regional Multimodal Freight Plan includes the following components:

- Significant regional trends and conditions;
- Baseline information, best practices, and data to encourage local planning efforts;
- An inventory of current needs to address freight-related highway and other infrastructure issues;
- A vision regional freight priority network illustrating potential future freight focus areas, and
- Strategies and actions for continued regional coordination and action.

Cambridge Systematics and DRCOG staff will provide a briefing on this document and discuss next steps.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

ATTACHMENTS

1. DRCOG Regional Multimodal Freight Plan presentation
2. Draft DRCOG Regional Multimodal Freight Plan

ADDITIONAL INFORMATION

If you need additional information, please contact Matthew Helfant, Senior Transportation Planner, at 303-480-6731 or mhelfant@drcog.org; or Evan Enarson, Cambridge Systematics, at 303-357-4663 or EEnarson @Camsys.com.

DRCOG Regional Multimodal Freight Plan

Regional Transportation Committee

March 17, 2020

Presented by:

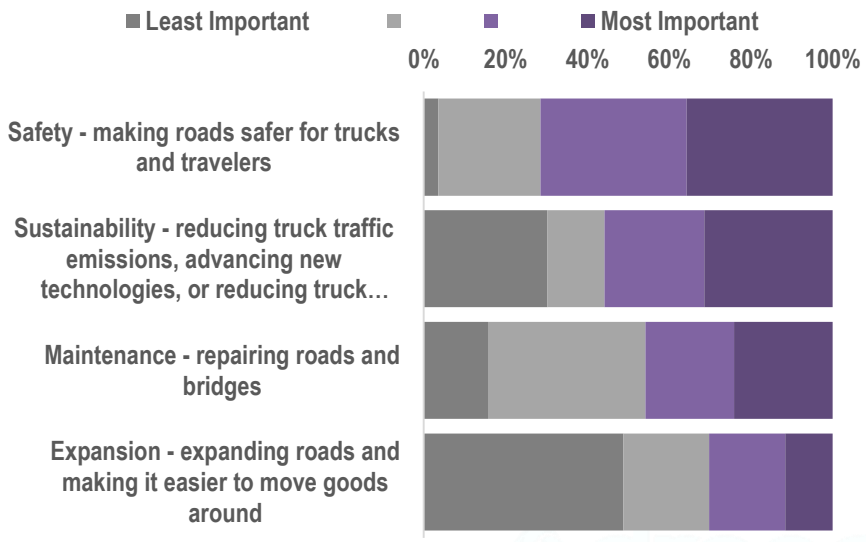
Matthew Helfant

Goals and Outcomes

- **Engage industry**, stakeholders, and local government partners
- Document significant regional freight **trends and conditions**
- Provide **baseline information, data, and best practices** to inform and encourage local planning efforts
- Develop **inventory of current needs to address** freight-related highway and other infrastructure issues
- Identify a **vision regional freight priority network** and illustrating potential **future freight focus areas**
- Craft **strategies and actions** for continued regional **coordination and action**

Stakeholder and Partner Engagement

- **Advisory Committee**
  - Public and private members guided effort
- **Industry Freight Forums**
  - Interactive needs discussion with industry
- **Public Input**
  - Online survey and needs map
- **Ongoing Coordination**
  - Coordination with FAC and industry partners



Advisory Committee Guidance

What should this plan address?

- Describe **impact of regional industry** clusters and economy
- Spotlight **air cargo, spaceport, and aerotropolis** development potential
- Highlight **first-last mile** and delivery issues
- Consider **future distribution and logistics activity** centers
- **Identify potential improvements** for rail, air, intermodal, and highway congestion, safety, and connectivity
- Identify **regional network of priority highway freight corridors**

What should this plan achieve?

- **Tell the story of freight** in the region
- **Prompt discussions** about what the future could look like
- Consider technology and **next generation** of goods movement
- Provide public **information on freight impacts and delivery** needs
- Encourage **integrated freight planning** at local levels
- Link **land use decisions** and goods movement
- Establish **platform for coordination**

Plan Contents & Summary

1 Preparing the Multimodal Freight Plan

- Integration with regional plans
- Industry and planning partner involvement
- Stakeholder and public input and key themes

2 Connecting the Economy

- Information on freight-related jobs and businesses
- Indicators of exports and commodity flows

3 Delivering the Region

- Modal conditions, needs, issues, and challenges
- Vision network of priority highway freight corridors

4 Planning for the Future

- Freight forecasts and estimates
- Emerging industry trends
- Best practices in local and regional freight planning

5 Focusing on Freight

- Regional strategies and recommendations
- Partnership, coordination, and implementation actions

6 Coordinating Investments

- Identified current highway and rail project needs
- Future freight focus areas and potential investments

Preparing the Plan –
Public and Partner Priorities

1

Safety

- Truck parking
- Railroad crossings
- Pedestrian and bicyclist safety

Technology

- Vehicle safety
- Emerging delivery modes
- Automation trends

Connectivity

- Future logistics development
- Highway and rail connectors
- Future railroad grade separations

Delivery

- Alternative delivery models and modes
- Consumer behavior shifts
- Urban centers delivery demand

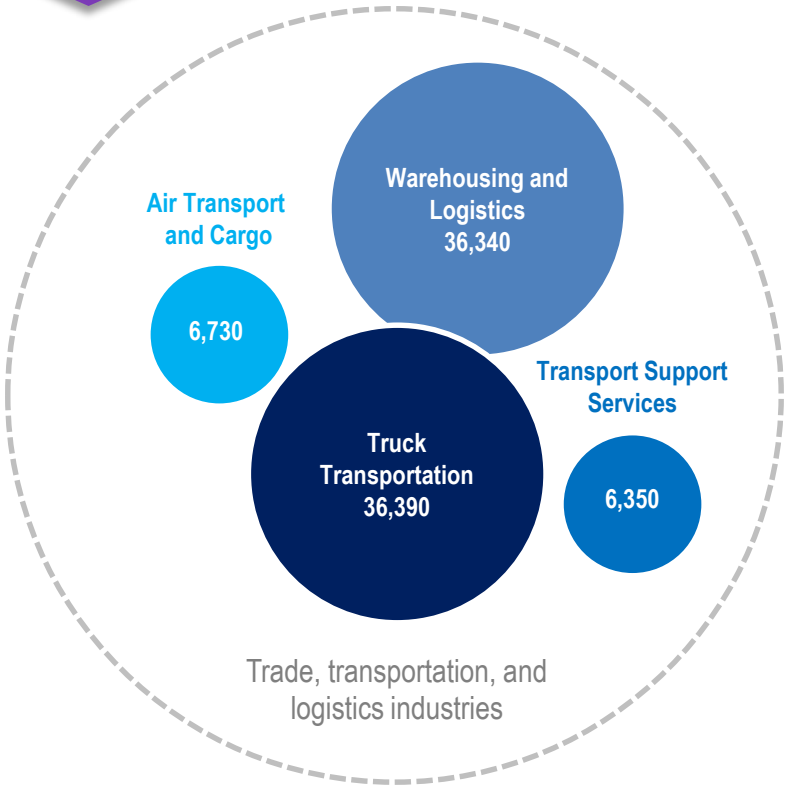
Sustainability

- Energy and fuel technologies
- Public education and information
- Railroad capacity

Coordination

- Integrated regional and local planning
- Land use and development
- Freight considerations in planning and project development

Connecting the Economy – *Key Economic and Trade Indicators*



Trade and logistics activity directly supported 85,810 jobs and another 449,159 jobs in freight-reliant industries in 2017

DRCOG region moved over 211.8 million tons valued at $218.7 billion dollars in 2015

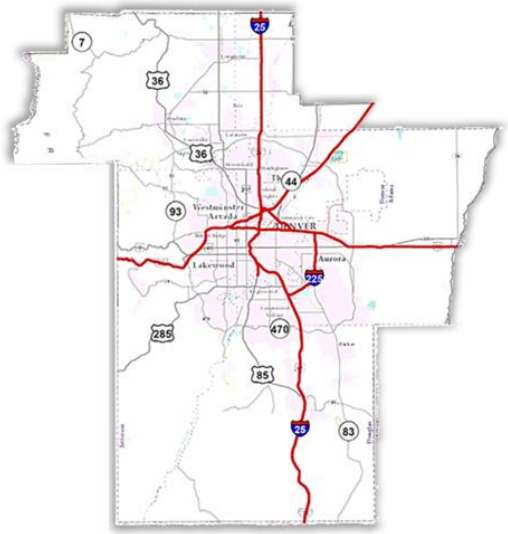
Top 10 Commodities by Value ($B)

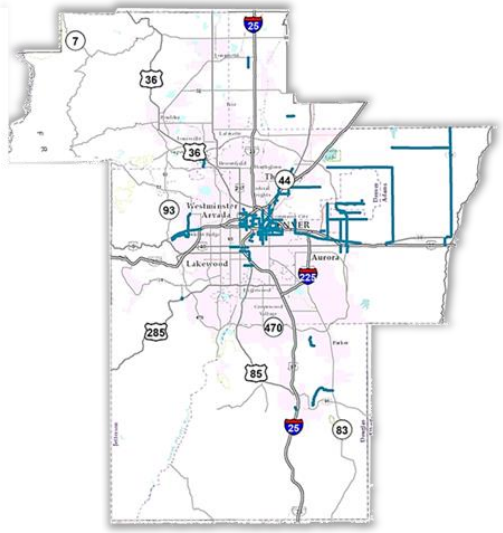
Rail Intermodal Drayage from Ramp	$17.9 b
Rail Intermodal Drayage to Ramp	$14.8 b
Warehouse & Distribution Center	$12.1 b
Motor Vehicles	$10.9 b
Petroleum Refining Products	$8.3 b
Drugs	$7.5 b
Missile or Space Vehicle Parts	$7.0 b
Electrical Equipment	$5.9 b
Misc Manufacturing Products	$5.3 b
Instrum, Photo Equipment, Optical Eq	$4.8 b

Top 10 Commodities by Tonnage (M)

Gravel or Sand	37.7 m
Misc Waste or Scrap	19.9 m
Broken Stone or Riprap	17.3 m
Petroleum Refining Products	15.5 m
Warehouse & Distribution Center	10.3 m
Crude Petroleum	6.3 m
Ready-mix Concrete, Wet	5.9 m
Concrete Products	5.3 m
Rail Intermodal Drayage from Ramp	4.1 m
Rail Intermodal Drayage to Ramp	3.3 m

Delivering the Region -
Regional Highway Freight Vision Network





Tier 1 – National Highway Freight Network

- Federally-designated National Highway Freight Network (NHFN)

Critical highway portions of the national freight transportation system as determined by objective national data.

Examples: I-70, I-25, I-225, I-70, I-76, and portions of US 6, US 85, and SH 470

Tier 2 – National Highway System

- Federally-designated National Highway System (NHS) routes

Nationally, the NHS includes only 4 percent of roadways, but carry more than 75 percent of heavy truck traffic.

Examples: US 36, 40, 85, 287, 285 and state routes such as SH 2, 31, 44, 85, 83, 93, 121, 128

Tier 3 – Intermodal and Local Connectors

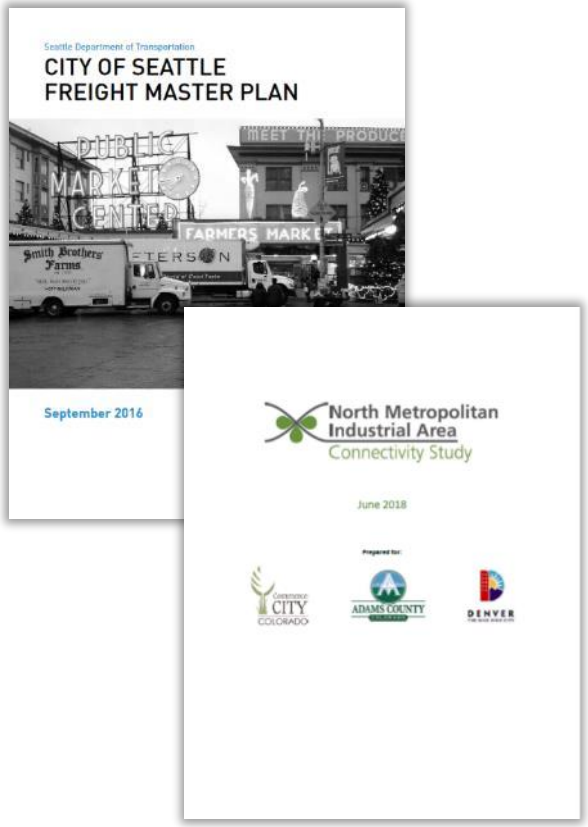
- Segments within ½ mile of designated NHFN intermodal connectors
- Recommendations from Advisory Committee

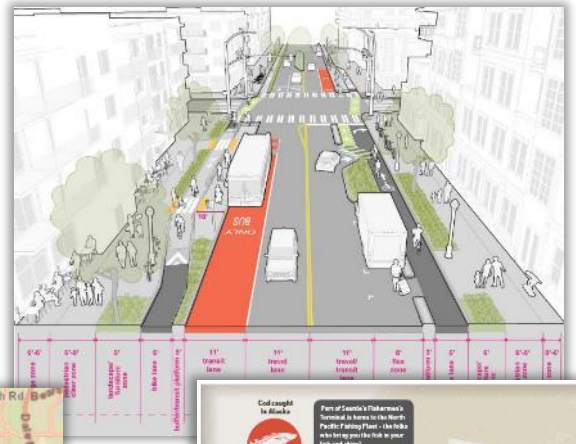
Provide critical links to major regional manufacturing, warehousing, distribution, and intermodal hubs

Examples: 32nd Ave, 44th Ave, Smith Rd, Chambers Rd, Tower Rd

Planning for the Future –
Regional and Local Best Practices

- Share ideas, innovations, and examples of effective integrated regional and local freight planning

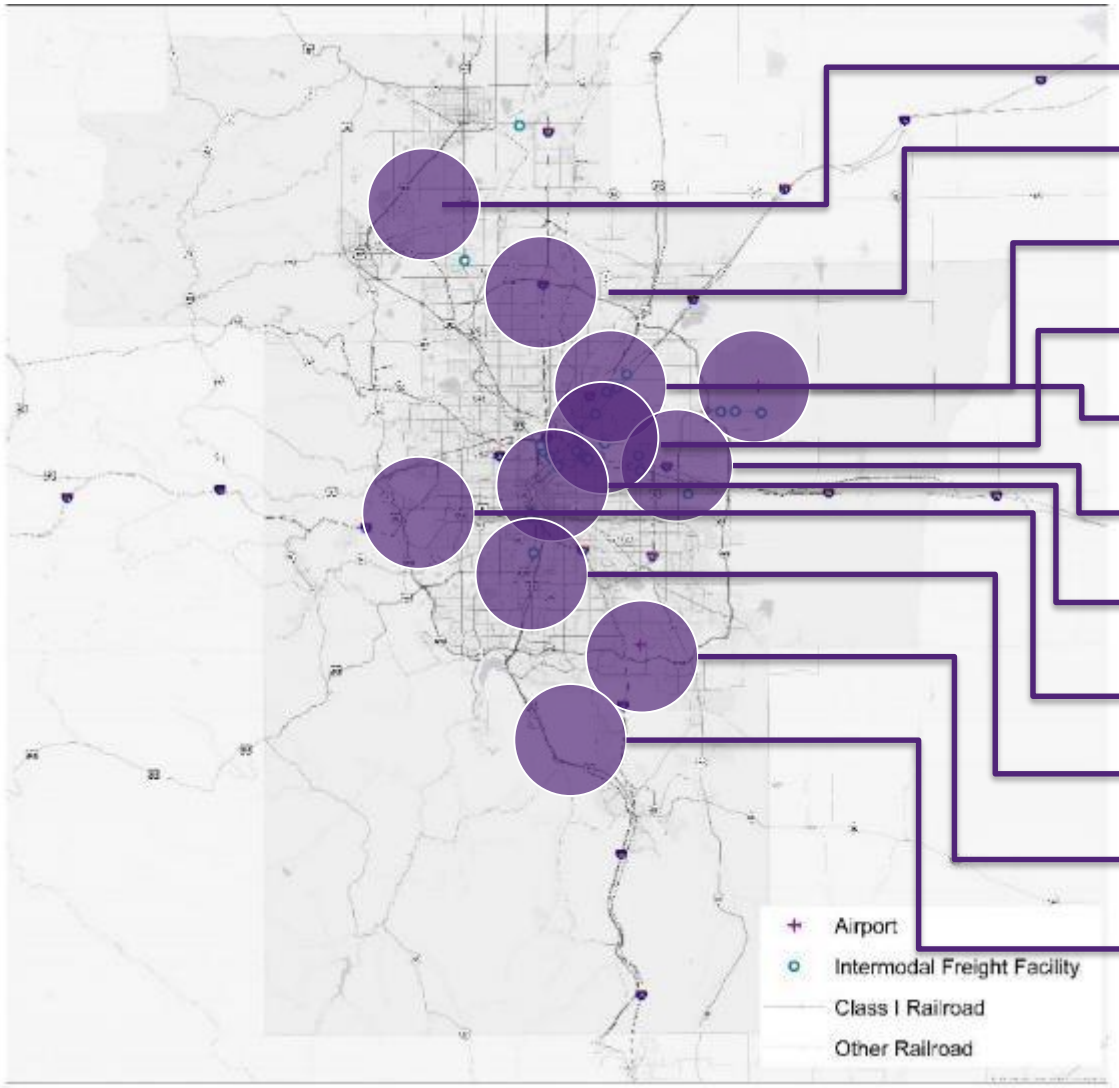




Focusing on Freight –
Key Regional Strategies

- Develop a comprehensive regional goods movement plan
- Encourage local area, corridor, and site-specific freight plans
- Consider goods movement issues in multimodal planning and design
- Develop coordinated and comprehensive freight land use plans and policies
- Preserve regional freight infrastructure and assets for future uses
- Compile freight specific regional data and information
- Target investments and pursue grant opportunities

Coordinating Investments –
Regional Freight Focus Areas



- NW Metro
- I-25 North
- DEN Cargo / Aerotropolis
- RiNo Industrial District
- I-76 / US 85 Intermodal Corridor
- I-70 East Distribution
- Downtown Denver
- I-70 and US 6 West
- I-25 South
- Centennial Airport
- US 85 South Corridor

2020 Multimodal Freight Plan - Summary

- 2020 MFP is a **strategic regional framework** for future coordination, planning, and action
- Provides information and **initial assessment of needs, but local studies and complete data are needed** to identify solutions and investments
- Critical for the region to **consider freight in all plans** and to develop **focused local studies and corridor plans**
- **Partnerships, coordination, and information** are key to implementation
- Freight **planning is still emerging; issues and needs are fast developing**

Regional Multimodal Freight Plan

NEXT STEPS

Anticipated Plan Timeline

	NOV/DEC	JAN	MARCH	APR/MAY
DRCOG Committee and Board Briefings	☑ MFP Committee Review	☑ TAC Briefing	☑ RTC & Board Briefing	☑ TAC Approval RTC & Board Approval
Revisions to Draft Document				
Public Comment				
Plan Adoption				

THANK YOU!

Regional Multimodal Freight Plan

February 2020

drcog
DENVER REGIONAL COUNCIL OF GOVERNMENTS

Introduction

In today's connected world, the flow of freight is constant, global, and often invisible to consumers. When a package arrives on a doorstep the day after placing an online order, or appears on a store shelf, many aren't aware of the thousands of miles, dozens of borders, handful of transfers, and multiple delivery modes that package travels. Planning for safe, efficient, and sustainable freight movement throughout the region is essential to maintaining the multimodal transportation system that keeps the flow of goods moving, that enhances communities and quality of life, and that strengthens the regional economy.

As the regional economy grows, as new freight technologies emerge, and as new business models take hold, just how goods are moved and delivered across the region is an emerging area of interest to local communities. Coordination and collaboration on goods movement issues, including safety, reliability, access, connectivity, economic development, and sustainability are critical. Planning and investing in freight infrastructure and technology today is vital to moving the region tomorrow. The region's public and privately-operated multimodal freight infrastructure is interconnected and includes local connecting roads, state highways, interstates, national railroads, local short line railroads, air cargo facilities, interstate pipelines, intermodal terminals, and a wide variety of distribution centers, warehouses, and delivery hubs.

Plan Contents and Summary

This 2020 Regional Multimodal Freight Plan provides a strategic view of significant freight issues, challenges, and opportunities that can be addressed together as a region. Many other important issues must be addressed at the local level, in concert with regional strategies. This plan is a precursor to more comprehensive regional freight planning and is intended to provide a framework for the region to engage on freight issues through coordination, partnership, integration, and investment.

1. **Preparing the Regional Multimodal Freight Plan** – This chapter introduces how this plan integrates with DRCOG's regional vision and transportation planning processes. Key themes, issues, and needs that arose from conversations with the travelling public, private industry, and regional Advisory Council members are summarized.
2. **Connecting the Economy** – This chapter provides information and indicators of how multimodal goods movement supports the regional economy through jobs and business activity. Available data on international exports and significant commodity flows are reported.
3. **Delivering the Region** – This chapter describes existing conditions, significant needs, and emerging issues related to highway, rail, air, and pipeline movements. Key indicators of current conditions and needs, such as highway and rail safety, are provided. This chapter illustrates a future regional vision network of integrated priority highway freight corridors.
4. **Planning for the Future** – This chapter presents available information on future freight forecasts and discusses emerging trends in the freight industry, including technology, safety, modal shifts, and sustainability and efficiency initiatives. Best practices in local and regional freight planning are highlighted in this chapter to provide information and examples for future freight planning efforts throughout the region.

5. **Focusing on Freight** – This chapter highlights key regional strategies and implementation actions that were identified by partners and stakeholders through this planning process. Regional strategies focus on improving regional data, integrating freight considerations into ongoing planning efforts, coordinating with private industry partners, and encouraging the development of local area plans and freight-specific master plans throughout the region.
6. **Coordinating Investments** – This chapter synthesizes available information on freight-specific existing conditions and needs from statewide data to provide a starting point for the regional and local planning partners to develop local area plans that identify solutions and to coordinate future projects to compete for limited state and Federal freight-specific funding and grant opportunities. This plan does not identify specific priority projects or recommendations. Instead, potential future investment areas are identified based on needs data and stakeholder input. These areas may guide future project development and local plans.

Summary of Key Regional Coordination Needs and Actions

This 2020 MFP presents overarching regional strategies that are focused on greater coordination and collaboration on freight issues at the local level. These strategies reflect the early stage of freight planning and investment across the region and are intended to develop the baseline studies, data, and information to better identify regionally-significant and locally-impactful freight projects. To implement these actions, regional coordination and partnership with industry representatives is critical. This plan provides best practice recommendations, key regional strategies, a vision freight corridor network, and potential investment areas to guide further planning and implementation at the regional and local level.

Best Practices	Regional Strategies	Regional Corridors	Future Investment Areas
Communities across the country are planning effectively for freight through local area plans, coordinated land use and development decisions, freight-specific guidelines, and effective public-private partnerships.	This plan emphasizes action on regional coordination, partnerships, and plan integration to better address freight movements and to develop the data, information, priorities, and projects to compete for national and state funding sources.	A network of regionally-significant highway and rail corridors serve the region. This plan identifies high priority highway corridors that form a base for bundling identified freight needs into regionally-significant investment opportunities and future project areas.	Local areas across the region have unique freight issues that can be addressed through a variety of solutions. Potential future investments are identified through available statewide data to highlight highway and rail safety, connectivity, capacity, and reliability needs.

1. Preparing the Regional Multimodal Freight Plan

About This Plan

The Denver Regional Council of Governments (DRCOG) is an association of over 50 local governments committed to protecting and enhancing the quality of life in the Denver metropolitan area. DRCOG has served as the Metropolitan Planning Organization (MPO) for the Denver region since 1977, acting as a forum for collaborative transportation planning processes. Today, through DRCOG, local governments are represented in a continuing, cooperative and comprehensive transportation planning process for all modes in the region along with the Colorado Department of Transportation (CDOT), the Regional Transportation District (RTD), the Regional Air Quality Council and other partners. Ongoing planning addresses both short-term needs through the Transportation Improvement Program and the long-term vision for the region presented in the Metro Vision Plan and Metro Vision Regional Transportation Plan (MVRTP).

This 2020 Regional Multimodal Freight Plan (MFP) is a supporting element of the MVRTP and Metro Vision Plan. Like Metro Vision, the MFP is aspirational, future oriented, and regional in focus. This plan respects local plans and decisions, while offering ideas and solutions for local action by encouraging communities to plan locally while identifying freight-related corridors, investment needs, and solutions for the future. This plan addresses communities across the DRCOG planning region including the counties of: Adams, Arapahoe, Boulder, Broomfield, Clear Creek, Denver, Douglas, Gilpin, Jefferson, and a southwest portion of Weld.

This 2020 MFP was coordinated by DRCOG and guided by an Advisory Committee of local government staff and industry stakeholders. DRCOG appreciates the insights and dedication of Advisory Committee members who were instrumental in shaping this plan, providing strategic direction, forming strategies and actions, and reviewing critical information. DRCOG is committed to advancing regional freight mobility issues though continued coordination and collaboration with local agency and industry partners.

Goals and Outcomes

Comprehensive regional freight planning is still an emerging practice for many state DOTs, MPOs, and local communities across the country. With the passage of the latest Federal surface transportation authorization – the 2015 FAST Act – state DOTs are now required to develop and update statewide freight plans and to identify priority projects for funding through that National Highway Freight Program. CDOT developed Colorado's first statewide multimodal freight plan in 2019 and continues to enhance freight-specific data and to engage industry stakeholders through the Freight Advisory Council.

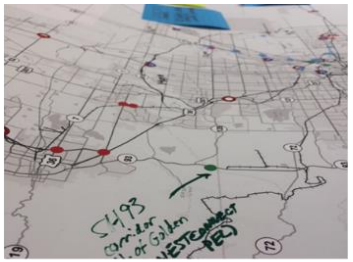
DRCOG first developed a freight element of the MVRPT in 2015 recognizing the significant role goods movements plays in the regional economy, quality of life, and transportation system. This 2020 MFP is designed as an iterative update to the freight element of the MVRPT and demonstrates DRCOG's commitment to continuing to enhance and improve regional freight planning, integration, and investment. Guided by the MFP Advisory Committee, the primary goals of this planning effort include:

- Engage industry, stakeholders, and local government partners
- Document significant regional freight trends and conditions
- Provide baseline information, data, and best practices to encourage local planning efforts

- Develop inventory of current needs to address freight-related highway and other infrastructure issues
- Identify a vision regional freight priority network and illustrating potential future freight focus areas
- Craft strategies and actions for continued regional coordination and action

Public and Partner Priorities

Business, industry organizations, and the travelling public were engaged throughout the plan development process to provide input on regional and local issues and impacts. Local government partners provided robust input and helped link this plan to local plans and priorities. Industry partners, including the Colorado Motor Carriers Association and BNSF Railway, participated in the project Advisory Committee and weighed in during a series of industry forums to map out specific local challenges and issues. Public participants were surveyed on priorities related to freight and invited to pinpoint locally significant issue areas and needs within an online regional map. From these discussions, a set of key themes and regional priorities emerged. These themes reflect the challenges of addressing freight issues and impacts, while balancing multimodal interests, and accommodating anticipated future growth in truck, train, and plane traffic.



- ***Safety –*** Freight movement presents particular safety challenges, including hazardous materials, potential conflicts between users of shared curbsides and streets, railroad crossing risks, older infrastructure accommodating larger vehicles, safe and accessible truck rest areas and parking, and truck turning and merging movements in congested areas. Key issues noted by stakeholders include: a need to address areas with dangerous turning movements by large trucks; truck merge areas and lane use on roadways; pedestrian and bicyclist safety in busy urban delivery areas and along truck routes; railroad crossings and railroad right-of-way trespass; truck driver training and safety procedures; and, hazardous materials trucks crossing at-grade rail lines.

- ***Connectivity –*** Much of the region's existing logistics and distribution centers are clustered along congested interstates or are in areas of older infrastructure in need upgrade and expansion. Key issues discussed by stakeholders include: potential for truck only lanes in the region; uniform designation of truck routes across the region; capacity improvements to accommodate future logistics growth around Denver International Airport (DEN) and emerging logistics oriented developments along the I-76 and US 85 northern corridor; upgrades to low-clearance bridges; grade separations at busy at-grade rail crossings and in areas of future development; improvements to key local roadway connectors; and, addressing freight mobility impediments, such as weight-restricted bridges or congested hotspots along key corridors such as I-70, I-25, I-270, I-76, and US-85.

- ***Sustainability –*** Freight movement contributes to the region's overall levels of congestion, vehicle miles travelled, and resulting emissions. Congestion increases costs for businesses in terms of wasted fuel and time and increases impacts on the environment and communities through excess emissions and delay. The freight industry is adopting new initiatives, technologies, and vehicles to minimize these impacts and find efficiencies. Shared initiatives between the public and private sector have the potential to help advance industry sustainability initiatives and alternative delivery programs. Issues raised by stakeholders include: potential for electric or alternative fuel delivery vehicles; new delivery models or consumer awareness programs to address residential freight delivery demands; public-private partnerships and programs to encourage commercial truck fleet and vehicle fuel-efficiency upgrades; coordinated land use and development decisions in areas of future cargo, logistics, and distribution-oriented developments; and, greater utilization of freight rail lines to move goods.

- ***Technology –*** The business practices and operations of the freight transport industry continue to evolve with advances in technology and emerging new delivery options. New delivery methods such as drones, blimps, autonomous vehicles, and robots are being actively tested and deployed. New technologies and applications for delivery enable real-time tracking and route optimization for large companies and individual drivers alike. Key issues noted by stakeholders include: a need to plan for alternative delivery options to meet increasing demand for residential delivery; preserving the potential of existing freight assets and infrastructure for future applications and technologies; deployment of new freight operations technologies; encouraging data sharing agreements between private entities and the public sector to better plan for and evaluate freight travel patterns and improvements; and, leveraging technology to improve safety, efficiency, and sustainability outcomes across all modes.

- ***Delivery –*** The rapid rise of online commerce enables consumers to access an ever expanding variety of goods from around the globe and allows businesses to reach new customers in new markets. As a result, more and more packages are moving to more and more addresses than ever before through more complex local distribution networks and a greater number of parcel delivery trucks. First and last mile connections are a growing challenge for businesses and growing concern for all users of the transportation system. Key issues expressed by stakeholders include: addressing user conflicts between delivery trucks and cyclists or pedestrians in busy urban and suburban areas; resolving the lack of delivery zones and parking availability in urban centers; and, the need for alternative delivery options such as off-hours delivery, lockers, or store pickup to manage residential delivery demands.

- ***Coordination –*** Addressing freight-related issues, needs, and opportunities requires close coordination and partnerships at the Federal, regional, and local level and between private industry and public partners. Key issues noted by stakeholders include: a need for more integrated regional and local freight planning efforts; coordination between land use, building codes, and development plans that may impact freight activity zones; exploring potential partnerships between private industry and public agencies to implement alternative delivery programs, share information, and coordinate on future investments; and a strong need to more carefully consider freight issues in transportation planning studies and project development.

DRCOG is grateful for the active participation of Advisory Committee members, of industry participants, and the more than 100 public responses received through this planning effort. These ideas and input significantly shaped the development of this 2020 MFP and directly guided the identification of regional corridors, future investment areas, and recommended regional strategies and actions. DRCOG's visioning efforts through Metro Vision provide an opportunity for continuing engagement on freight and regional transportation issues.

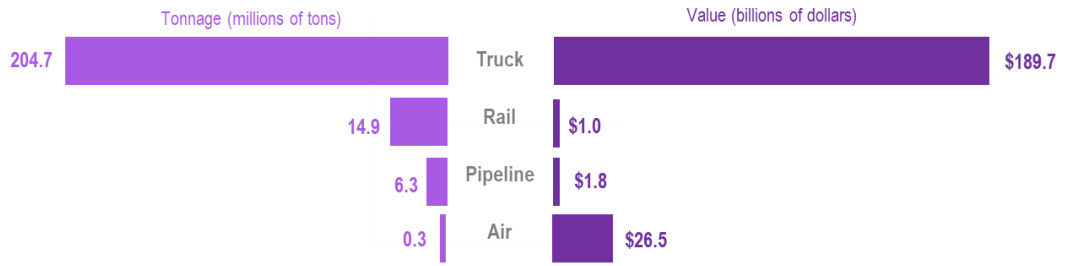
2. Connecting the Economy

Regional Commodity Flows and International Exports

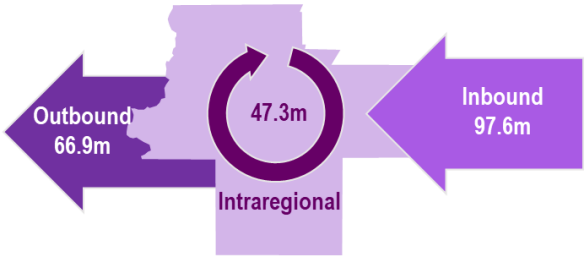
The DRCOG region is the trade hub for Colorado. Many of the state's significant rail terminals, intermodal yards, highways, warehouses, distribution centers, and manufacturing centers are located in the region. As a result, more than half of the total tonnage and value of goods moved in Colorado in 2015 were handled primarily within the DRCOG region as a first origin or destination area. For example, newly manufactured vehicles are shipped into Denver's rail intermodal facilities for sale across the region and the Mountain West. Oil and petroleum products that fuel those vehicles are moved by pipeline, truck, and train within the region and to the Western Slope. The consumer items, business supplies, online parcels, and mail that residents rely on for everyday use arrive into the region by truck, plane, and train and are distributed through a network of intermodal hubs, distribution centers, and warehouses. Major manufacturers in key regional industry clusters rely on the freight system to reach customers and access global markets. Producers of milk, cheese, chocolate, pet food, beef, and a range of natural and locally-made food products are distributed across the region and shipped out the rest of the country and world.

With over 3.2 million residents, 1.7 million workers, 119,000 businesses, and 18 million visitors, the DRCOG region relies on the multimodal freight system to move millions of individual packages, products, and parcels. Together, the total flow of goods into, out of, and within the metro area equaled 211.8 million tons valued at $218.7 billion in 2015. The majority of those goods, measured by total tonnage and value, travel by truck. Primary commodity flows by mode and direction are shown in the following graphics.

Tonnage and Value of Commodities by Mode, 2015



Tonnage of Goods by Directional Flow, 2015



IHS Global Insight, Transearch, 2015.

With the Denver region's growing population and service-based economy, more goods are imported into the region from the remainder of Colorado, the U.S. or overseas than are exported from the region. This imbalance can result in trucks, trains, and planes bringing goods in and leaving empty. Continuing to support manufacturing, distribution, and natural resource industries as a core component of the regional economy can reduce empty vehicle miles travelled and provide value added economic activity to the region.

Of the millions of tons and billions of dollars in products that move in and out of the DRCOG region, top commodities include retail products moved by rail intermodal or in and out of warehouse and distribution centers by truck to fill consumer demand from a growing population and economy. Goods such as petroleum, motor vehicles, gravel and aggregates, and field crops and grain represent the region's position as a major distribution hub for the entire state and Mountain West region. Aerospace, pharmaceuticals, electrical and machinery equipment, and food products reflect the region's manufacturing strengths and business activity. Regional industry clusters, including breweries, generate significant freight activity. A large brewer such as MillerCoors ships out more than 1,500 truckloads and approximately 100 rail carloads of final product each week.

The following table highlights the value and tonnage of the top 20 commodities moved in and out of the region in 2015. Commodities are reported consistent with Standard Transportation Commodity Code definitions. Commodities are tracked and reported based on movements and as a result first and last connections are reported as commodities. For example, rail intermodal drayage describes the movement of a container or trailer to or from the railroad intermodal terminal to or from the customer's facility for loading or unloading. Warehouse and distribution center movements can describe a number of secondary movements of general or miscellaneous commodities and goods generated by retail distribution centers.

Value of Top Commodities Moved In and Out of DRCOG Region, 2015

Rail Intermodal Drayage from Ramp	$17,949,415,009
Rail Intermodal Drayage to Ramp	$14,755,337,098
Warehouse and Distribution Center	$12,056,629,827
Motor Vehicles	$10,884,600,066
Petroleum Refining Products	$8,276,996,128
Drugs	$7,481,358,790
Missile or Space Vehicle Parts	$7,028,357,322
Electrical Equipment	$5,875,794,819
Misc. Manufacturing Products	$5,296,171,898
Instrument, Photo, Optical Equipment	$4,795,326,998
Misc. Waste or Scrap	$4,768,683,819
Transportation Equipment	$3,686,857,656
Air Freight Drayage from Airport	$3,481,446,372
Misc. Plastic Products	$3,216,096,758
Air Freight Drayage to Airport	$2,259,142,260
Crude Petroleum	$1,790,736,847
Bread or Other Bakery Prod	$1,676,810,185
Malt Liquors	$1,341,716,491
Motor Vehicle Parts or Accessories	$1,261,784,671
Processed Milk	$1,213,975,118

Tonnage of Top Commodities Moved In and Out of DRCOG Region, 2015

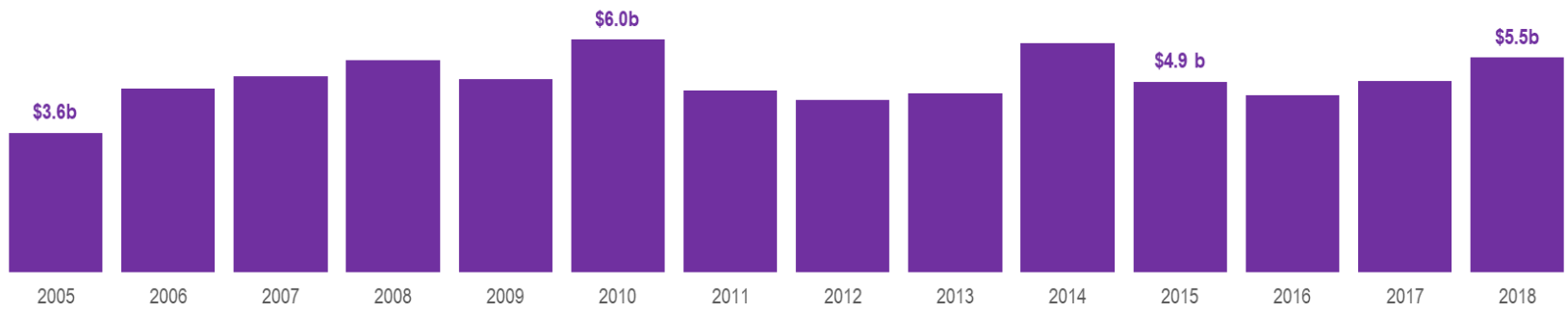
Gravel or Sand	37,727,601
Misc Waste or Scrap	19,901,609
Broken Stone or Riprap	17,277,726
Petroleum Refining Products	15,545,891
Warehouse & Distribution Center	10,297,132
Crude Petroleum	6,348,334
Ready-mix Concrete, Wet	5,947,067
Concrete Products	5,282,675
Rail Intermodal Drayage from Ramp	4,057,503
Rail Intermodal Drayage to Ramp	3,335,475
Misc. Field Crops	2,731,628
Grain	2,289,950
Cut Stone or Stone Products	2,047,657
Asphalt Paving Blocks or Mix	1,817,991
Soft Drinks or Mineral Water	1,354,161
Malt Liquors	1,256,905
Motor Vehicles	1,090,996
Misc. Plastic Products	858,362
Metal Scrap or Tailings	824,808
Asphalt Coatings or Felt	773,234

IHS Global Insight, Transearch, 2015.

Heavier weight commodities are primarily moved by the region's railroad network with intermodal transfer to and from trucks or interstate pipelines. Higher value and time-sensitive products such as electronics, pharmaceuticals, semiconductors and other lightweight consumer products may move by air. Trucks carry the majority of products by weight and value and serve as the primary distribution mode and final link between rail and air intermodal centers. Together, the region's multimodal freight network is responsible for the daily business of efficiently moving a wide array or critical products, inputs, and parcels.

The economic contribution of goods made, grown, and mined in the DRCOG region for export throughout the U.S. and internationally are significant. In 2016, over 5,500 Colorado-based companies produced goods for export overseas; the majority of which are small and medium-sized enterprises. Export-oriented manufacturing supports significant additional economic activity and employment throughout the region and supports economic diversification and resilience. Data from the Brookings Institute's Metropolitan Export Monitor suggests that in 2017 the Denver metropolitan statistical area ranked 20th among the top 100 metropolitan areas in the U.S. with approximately 53,630 jobs dependent on direct international exports.

Value of International Exports of Manufactured Goods, 2018



U.S. Department of Commerce, International Trade Administration. Metropolitan Export Series, 2019.

In 2018, the Denver and Boulder metropolitan statistical areas produced goods for international export valued at over $5.5 billion. This represents 56 percent of the total international export value produced in Colorado. The region's largest export markets include countries within the Asia Pacific Economic Cooperation region, North American Free Trade Agreement countries including Canada and Mexico, and smaller markets with nations in the European Union and Organization of Petroleum Exporting Countries. Top manufactured commodities include: electronics, oil and gas, machinery, food, fabricated metals, chemical, and electrical equipment.

Freight moves the region's economy and connects residents, visitors, and businesses to the flow of global commerce. The DRCOG region is a hub for stuff made and consumed locally, for shipments of essential parcels and packages into the region, for exports of Colorado made produce and products to global markets, and for networks that distribute goods across the entire Mountain West.

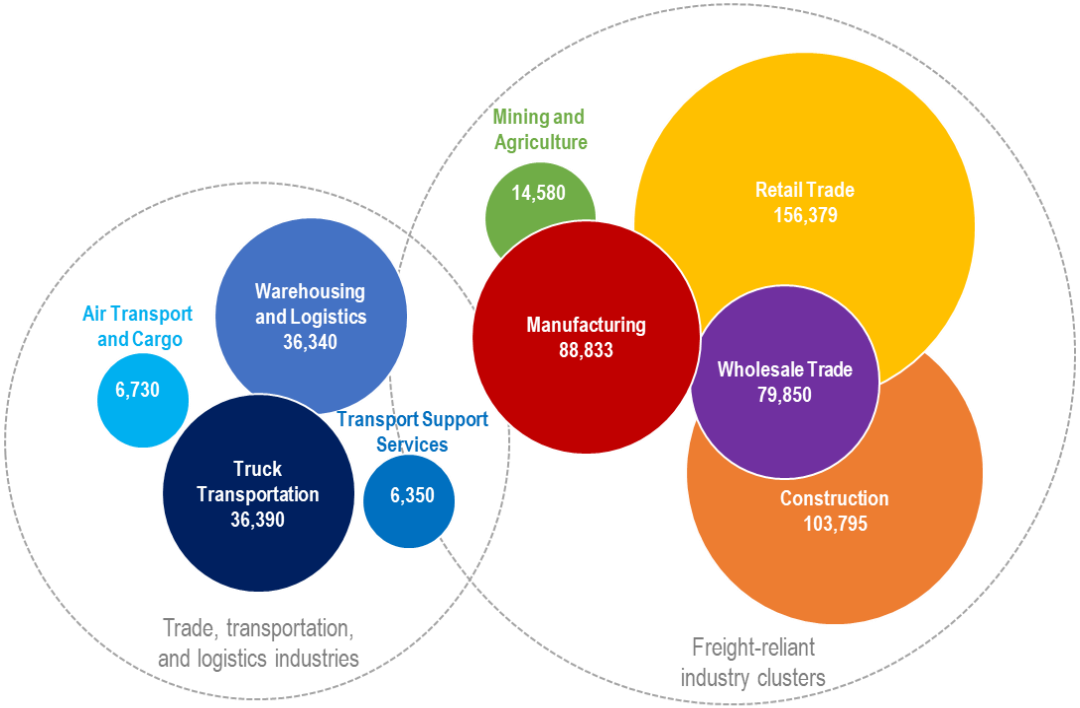
Trade, Transportation, and Logistics Workforce

The constant flow of everything from shoes, to steel, to skis, to soap, to seeds generates significant economic activity and supports high-wage jobs across the region. In 2018, approximately 88,500 jobs in the region were directly tied to trade, transportation, and logistics activity. The DRCOG region is the logistics hub for Colorado with nearly 2/3rds of trade, transportation, and logistics jobs in the state clustered in the region.

Trade and logistics jobs are as varied as warehouse stockers, forklift and crane operators, truck drivers, cargo handlers, packaging technicians, rail and intermodal yard operators, supply chain managers, logisticians, and international export and customs brokers. Data from the U.S. Bureau of Labor Statistics suggests that average wages in key occupations within the trade, transportation, and logistics sector are generally higher than average wages paid in all occupations across Colorado. Trade, transportation, and logistics jobs are projected to grow relatively quickly over the coming decades and provide stable opportunities for workers across the region. Employment projections from the Colorado Department of Local Affairs indicate that by 2028, employment in trade and transportation occupations is expected to reach 123,000 jobs; a growth rate of nearly 40 percent from 2018.

Additionally, 32,650 businesses employ 449,159 workers across the region in freight-reliant industries. These businesses depend on moving produce, products, packages, and inputs as a daily core business function and represent nearly one out of every three jobs in the region. Freight-reliant businesses operate in critical industries that help power homes, farm and raise food, stock store shelves, manufacture goods, and supply other businesses. The graphic at right illustrates employment in regional industry clusters that rely on the transportation system to move goods every day.

Employment in Freight and Freight-Reliant Industries and Clusters, 2018



U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wage, 2018.

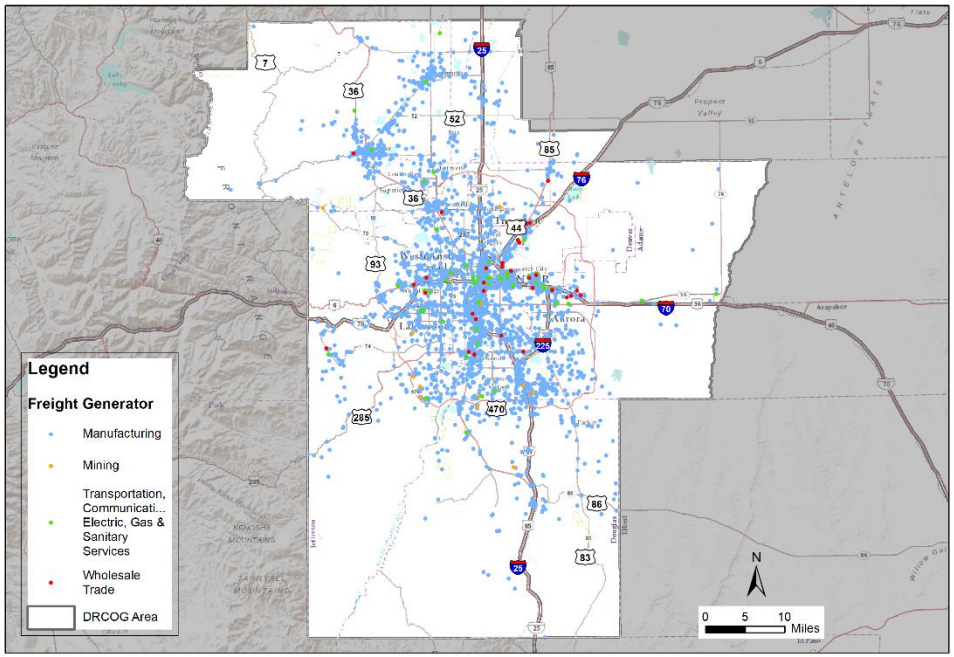
Regional Freight-Reliant Business Clusters

The DRCOG region's multimodal freight system, including highway, rail, air, and intermodal networks, link people and businesses within the region and across the globe, support small businesses and producers, enable consumers access to global markets, and play a vital role in the region's economic competitiveness. Many of the region's freight-reliant businesses are located in traditionally industrial areas with direct access to major road and rail networks. Other businesses are strategically located near workforces or within urban centers, adjacent to connecting intermodal terminals, or with direct access to airports and space facilities.

As the region's population and economy continues to grow, demand for moving products and packages will also increase. However, many traditional industrial and distribution-oriented areas are being redeveloped while other areas are pressured by increasing congestion on strategic corridors or from adjacent residential development. Accommodating mixed land uses and multimodal transportation needs while preserving the access and connectivity of key industrial areas and distribution corridors will be critical to the future of the region. Hard infrastructure such as rail lines, intermodal terminals, pipelines and refineries, distribution centers, and cargo facilities cannot be readily relocated and must be strategically located near consumer markets.

Local governments can plan for the preservation of existing freight facilities, while identifying potential areas suitable for for future distribution and logistics-oriented development, to supply the region's growing population. For example, the northeast quadrant of the region offers connections to two national rail lines, access to DEN airport, and important highways such as I-76 and U.S. 85. This area of the region is likely to be the distribution and delivery gateway for the region in the future and would benefit from land use planning, freight-oriented development zoning, connectivity improvements, and freight asset preservation.

Regional Freight-Reliant Business Generators



3. Delivering the Region

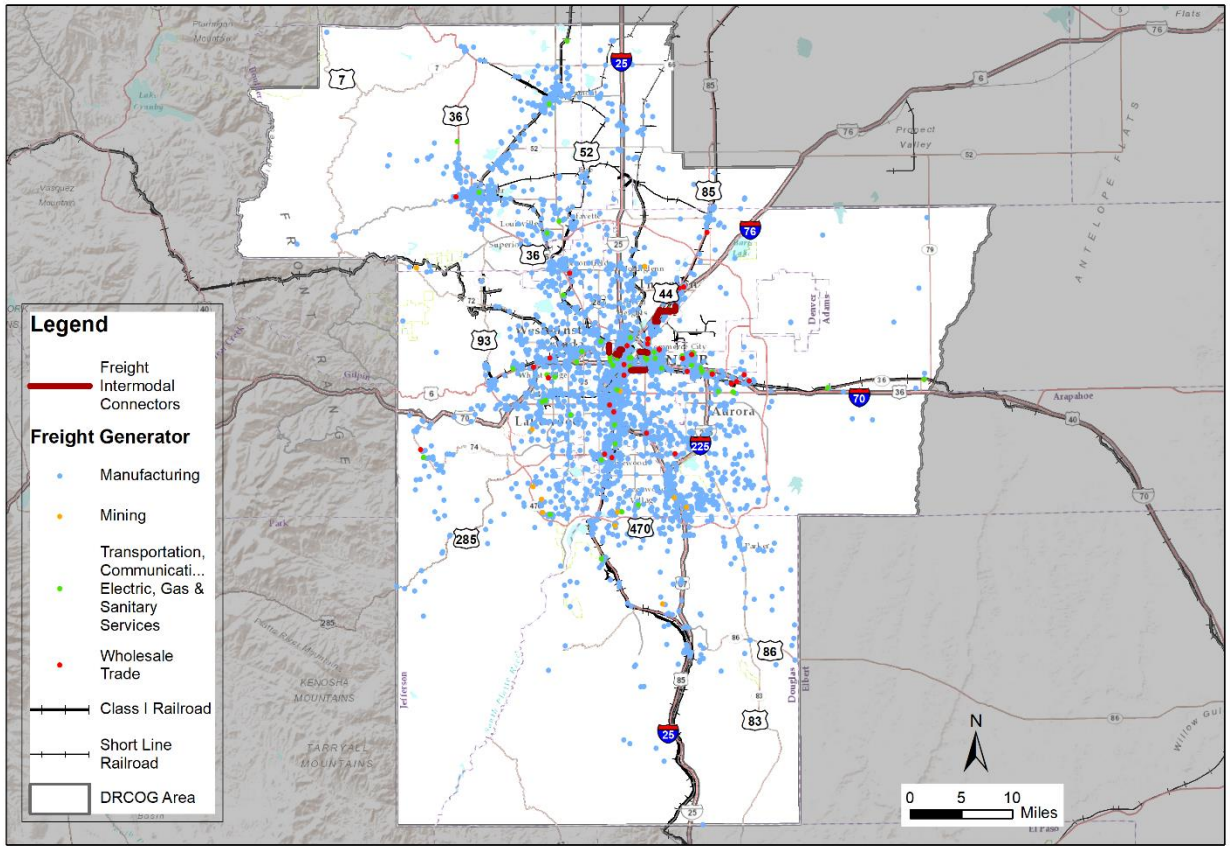
Goods movement makes a difference in each of our daily lives, impacts the experience of residents, businesses, and visitors, and influences the economic competitiveness, livability, and sustainability of the entire region. Planes, trains, and trucks operate at airports, on railroad tracks, over highways, and through a variety of intermodal terminals and facilities that link these modes together. This system is essential to delivering products, supplying businesses, creating jobs, and supporting communities across the region.

Regional Multimodal Freight Network

The region's rail, air, and multimodal freight network includes both publicly and privately owned and operated facilities. Private infrastructure includes railroad tracks, terminals, rail yards, most pipelines, and the system of connecting fulfillment, distribution, and warehouse centers. Together, these transportation modes combined with the infrastructure they run on support the multimodal freight system in the DRCOG region.

In addition to primary regional highway and rail corridors, there are eight key intermodal connectors designated by the Federal Highway Administration. These include DEN airport, two pipeline terminals, and five railroad intermodal terminals.

Regional Multimodal Freight Network Infrastructure and Facilities



Regional Highway Freight Vision Network

Trucks move the majority of goods, nearly 90 percent by tonnage, in, out of, and within the region. This includes long-haul interstate semi-tractor trailers moving goods from major national seaports and distribution hubs, as well as box trucks and tractor trailers making daily deliveries to restaurants, grocery stores, construction sites, and retail centers, as well as trucks and vans delivering parcels and packages to office buildings and residences across the region.

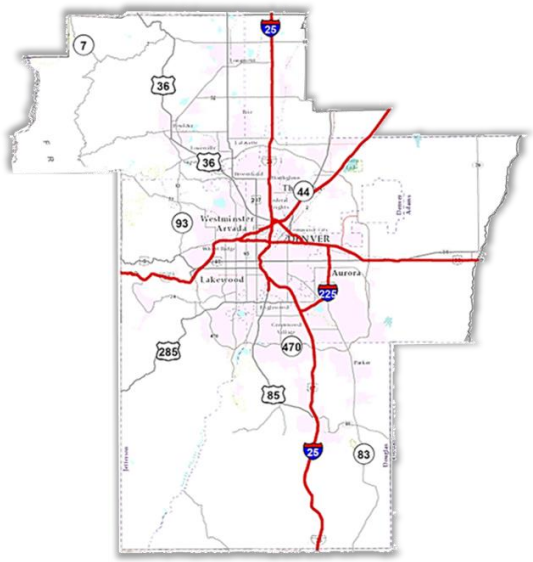
Every commercial alley, neighborhood street, industrial connector, local road, arterial, regional highway, and Interstate plays a role in moving truck traffic and delivery daily goods. Interstate corridors such as I-25, I-270, I-70, and I-225 carry significant truck traffic volumes. U.S Routes and State Highways such as SH 58, SH 79, SH 35, and US 85 and US 6 carry relatively high percentages of trucks during peak travel times. Local roads such as 88th Avenue, Smith Road, Tower Road, 104th Avenue, York Street, and others throughout the region carry significant truck tonnage, according to available Transearch data. Highway corridors within the region connecting to DEN airport, intermodal and rail terminals, private distribution and fulfillment centers, and major manufacturers and producers are critical to efficiently moving goods and supporting industry clusters and existing businesses.

This 2020 MFP identified a future vision network of high priority freight roadways throughout the region. The maps on the following page display key corridors and segments based on available truck volume data and travel patterns, intermodal connectivity, and local government input. Input from Advisory Committee members was critical in identifying important local roadways that may not be reflected in available datasets and that provide key local connecting or transferring routes between significant origins and destinations.

Corridors were identified based on the following criteria: Average annual daily truck traffic greater than 2,500; Average percent of peak traffic by trucks of greater than 10%; Proximity to key intermodal facilities of ½ miles; and, Local input and engineering judgement. With this data-driven criteria and based on Advisory Committee input, regional highway freight corridors are illustrated in three tiers. Tier 1 corridors represent nationally strategic roadways that connect DRCOG to the country and international trading partners. These corridors are best identified by existing National Highway Freight Network designations. Tier 2 corridors are regionally significant roadways that link the region with other areas of the state and offer important intra-regional connections for moving goods within the DRCOG region. These corridors are best represented by the existing National Highway System designation. Tier 3 corridors include local connectors that provide access to intermodal facilities and local roads and connectors identified by Advisory Committee members as important connectors to major regional freight origins and destinations.

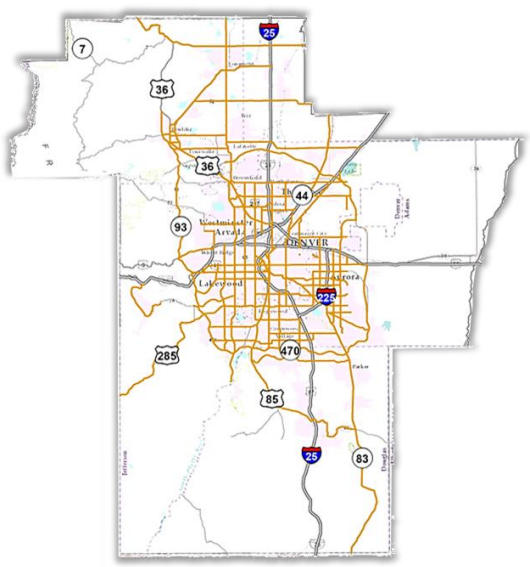
This regional vision network represents the significant highway freight corridors that work together to move the hundreds of millions of tons of goods moving though the DRCOG region. This network provides a basis for future planning and investment so that resources are focused on building out and improving a robust regional highway freight network. Corridor designations may be refined and utilized in future regional and local freight planning efforts and can form a basis for bundling identified freight infrastructure needs into potential future investment areas and regional projects. With regional railroad lines and facilities, air cargo hubs, pipeline networks, intermodal terminals and connectors, and other privately-owned distribution and transportation infrastructure, this robust network should work seamlessly to move goods safely and efficiently.

Regional Highway Freight Vision Network



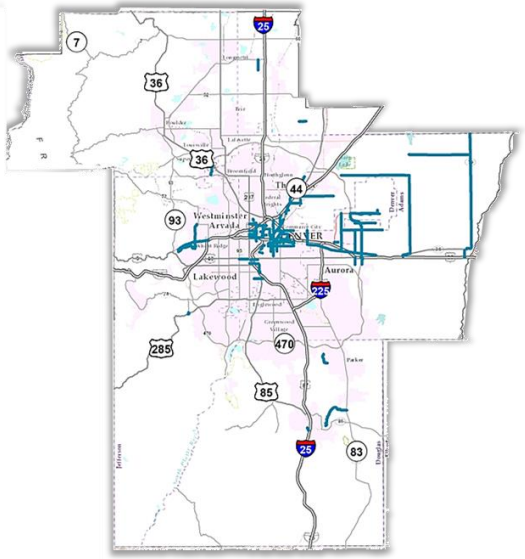
Tier 1 – National Highway Freight Network.

These corridors represent the Federally-designated National Highway Freight Network (NHFN). Designated by the U.S. DOT, the NHFN identifies the most critical highway portions of the national freight transportation system as determined by measurable and objective national data. In the DRCOG region, the NHFN includes the Primary Highway Freight System covering I-70, I-25, I-225, I-70, I-76, and portions of US 6, US 85, and SH 470.



Tier 2 – National Highway System.

These corridors represent the Federally-designated National Highway System (NHS) routes. NHS routes consists mostly of existing two-lane roads. Nationally, the NHS includes only 4 percent of roadways, but carry more than 75 percent of heavy truck traffic. In the DRCOG region, these include significant US routes such as US 36, 40, 85, 287, 285 as well as many local connectors and state routes such as SH 2, 31, 44, 85, 83, 93, 121, 128, and others.



Tier 3 – Intermodal and Local Connectors.

These corridors and segments include local roadways recommended by MFP Advisory Committee members that are not otherwise designated as part of the NHFN or NHS. Local recommendations include segments that provide critical links to major regional manufacturing, warehousing, distribution, and intermodal hubs including 32nd Ave, 44th Ave, Smith Rd, Chambers Rd, Tower Rd, and other key links. This tier also includes local roads within ½ mile proximity to Federally designated PHFS intermodal connectors which include rail terminals, pipeline to truck transfer facilities, and DEN airport.

Truck Traffic and Freight Trends

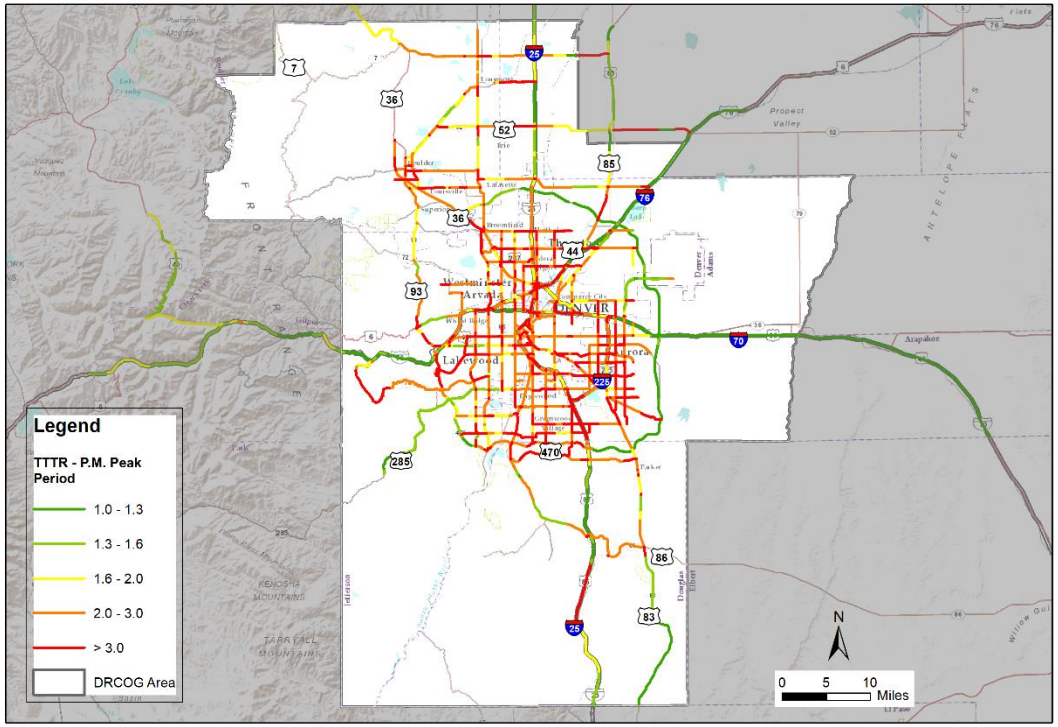
Truck movements are forecast to grow significantly across the DRCOG region in the future. Total tonnage moved by truck in, out, and within the region is estimated to grow from 204 million tons in 2015 to over 311 million tons in 2045, the most recent available forecast horizon from the HIS Global insight Transearch dataset. These trends, coupled with increasing levels of congestion and the expectation that vehicle miles travelled and delay will only continue to worsen, mean that costs will rise for shippers that rely on moving goods by truck and the carriers and drivers that provide trucking services. DRCOG estimates that the cost of congestion for commercial vehicles will rise from $541 million in 2017 to over $900 million in 2040. Growth in congestion will outpace growth in vehicle miles travelled and reflects increased delay and worsening reliability. Impacts of greater fuel consumption and related increases in air quality emissions will impact business, consumers, and communities across the region.

Reliability is a key measure of traffic levels that directly matter to businesses and trucking carriers. Commercial motor carriers must meet high standards for on-time delivery of products and inputs to customers. Delays can mean missing delivery times to businesses, or missing cutoff times for pick-ups, or exceeding hours of service regulations which can impact entire supply chain operations.

Truck travel time reliability is a key performance measured tracked by DRCOG and reported to the U.S. DOT on a regular basis. DRCOG has set an interim performance target of achieving truck travel time reliability outcomes of 1.5 or better. A reliability measure of 1.5 indicates that for a trip that usually takes 30 minutes in free-flow traffic conditions, a truck driver should plan on 45 minutes of travel to arrive on time during peak period traffic.

The American Transportation Research Institute reports on the country's top congested freight bottlenecks. In 2018, the 14th most congested segment in the U.S. was I-70 along the Central Project and the 20th ranked segment was the I-70 interchange with I-25.

Travel Time Reliability Index Measures by Corridor, 2018



Truck Safety

Statewide, the number of motor vehicle fatalities in Colorado has climbed in recent years, from 447 in 2011 to more than 632 in 2018. At the same time, vehicle miles travelled have been increasing. More drivers on the roads increases the likelihood of crashes. The same trend is apparent for commercial vehicles. The most recent available data statewide indicates that truck-involved crashes have reached their highest point in recent years. In 2016, there were 2,002 truck-involved crashes resulting in 71 fatalities and 564 serious injuries across the state. While regional data on commercial vehicle safety is not consistently available, recent data from the City and County of Denver suggests that crashes involving vehicles over 10,000 pounds represented just 1 percent of all fatal and serious injury crashes within the county.

Regional truck-specific safety hotspots are identified as areas where commercial vehicle crash rates consistently exceed overall crash rates. These areas are detailed in Chapter 6 of this plan and identified as future investment needs These hotspots typically include roadways with significant congestion where short merge lanes with many vehicles can be challenging for trucks to navigate. Other truck safety hotspots locations may include roundabouts, interchanges, or roadways with narrow turning radii, as well as roadway design features or weather conditions that can contribute to crashes. Throughout the region some older interchanges, newer roundabouts, or established truck routes through may not be designed to accommodate truck movements and can result in frequent side swipe truck crashes.

Truck parking is a growing concern nationally and an acute issue in Colorado. Lack of real-time information, growing congestion in urban areas, and stricter monitoring of hours of service laws under new Federal electronic logging device requirements continue to add to the challenge of providing sufficient and safe truck parking in areas where and when drivers need it. Additionally, local municipalities may restrict truck parking in certain areas or at certain times of day. Lack of parking or information about available parking can result in trucks parking on highway shoulders, ramps, and interchanges, or in other areas that create safety hazards for both truck drivers and other road users. Lack of safe parking spaces that are lighted or the absence of key amenities such as restrooms or trash pickup can deter truckers from using available spaces or create hazards and issues for local owners. Parking issues can also create inefficiencies and delays in supply chains. Trucks may stop well before their allotted driving time runs out to ensure access to a parking spot or detour out of their way to find parking, losing valuable road time and delaying shipments. An analysis of truck parking utilization by CDOT found that of available private and parking facilities in the DRCOG region, most facilities were nearing peak capacity and utilization and additional safe parking areas may be necessary. Additional parking facilities may be created by expanding existing rest areas or publicly-owned facilities or by partnering with private land owners, including truck stop owners, to jointly develop new parking areas.

Regional Freight Rail Network

Freight Rail Infrastructure

Freight rail provides safe and efficient transportation for products used every day by consumers and goods produced in the region and throughout Colorado. Rail service provides critical links for communities that depend on farming, ranching, extraction, energy, and mining and move common goods such as beer, motor vehicles, lumber, and manufactured consumer items.

BNSF Railway (BNSF) and Union Pacific Railroad (UP) are the two class I national railroads operating in the DRCOG region. These national railroads are the primary arteries for rail cargo traveling to and from the region from other states and provide important connections to the national rail networks and international markets. Mainline operations for these railroads carry coal, intermodal goods, and agricultural bulk goods through, into, and out of the region. BNSF and UP mainline operations run north-south generally along the I-25 corridor and UP operates mainline tracks generally along the I-70 corridor east and west of Denver.

BNSF and UP branch lines and industrial spurs throughout the region serve communities such as Aurora, Boulder, Commerce City, Denver, Golden, Lafayette, or Lakewood. These lines serve customers producing and receiving agricultural, lumber, concrete and sand, power generation utilities, manufacturing, and beverage production. In the City and County of Denver, BNSF operates the Rennicks and Globeville switching yards with major terminals and freight transfer facilities to serve trailers on flat cars and auto transport at its Big Lift facility in Littleton. UP operates major terminals and freight transfer facilities known as the North Yard and 40th Street Yard in Denver and the Rolla Auto Transfer Yard in Henderson, in addition to other regional switching yards.

Two Class III short line railroads also operate within the DRCOG region: Denver Rock Island Railroad (DRIR) and Great Western Railway of Colorado (GWR). DRIR provides first and last mile connections between local customers and national rail networks. DRIR operates two lines at the National Western Complex: the River Spur, that runs along the South Platte River, and the Center Spur, that runs along the west side of the stockyards, both of which date back to the early 1900s. The two lines currently carry two trains per day in each direction and switching movements for local businesses. DRIR also operates three terminal switching yards at Silver Yard, North Washington Industrial Yard, and Stock Yard Lead in Denver. GWR operates 80 route miles of track in northern Colorado, including interchanges with BNSF and UP. GWR has an interchange point with BNSF in Longmont which represents the portion of operations within the DRCOG region.

Freight Rail Traffic and Trends

Rail traffic originating, destined, and moving within the region totaled approximately 15 million tons valued at over $1 billion dollars in 2014. More than half of traffic by tonnage was inbound to region, destined for distribution across the region and state. Top commodities moved by rail in and out of the region included coal, aggregates, mixed shipments, nonmetallic minerals, farm products, petroleum products, food items, lumber and wood, waste and scrap, and chemicals. The total tonnage or rail moving through the DRCOG region without a final destination or origin in the region is not available but likely represents a significant amount of tonnage and rail traffic. For example, more than 154 million tons of product moved through Colorado in 2014, much of which would pass through the DRCOG region on BNSF and UP mainline tracks.

Railroads move heavy or bulk goods as well as mixed freight in carload units. Intermodal rail traffic includes tractor trailers on flatbed rail cars and shipping containers. Just 20 percent of rail traffic by tonnage in and out of the DRCOG region was intermodal. Increasing the amount of intermodal goods shipped by rail directly from West Coast, Texas, or Pacific Northwest seaports or distribution centers in the Midwest or Southeastern U.S. can reduce demand for trucks to carry goods and alleviate challenges with roadway congestion. One railcar handles the equivalent weight of three to four trucks, and one intermodal trailer or container handled by rail is generally equivalent to the amount of product that can be hauled by a truck.

Freight rail movements, by tonnage, are forecast to double in the region by 2045 according to available Transearch data. However, coal transport is forecast to decline which may result in railroads with additional track and operational capacity to accommodate additional bulk and intermodal traffic instead. Information on volumes of goods moved by individual railroads or across specific rail lines or track ownership are not publicly available. However, BNSF and UP main line tracks, particularly on north-south routes, are likely to remain the busiest in the region.

Hazardous Material Movements by Rail

Rail transport of products such as crude oil, chemicals, waste, and other goods is generally safer than moving these hazardous materials by truck. With growth in the oil and gas industry, Colorado is experiencing an increase in crude oil and petroleum products produced in the state and shipped by rail. Hazardous material movements reached an all-time high in 2014 but have declined since. With increased development in formerly industrial areas, some neighborhoods in the DRCOG region have rail lines, residential development, and commercial properties all located in close proximity. Most hazmat loads are flammable liquids, including crude oil, ethanol and oil- and gas-related liquids, that present risk when traveling on rail lines in densely populated areas.

The City and County of Denver monitors movements of flammable liquids, crude oil, and related liquids and ethanol. Denver's Office of Emergency Management reports that hazmat shipments by rail in Denver rose from 23,000 carloads in 2011 to over 70,000 carloads in 2015. In 2011, over 15,000 tank cars of crude oil moved through the city. This declined to 9,000 cars of crude oil in 2015. The City and County of Denver convened a Railroad Safety Working Group, including City and County of Denver agencies and partners from the freight and passenger rail carriers, federal government, and state government, including CDOT representation. This group reviewed the City's safety and hazard mitigation policies and practices in areas near rail and developed recommendations to improve existing prevention, preparedness, response, and recovery practices.

Freight Rail Safety

Freight rail lines most frequently associated with rail crossing and trespass incidents are typically those running through populated and developed urban areas. Railway-highway crossing safety incidents involving freight railroads in the DRCOG region averaged two fatalities or serious injuries annually between 2015 and 2019 with a high of four incidents in 2018.These incidents generally occur at public at-grade rail crossings when vehicles attempt to circumvent safety devices, when vehicles stall on tracks, or when pedestrians or vehicle drivers do not respond to warning signals. Other incidents may occur because of intentional behavior by a driver. Approximately 574 freight railroad crossings exist in the DRCOG region of which 312 are at-grade crossings along public roadways. Key indicators on existing conditions and safety infrastructure of at-grade public rail crossings across the region are highlighted in the following table. The top row of the table indicates the total number of at-grade crossings associated with each characteristic or safety infrastructure. The bottom row indicates the proportion of total at-

grade crossings associated with the highlighted characteristics or infrastructure. For example, while more than 80% of at-grade crossings are marked with recognizable crossbucks, just 33% of at-grade crossings also include warning bells.

Inventory of DRCOG Region Public At-Grade Railroad-Highway Crossing Characteristics

On Federal Aid Highway System	One or More Trains Per Day	Commercial or Industrial Land Use	Residential or Institutional Land Use	Crossbuck Present	Advance Warning Signals Present	Crossing Illuminated	Stop Signs Present	Bells Present	Pavement Markings Present
250	174	188	54	252	213	186	134	103	61
80%	56%	60%	17%	81%	68%	60%	43%	33%	20%

Federal Railroad Administration, Office of Safety. Grade Crossing Inventory

Information on potential risky railroad crossings is provided in Chapter 6 of this document highlights at-grade crossings with recent reported safety incidents. However, this information does not capture the need to eliminate hazards or reduce delays at increasingly busy at-grade rail crossings or at crossings near future development sites throughout the region. Upgrading to grade-separated rail crossings requires significant investment but can improve safety and congestion outcomes for roadway users as well as allow railroads to operate at higher speeds with less horn noise and more reliable transit times. Grade separations may be needed throughout the region particularly in areas where new development is planned near Class I railroad mainlines or where risks already exist, such near schools or on roadways traversed by trucks carrying hazardous materials.

The Railway-Highway Crossings (Section 130) Program is one of several federal programs intended to mitigate the frequency and the severity of accidents to vehicles and pedestrians at railroad crossings. The program, funded by FHWA, is administered by CDOT. Colorado receives approximately $3 million annually in federal funding under Section 130 that is directed to projects that improve railway-highway at-grade crossings. Section 130 funds are programmed based on a hazard index which identifies the most critical railway-highway crossings statewide based on train and vehicle movements and other safety considerations. Of Section 130 projects planned by CDOT through FY 2022, most improvements within the DRCOG region are targeted along the U.S. 85 corridor in Weld County with several others planned along BNSF tracks in Boulder and Broomfield counties.

Regional Air Cargo

Air Cargo Infrastructure

DEN airport is the region's primary cargo airport, handling thousands of packages and containers per day. Other airports in the region, including Centennial, Rocky Mountain Metropolitan, and Front Range Airports may handle specialty cargo or mail and parcels carried in the holds of passenger aircraft. DEN is the 5th busiest passenger airport in the country and the 26th busiest cargo airport in North America. In 2018, 278,272 tons of air freight were moved through DEN. Air cargo operations occur 24 hours a day at DEN and many cargo flights arrive overnight. Freight is transferred from on-site cargo facilities to trucks for delivery to distribution centers in the DRCOG region, around the state, and throughout the Mountain West. FedEx and UPS account for 77 percent of the total tons moved through DEN in 2015. Top commodities shipped in and out DEN include electronics and instruments, misc manufacturing, drugs, and aerospace and transportation equipment worth approximately $26.5 billion. By value of commodities inbound and outbound of the DRCOG region, air cargo is second only to trucking in terms of total value of products moved.

Air Cargo Trends

For air cargo, the ability to sort, organize, and repackage goods on site or near airport terminals and outside of urban area congestion is critical. While DEN has capacity and infrastructure to support expanded air cargo operations, national economic factors and relatively low truck transportation prices have resulted in air cargo movements at DEN that are fewer than initial forecasts suggested. When DEN opened in 1995, growth in air cargo was predicted around 5 percent per year. Currently, future air cargo growth is expected to hold steady with growth less than 1 percent per year through 2040. Limited on-site air cargo process and customs handling may continue to make air cargo uncompetitive compared to trucking in the short-term. For example, inbound FedEx shipments from foreign countries cannot easily clear customs at DEN due to a lack of secure areas and customs facilities, as well as the operational routing and efficiency decisions of carriers. Instead, cargo destined for Colorado is often routed to Memphis or other national air hubs to clear customs before being returned to DEN for distribution and delivery. According to estimates prepared for DEN, an estimates 50 percent of the region's outgoing air cargo is trucked to Chicago, Dallas, and West Coast airports for final shipment instead of being flown out of DEN. Air cargo economics are subject to global and national variables including aviation and truck fuel prices, ocean shipping rates, and changes in international trade patterns.

The future path for air cargo activity and related airside development in the region may change these dynamics. DEN is the largest airport site in North America and the second-largest in the world. DEN is expanding logistics-based development on or near the airport in concert with the vision for the DEN Aerotropolis. The Aerotropolis is a concentration of airport-oriented development and economic activity planned for nearly 3,000 acres south of DEN. The pending completion of an Amazon Fulfillment Center south of DEN is one example and development plans for the Aerotropolis project include as much as 40 million square feet of new industrial and commercial capacity for the region.

Other national trends may help drive an increase in air cargo to and from the region. Consumers continue to expect goods ordered online to arrive within days. Depending on the location of distribution centers and customers, air cargo is often the only way to provide fast and reliable delivery. Increases in trucking costs or driver shortages could also facilitate a switch to air cargo. Growth of advanced manufacturing in the region, including electronics, semiconductors, and aerospace

equipment could also increase the potential utilization of DEN air cargo facilities to reach foreign and domestic markets. Colorado's changing demographics and future increase in healthcare spending may provide a boost to pharmaceuticals and medical supplies that arrive into the region by air.

Space Freight Infrastructure

Located six miles from DEN is the Colorado Air and Space Port which is positioning to serve as one of the country's hub for commercial space transportation, research, and development. In 2018, the facility received a site operators license from the Federal Aviation Administration for space vehicle launch activities. Space may well be the fifth mode in freight transportation in the coming decades and the DRCOG region and Colorado's aerospace manufacturing cluster, public and private research facilities, and defense contractors provide a competitive base for expanding space operations and associated freight and economic activity.

Regional Pipeline Network

Pipeline Infrastructure

The pipeline network in the DRCOG region is primarily utilized to transport petroleum products such as oil and natural gas. Two pipeline intermodal terminals in the region are identified as critical connectors on the National Highway Freight Network. The Conoco and Kanab Pipeline Terminals and the state's only oil refinery is located in Commerce City near I-270. Crude oil is processed into usable fuels such as gasoline and delivered by truck to retail gas stations throughout the state. Motor fuel for the Western Slope and parts of New Mexico and Utah are supplied by the refinery in Denver.

Within the DRCOG region there are over 107 miles of crude oil pipelines, 1,124 miles of natural gas and natural gas liquids pipelines, and 271 miles of pipeline carrying refined petroleum products. The region's pipeline network is owned, operated, maintained, and protected by 13 companies or public utilities and carried over $1.8 billion worth of commodities in, out, and within the region in 2015. Pipelines are the safest way to transport energy products like natural gas, crude oil and other fuels. The U.S. Department of Transportation's Pipeline & Hazardous Materials Safety Administration (PHMSA) regulates pipelines with support from the Colorado Public Utilities Commission. In Colorado, legislative and regulatory attention is being called to the safety of pipelines, including the availability of public information and maps of pipelines and monitoring for spills, leaks, and safety and environmental risks.

Pipeline movements are forecast to grow in the future as capacity is increased and with continued development and distribution of natural gas and petroleum products.

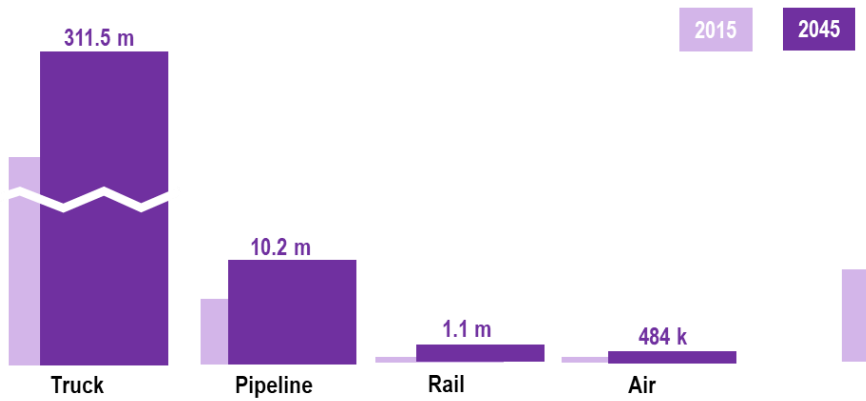
4. Planning for the Future

Future Freight Trends

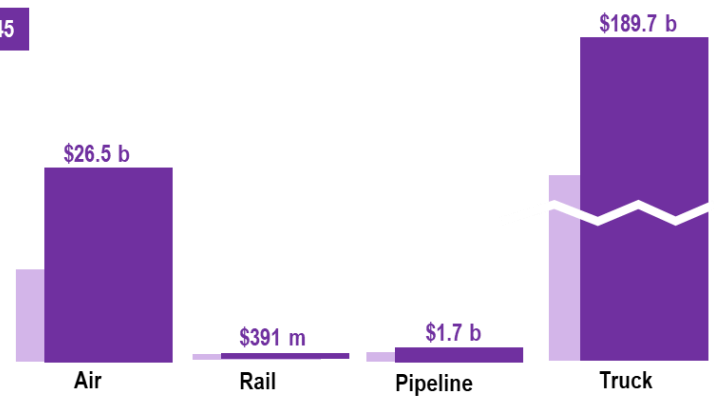
As the population and economy of the DRCOG region grows, so will demand for moving packages and products. By 2040, an additional 1.2 million residents and almost 700,000 jobs will place much greater demands on the region's entire transportation system. Those demands include more and more trips made on the region's already congested roadways and more and more products, packages, and inputs to be moved by rail, air, and pipeline.

Overall goods movement is forecast to increase by 80 percent between 2015 and 2045. By 2045, over 323 million tons valued at $400 billion dollars are expected to be moved within, in, and out of the DRCOG region. This increase will be driven by population and economic growth as well as changes in the region's industry composition, growth in production and manufacturing sectors, demographics, household income and consumer spending patterns, as well as continued growth in e-commerce. Consumers have more and more choices available online and can order goods and send products anywhere across the globe with relative ease. Colorado's overall aging population will drive growth in the healthcare industry, while rising income levels of younger residents in communities across the DRCOG region will continue to generate demand for retail, consumer, construction, and manufactured goods. Increases in goods movement by tonnage and value are expected to be largest in real terms for goods moved by truck, including first and final mile delivery of goods primarily shipped by rail, air, or pipeline. However, rail and air cargo are forecast to grow faster than truck movements in terms of percent change.

Tonnage of Goods by Primary Mode, 2015-2045



Value of Goods by Primary Mode, 2015-2045



IHS Global Insight, Transearch, 2015.

By 2040, people living in, working in, and visiting the region will make over 20 million total person trips per day. Population growth and vehicle trips have already fast outpaced highway capacity expansion in past decades. The result as of 2016 is over 390 miles of severe recurring congestion on freeways and arterials in the DRCOG region. The number of congested roadway miles is forecast to increase to 660 miles by 2040. With trucks carrying over 90 percent of total goods by tonnage, future congestion and reliability challenges on regional roadways will impact the ability of businesses to deliver efficiently to the region's homes, office buildings, retail and grocery stores, and manufacturers and producers. Shifts from road to rail or alternative delivery options that manage demand during peak delivery times can help address these pressures and meet demand for moving the 300 million tons of goods expected in 2045.

Next Generation in Goods Movement

Freight transport technology and business models are changing quickly and potentially dramatically. Technology, including real-time tracking, route optimization, distribution automation, and autonomous vehicles are already infused into the first mile, middle mile, and increasingly the last mile of global supply chains. What the future of freight looks like in the DRCOG region is uncertain, but it is likely to be one of continued incremental change, rather than rapid shifts in how goods are produced, handled, and delivered. The region can support next generation technologies and business practices through industry partnerships, financial incentives, demonstration programs, and supportive policies. The following major trends are likely to influence goods movement in the coming decades:

- ***Business practices –*** The shipping industry operates on relatively small profit margins even though transportation costs represent a significant portion of the final cost of goods and a significant investment by manufacturers, producers, and retailers. In 2018, logistics costs at the national level rose to $1.6 trillion or the equivalent of 8 percent of U.S. gross domestic product. Costs have increased in recent years, though still remain at historical lows. Tight labor markets for drivers, high inventory costs, retooling to meet e-commerce demands, investments in smaller warehouses and distribution centers, and competitive markets drove supply chain costs and investments higher across the country.

  The transport industry is investing and deploying new practices, vehicles, and technology to control costs and find efficiencies. Route optimization technology and real-time tracking and routing can lead to significant fuel savings and help reduce empty loads and trips. Precision scheduling for railroads and recent investments in rail intermodal facilities, including in the Denver market, enable rail freight to continue to compete. Electric vehicle technology for light-duty parcel delivery vans and larger tractor trailers has been slow to reach U.S. markets, but are being utilized in other parts of the world. Globally, electric or alternative-fuel vehicles may represent less than 10 percent of vehicle fleets currently used by carriers such as FedEx. Policy incentives, manufacturing capacity, and public-private partnerships may help speed adoption of electric delivery vans and light-duty trucks.

  The freight trucking industry is also looking to new workforces to help meet delivery demand. Major freight carriers are increasingly outsourcing or using third-party logistics providers to meet demand for drivers and vans. For example, Amazon's delivery service partner program provides leased vehicles, insurance, and financing to those looking to start their own delivery companies. The Denver market has seen significant uptake in this program. As reported by CBS4 Denver, in 2018 the owner of Final Mile Fast quit a job in corporate finance and started a new business as an Amazon delivery service partner. After eight months, the company employed 112 drivers serving over 50 routes. Gig economy drivers, such as Uber Flex or Walmart home delivery by employees, may also continue to grow in practice

- ***Consumer shifts –*** The exponential growth in e-commerce has dramatically changed the parcel delivery and shipping industry. Even just a decade ago, carriers such as FedEx, UPS, or DHL primarily provided business-to-business services. Today, more than half of FedEx and UPS business is in residential delivery and new carriers, including Amazon are entering the market. With the shift to residential delivery, business costs and environmental externalities have also risen as more packages are destined for more addresses. This means more trucks, more drivers, more transit time, and more fuel. Coupled with growing congestion on major roadways across the region, the pace and pattern of residential delivery may not be sustainable. Generally, consumers are not charged the full cost of delivery.

  As a result, businesses are seeking efficiencies and encouraging changes in consumer behavior. The expectation of next-day or even same-day delivery may not be possible in the near future without significant technological shifts or changes in travel patterns. Instead, consumers may readjust to having packages delivered on a single day of the week – such as the Amazon Day program recently launched. Or consumers may get used to picking up parcels at grocery stores, neighborhood drop boxes, or even transit hubs and park and rides. Business practices will change to meet to market forces and consumer expectations will adjust to alternative delivery options.

- ***Mode shifts –*** In the DRCOG region trucks are likely to continue to carry the majority of goods to, from, and within the region. However market forces and business decisions could shift activity to supporting modes and diversify regional supply chains. Shifting from traditional delivery vans to bicycle cargo delivery may make business sense in increasingly crowded and complex urban centers and downtowns or within new purpose-designed developments that focus less on vehicles and more on other mobility options. UPS has launched limited fleets of electric cargo bikes in Seattle, Toronto, Pittsburgh; and cargo bikes have been deployed in European cities for more than a decade. The Seattle launch was an outcome of the University of Washington's Urban Freight Lab and a collaboration between UPS and the City of Seattle. In the DRCOG region, planning for right-of-way, safety technology, and other infrastructure considerations may be necessary to make non-traditional delivery modes practical.

  The majority of freight rail activity and Class I national rail lines in Colorado have focused on carrying coal and petroleum products from producers on the Western Slope or Wyoming to generating plants in the region and other states. Coal rail traffic is forecast to decline significantly in the near future, continuing recent downward trends. This shift could open up freight rail capacity to carry other goods including intermodal cargo and consumer goods. With a continued focus on sustainability and emissions-reduction from the freight sector, freight rail can serve a critical role in the DRCOG region and throughout the state, by shifting freight traffic from roads to rails. Freight rail infrastructure may need to be improved to serve double-stack containers and access to rail intermodal yards and terminals would need to be preserved.

  Air cargo shipping trends at DEN have remained stable. Many goods that could be shipped by air from DEN are instead trucked to major air hubs in Dallas, Memphis, Atlanta, or Chicago. Air cargo markets are sensitive to changes in fuel prices and transport costs of other modes. If highway congestion, operational challenges for truck drivers, or fuel prices in the DRCOG region were to increase significantly, air cargo activity may expand. Air freight also typically serves lower-weight, higher-value products such as pharmaceuticals, medical supplies, consumer parcels, electronics, and semiconductors. Demand for healthcare products will increase with Colorado's aging population and other high-value commodities are produced by

growing industry clusters in the DRCOG region. Entirely new air cargo markets could also open, including shipping agricultural products such as live animals, beef, or value-added and locally produced food items to growing overseas markets in Asia and Africa.

- ***Automation –*** The transport industry is adopting automation and autonomous technologies more rapidly than other industry sectors. These advances have the potential to introduce significant, but limited, changes to freight transport. Autonomous trucking technology has already been tested in Colorado and truck platooning is being piloted on roads across the Mountain West by companies such as Peloton Technology. Autonomous trucks could be active on U.S. roads in the coming decades but are more likely to be deployed on interstate routes that could serve new larger automated distribution hubs on the outskirts of regional population centers. Trucking activity to move goods to final destinations within busy metropolitan areas is still likely to completed with drivers and traditional vehicles. The technology for vehicles operating autonomously in busy downtown environments, within complex loading docks and terminals, or serving suburban residential delivery hub and spoke distribution locations remains decades away from deployment. Freight shuttle systems that could utilize traditional rail lines or entirely new infrastructure such as Hyperloop remain in development. These fixed-guidance systems are most likely to be pilot tested and initially utilized to move goods, rather than people.

  Warehouses and distribution centers are automating rapidly using sophisticated software, robots, and drones to pick, package, and process shipments. Amazon's sorting facility near DEN airport currently deploys 400 to 500 robots to pick packages and drop items into loading bins by zip code for delivery by van. In the near future fulfillment centers where consumer items are picked from inventory shelves and packaged may also be automated. Jobs in warehousing and distribution are likely to become increasingly focused in high-skill occupations such as systems and software engineers and managers responsible for overseeing complex automated systems. Automation of the fulfillment end of the supply chain could advance rapidly, though distribution and final delivery may be slower to shift away from traditional vehicles. The potential for air drones and ground delivery robots to serve neighborhood markets with final delivery has already been demonstrated in limited capacities such as university or hospital campuses or controlled urban environments. Companies such as Amazon, Alphabet, and UPS are investing in automated delivery options, though full-scale utilization may be limited until regulatory, air traffic control, and reliability issues are addressed.

  To support connected and autonomous vehicle technology deployment in the DRCOG region requires significant infrastructure upgrades and maintenance, advance planning, and coordination among public and private sector partners. While sensor technology is improving rapidly, the condition of roads, bridges, striping, and paint in and around intermodal terminals and distribution centers would need to be significantly improved to enable autonomous vehicles. Accommodating future massive automated hub and spoke distribution centers could require careful long-term planning and coordination to minimize barriers and avoid conflicts with surrounding land uses and development, much like the process for planning an entirely new airport or inland port facility.

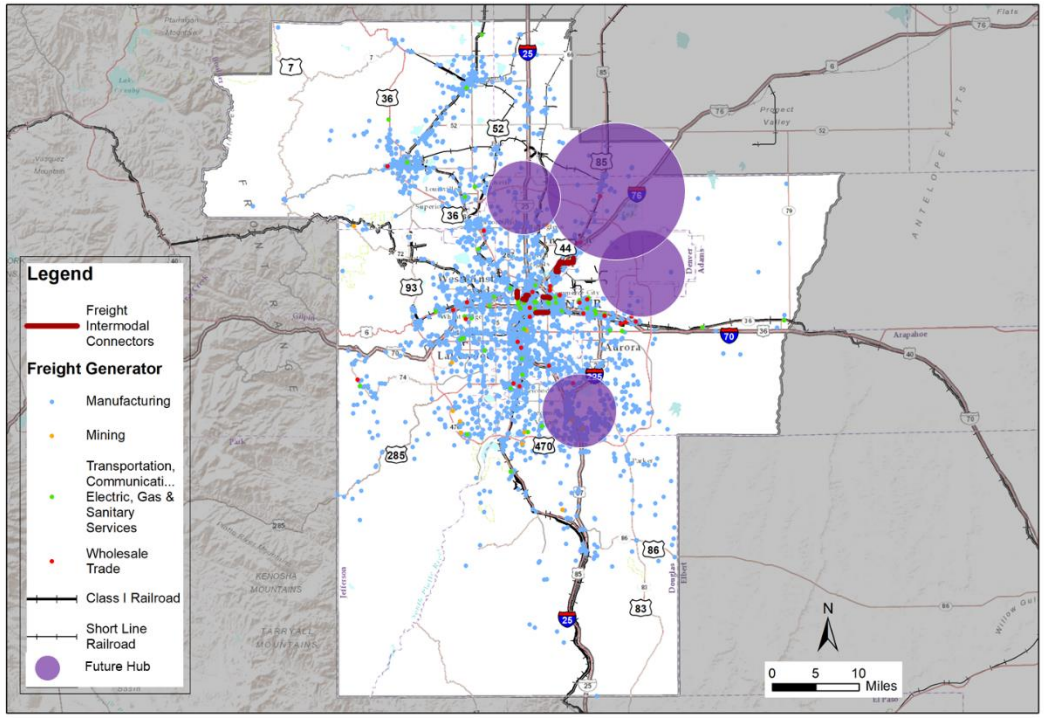
Future Cargo-Oriented Development Centers

Expected growth in the DRCOG region's population, economy, and tourism will drive future increases in the amount and frequency of goods moving in, out, and within the region. Global trade patterns, e-commerce trends, industry diversification, demographic changes, and development patterns may shift the type of goods being moved and where those goods are being moved to and from. Technology adoption and new delivery models may help alleviate local challenges and make freight transport safer and more sustainable. However, significant future growth in freight traffic across all modes is expected and the region must plan collaboratively for the future.

Warehouse and distribution activity is currently clustered along I-70 East and I-25 North, freight rail yards and intermodal terminals are clustered to the northeast of downtown Denver, and the DEN airport, spaceport, and future aerotropolis development are generally located further to the northeast. Critical highway corridors carrying interstate traffic include US 85, I-76, and I-25 that connect to major national freight priority corridors such as US 287 and I-80. Preserving the future potential for the northeast sector of the region to provide critical distribution, logistics, and cargo-oriented development is critical. In particular, the I-76 and US 85 intermodal corridor is likely to serve an increasingly important role in the future.

Regional visions and local area plans anticipate significant future cargo-oriented development within the spheres of the DEN Aerotropolis and the Colorado Air and Spaceport, Centennial Airport, the I-25 north corridor around E-470 and SH 7, and the I-76 and U.S. 85 corridor to the northeast of Denver. Land use plans and freight visions could be established for these areas to ensure that connectivity and access improvements are made, that local land use and economic development plans support cargo-oriented development, and that private sector representative support logistics cluster development opportunities. In close proximity to the region, communities such as Hudson, Bennet, or Ft. Lupton and even farther out Greeley, Ft. Morgan, or Limon will likely see continued growth in fulfillment and distribution center development and could serve key roles in automated warehousing and trucking with the need for connectors into regional and local specialized intermodal hubs within the DRCOG region.

Potential Future Logistics and Cargo-Oriented Development Centers



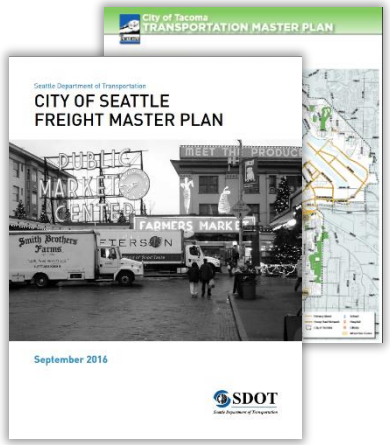
Best Practices in Regional and Local Freight Planning

The DRCOG region's multimodal freight system is essential to the everyday lives of residents, visitors, and businesses and to the economic competitiveness of regional industry clusters and the broader economy. Planning for and creating communities and corridors that are freight-supportive can improve outcomes for the entire region. Freight-supportive planning, design, and operations can mitigate externalities and impacts on quality of life, reduce excess vehicle miles travelled and associated emissions, increase safety for all travelers, and focus on making improvements to the efficiency, connectivity, and accessibility of the entire freight network.

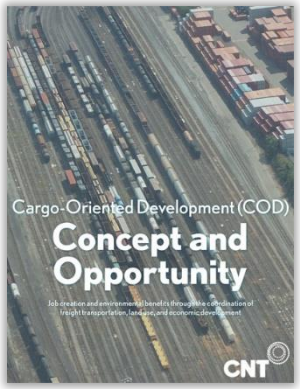
This section provides a summary of national best practices in freight planning including examples, resources, and links for consideration by regional and local agency partners across the DRCOG region. Across the country, regions and communities are increasingly addressing freight issues and seeking to create freight-supportive communities through plans, studies, policies, and guidelines. Best practice examples can be categorized into the following major topic areas:

- ***Local or industrial area freight plans and studies –*** A growing number of regions, counties, and cities across the country have developed freight specific plans and studies. Area freight plans may be components of local comprehensive plans or one of many supporting modal plans that inform local transportation policy. Specific industrial area studies or corridor studies can evaluate transportation and mobility needs from a freight perspective in and around areas with significant freight-activity or with planned future logistics-oriented development potential. Local studies are effective at evaluating needs and improvements at a more micro level which can be effective when considering the complexity of trucking, rail, intermodal, and airside issues and the general lack of freight-specific data at other planning levels. Studies may also look at the freight movement needs of specific industries, including agriculture, intermodal, air cargo or other target industry clusters. In the DRCOG region, the recent North Metropolitan Industrial Area Connectivity Study was a joint effort between the City of Commerce City, Adams County, and the City and County of Denver to evaluate transportation needs in a traditionally industrial and transport focused area of the region. This study evaluated needs from a freight perspective and developed a master list of potential improvements. National examples include the Atlanta Regional Commission which provides a regional grant program to support the development of local freight cluster plans. The North Metropolitan Industrial Area Connectivity Study is available at: https://capitalprojects.c3gov.com/additional-projects. Additional examples and guidance for developing local plans can be found at: https://atlantaregional.org/transportation-mobility/freight/transportation-mobility-freight-freight-cluster-plans/

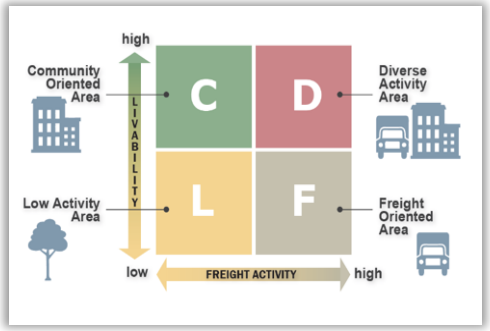
- ***Freight elements in master plans –*** Specific freight transportation or logistics land use elements within county and city comprehensive plans are not common. Colorado guidance on master planning and traditional American Planning Association (APA) guidelines do not specifically reference freight within best practices. The APA has recently introduced freight policy guidelines for consideration in local plans. Many local plans within the DRCOG region do mention or address freight-specific transportation needs at a high level or in the context of freight rail and some subarea plans may consider freight needs in greater detail. Introducing freight and associated economic development, land use, and policy needs is a best practice in local plan development and can help inform decision making, improve truck route identification and designation, and synchronize land use and economic decisions. For example, the Delaware Valley Regional Planning Commission completed county-level freight scans for the nine counties within the MPO region. These scans reviewed freight elements of local comprehensive plans and provided baseline data and findings for local governments to continue freight planning efforts. APA policy guidelines on freight are available at: www.planning.org/policy/guides/adopted/freight/



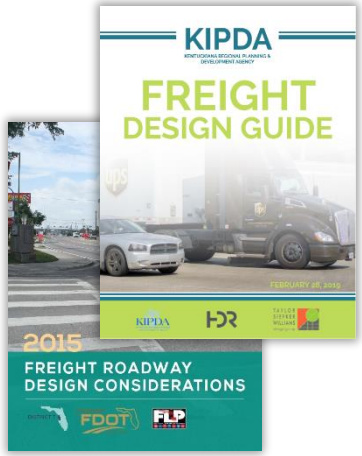
- ***Freight and logistics-oriented development and land use visions –*** In regions with significant intermodal and maritime cargo activity, some agencies are developing long-term visions for logistics or cargo-oriented development and future land use. Often these plans are centered on specific site development opportunities such as major inland port concepts. In other cases, planning organizations are proactively identifying logistics centers in much the same way as urban centers or transit-oriented development locations are encouraged through policy support and development guidelines. These initiatives can help reinvigorate urban areas, encourage redevelopment and economic activity, and envision major developments with trade and logistics as focus. In Washington, the Puget Sound Regional Council designates Manufacturing/Industrial Centers where manufacturing and industrial uses can be clustered and intermodal access improvements focused. In Fort Worth, the AllianceTexas development was purpose built around airport and rail facilities and is now supported by cargo-oriented communities. The Center for Neighborhood Technology (CNT) has advanced cargo-oriented development initiatives in Chicago, Memphis, New Orleans, and other communities. Information and resources from CNT are available at: http://locationefficiency.cnt.org/cargo-oriented-development/



- ***Freight activity center community design standards –*** Regional planning organizations and freight-oriented cities are establishing best practices of identifying freight activity centers or freight-oriented areas. These designations seek to balance community context with freight activity and can identify a range of freight-oriented areas from industrial access areas, commercial alley systems, urban centers connectors, to downtown neighborhood access zones. Planning for different land use and designing urban environments and roadways to purposefully incorporate freight considerations, while accommodating a range of other uses and users can help mitigate freight delivery and access issues in mixed community types. Examples include the City of Seattle's Right of Way Manual and Tampa Bay Regional Strategic Freight Plan. Examples available at: https://streetsillustrated.seattle.gov/ and at https://tampabayfreight.com/wp-content/uploads/TBRGM_AbbContent_FINAL.pdf

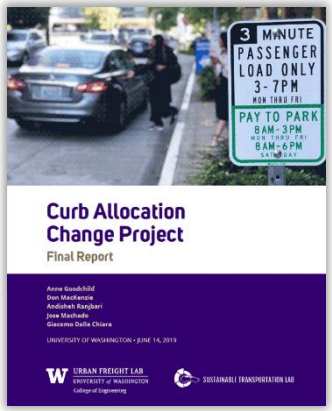


- ***Truck roadway design standards –*** Several state DOTs, regional organizations, and local governments have developed roadway design standards or manuals specific to truck movements. Examples include the City of Seattle, City of Tampa Bay, City of Portland, Florida DOT and others. These guidelines tend to go beyond truck specifications included within AASHTO manuals or state DOT design standards and are specific to truck movements. Similar to freight activity center design guidelines, freight-specific roadway design standards should also consider the community type or different environments and functions of streets in different areas for context sensitive design. Florida DOT's District 7 Freight Roadway Design Considerations includes processes to integrate freight considerations into each aspect of roadway design processes and coordination steps to balance freight facility functionality with community livability. Examples available at: www.tampabayfreight.com/wp-content/uploads/FRDC_Complete_DRAFT.pdf and at www.portlandoregon.gov/transportation/article/357099.



- ***Public information and education –*** Education, communication, and collaboration are significant elements of many freight-related initiatives. Providing information on why goods movement is important, how goods arrive on doorsteps and store shelves, and how the choices consumers make relate to the number of trucks, trains, and planes that depend on the transportation system can help inform initiatives and planning efforts. Examples of public information and education campaigns include CDOT's Colorado Delivers initiative. Other examples from regional plans include supply chain infographics and visual representations that illustrate the volume and connections of freight moving through a region or community. Public education around residential delivery is an emerging topic and can play a supporting role in addressing first and last mile challenges in urban and suburban areas. Increasing awareness of the impact of e-commerce and providing information on alternative options, such as Amazon Day or pickup lockers, may be a component of broader regional strategies to address delivery impacts.

- ***Public private partnerships -*** Addressing freight issues requires close communication and collaboration with private sector representatives and often individual businesses. Engaging the private sector in planning can be challenging, but partnerships can be effective means to develop connections, receive input and data, and involve businesses in solutions and actions. Around the country, partnerships around freight have jointly funded studies and plans, advocated for increased investment, pursued grant opportunities, and pilot tested alternative delivery options including off-hours delivery or urban delivery solutions. For example, the Freight Action Strategy for the Everett-Seattle-Tacoma Corridor (FAST Corridor) is a partnership of 26 local cities, counties, ports, federal, state and regional transportation agencies, railroads and trucking interests that advocates for freight issues, secures funding, and sets guidelines in the region. Also in Washington State, the Seattle Urban Freight Lab is a consortium led by the University of Washington with public agency and private industry partners that researches, tests, and pilots new solutions to urban delivery and freight mobility, in concert with businesses. Information on the Urban Freight Lab is available at: https://depts.washington.edu/sctlctr/urban-freight-lab-0#



Effective freight planning throughout the region can lead to productive outcomes for livability, mobility, efficiency, and safety. Local and regional collaborative efforts can support new partnerships to test alternative delivery options and reduce truck trips; synchronize truck and hazardous material routing and permitting; coordinating economic development and logistics or aerotropolis development plans; preserve the functionality or cross-jurisdictional rail lines or freight priority networks; or identify and prioritize improvements that can lead to reductions in emissions, noise factors, rail crossing delays, and safety for all travelers. A comprehensive guide to local freight planning is available from the Ministry of Transportation in Ontario at: www.ceaa-acee.gc.ca/050/documents/p80100/118334E.pdf

5. Focusing on Freight

Regional Strategies

Planning for the future of freight mobility in an era of rapidly changing consumer expectations, technology, logistics and business operations, and continued growth and expansion across the DRCOG region is challenging. To meet these challenges, regional action, cooperation, and collaboration is needed. This 2020 MFP focuses on regional strategies to better integrate freight considerations in transportation and land use planning, to preserve existing regional freight infrastructure and assets while planning for future freight hubs, and developing the data, information, partnerships, and initiatives necessary to identify, prioritize, create, and fund regional solutions. The following cross-cutting regional strategies support collaborative action and can be championed by DRCOG and local planning partners.

- ***Develop a comprehensive regional goods movement plan –*** This 2020 MFP represents the emerging practice of planning for freight and addressing freight specifically in regional plans, such as the MVRTP. A more complete and comprehensive regional freight plan should be developed based on the conditions and needs assessment and strategic framework provided by this plan. Future regional freight planning efforts can focus on gathering and analyzing local and multimodal freight data in order to develop more detailed, prioritized projects by investment category type, with costing, phasing, time frames, implementation partners, and potential funding sources identified. The vision network of highway freight corridors and the identified freight focus areas and potential investment needs within this 2020 MFP provide a strategic framework for identifying regional priorities and developing project concepts.
- ***Encourage local area, corridor, and site-specific freight plans –*** The DRCOG region encompasses areas of mountains and plains; historic communities, suburban centers, and downtown business districts; and, alleys, neighborhood streets, regional arterials, interstate highways, and branch and mainline railroads. The local freight issues and challenges present in areas across the region are as unique as the potential solutions and investments needed. This regional freight plan provides a broad framework but local, corridor, and site-specific freight plans are important to understand local connectivity, access, safety, or planning needs and to identify potential investments and improvements. Local plans are effective in understanding micro issues and identifying specific freight mobility impediments such as roadway design, rail grade crossing risks, bridge clearances, curbside management policies, and access issues for future funding and grant programs. The North Metropolitan Industrial Area Connectivity Study is an example of a local area plan that specifically considers freight movements and identifies investments to improve mobility and connectivity for truck and rail movements. The DRCOG region can encourage local freight plans through planning grants and resources such as technical guidance, tools, and data.

- ***Consider goods movement issues in multimodal planning and design –*** Issues and needs specific to freight are not always considered in multimodal planning and policy development. The region's transportation system must work for a variety of travelers, from bicyclists, to pedestrians, to transit riders, to drivers, and to the drivers and operators of parcel delivery vehicles, heavy trucks, hazardous material trucks and trains, railroads, and air cargo operations. Roadway or community improvements designed for certain uses may have unintended impacts on freight mobility. For example, some roundabout designs pose safety risks to large trucks; walkable communities may not also be designed to accommodate truck turning movements; limited curb space in downtown centers must be shared by sidewalks, bike lanes, and delivery vehicles; and, new development and growth may require new

railroad crossings. Integrating freight considerations into multimodal planning, design, and operations can help mitigate potential community impacts of freight traffic, reduce excess vehicle miles travelled and associated emissions, improve safety for all travelers, and increase the efficiency of the regional multimodal freight network. The DRCOG region can integrate freight into planning and design through policies and guidelines, hosting community workshops, and by making information on freight issues and needs in planning broadly available.

- ***Develop coordinated and comprehensive freight land use plans and policies –*** Transportation and land use decisions are closely connected. Land use, zoning, and development guidelines can have significant impacts on freight movement and mobility. Freight and logistics-oriented development can range from traditional heavy industrial areas with significant rail and truck activity as well as light commercial distribution space with smaller and less frequent truck or intermodal activity. As the region continues to grow in population and in footprint, planning for freight-oriented land uses and identifying future logistics and distribution hubs will be essential to continuing to deliver for the regional economy. Several regions and communities across the country have developed freight-oriented land use designations or overlays that can help inform local plans and policies or provide guidance for roadway and multimodal transportation system design and operation. This broad guidance does not supplant local policies and plans, but provides a framework for preserving access and connectivity for existing freight activity centers and planning for new centers and hubs. Advance planning to accommodate future freight movements along the northeast I-76 and US-85 corridor, around DEN airport and spaceport development sites, in proximity to existing major distribution centers along I-70 and I-25, and around key regional freight corridors and intermodal sites is needed. The DRCOG region can support regional land use planning through resources, technical guidance, and planning guidelines.

- ***Preserve regional freight infrastructure and assets for future uses –*** Historically, the Denver region developed as a trade gateway and railways, roads, and industrial areas developed along main corridors, rivers, and near emerging town centers. Traces of the past remain in the many railroad main and branch lines that crisscross the region, in the industrial and distribution areas along the South Platte River, and in the alleyways, viaducts, and local access roadways across the region's communities. As the region has grown in size and population, much of the industrial land uses, warehousing and distribution facilities, and rail and intermodal terminals remain clustered to the north and east of the region. Increasing congestion, infill and redevelopment, new growth, and conversion of facilities are hampering the continued functionality and efficiency of key regional freight assets. Preserving the functionality of freight infrastructure for future use is essential to serving the delivery needs of the region today and in the future. What the next generation of goods movement will look like and how goods will be transported is uncertain, but regional rail lines, terminals, distribution centers, and intermodal yards can serve important roles in any future. Preservation of freight assets could include design guidelines so that future use of rail lines for double-stack containers or automated freight shuttles are not precluded by overpasses or at-grade crossings, or roadway design guidelines in industrial and distribution areas that enable access by autonomous trucks and vehicles, or land use overlays that designate freight or logistics-oriented development hubs. The DRCOG region can preserve existing functionality and not preclude future use by identifying regional and local freight assets and developing regional policies and design guidelines specific to goods movements.

- ***Compile freight specific regional data and information –*** Planning for freight is an emerging area for many states and regions across the country. Central to effective planning is comprehensive and complete data and information related to freight movements, volumes, patterns, trends, hotspots, and needs. At the macro level, information is generally available on major truck movements, safety concerns, barriers and bottlenecks, and basic

infrastructure inventory. At the micro level, data is often lacking for local roadways not covered by national highway datasets or regional travel models, for residential parcel delivery and light-duty truck movements, or for privately-owned infrastructure such as railroads and freight terminals. These data are important to better understand the scale and scope of emerging freight challenges, particularly in urban and suburban settings. Collaborative efforts to gather freight specific regional and local data, leverage real-time or location-based information, and to work with private-sector partners to anonymize and utilize proprietary datasets are critical to effective planning. The DRCOG region can support efforts to gather and analyze data by investing in available datasets, gathering and maintaining regional datasets, and developing relationships with industry partners.

- ***Target investments and pursue grant opportunities*** – Few dedicated resources are available for freight investments at the Federal and state level and a pipeline of freight-specific investment needs or projects is still underdevelopment at the regional level. Leveraging existing funding opportunities include competitive grant programs such as INFRA, CRISI, BUILD, and NHFP will be essential to completing major freight specific investments. Federal grant opportunities are competitive and include provisions specifically for freight-related projects, including freight rail and connections to private infrastructure. The Colorado Department of Transportation administers the NHFP program which provides approximately $15 million per year in dedicated funding for statewide and regionally significant freight projects. The DRCOG region can position for competitive funding programs by identifying priority projects through local plans and studies, advocating for consideration of regional projects under the NHFP program, and encouraging grant applications from local sponsors.

Continued Cooperation and Partnerships

Metro Vision is the region's common platform for collaboration and provides a mechanism for implementing the key strategies and actions of this regional multimodal freight plan. Implementation requires engaging new partners, building relationships with industry, investing resources, developing a foundation of data and information, and identifying regional and local champions.

Colorado Freight Advisory Council (FAC)

The Colorado FAC is the state's primary forum for industry to advise CDOT and regional and local planning partners on issues, investments, and decisions relating to freight transportation. The FAC includes representatives from across industry sectors and is a ready resource for participation in local plans or studies, for review and insights into freight decision making, or for connections to local stakeholder organizations or industry contacts. The FAC meets on a quarterly basis and is hosted by CDOT.

Local Freight Advisory Committees

Across the country, some regional and local agencies have established freight advisory committees advise on freight transportation issues at the local level. Committees may be established temporarily to guide plans or studies or on a more regular basis to provide a sounding board and voice for industry. In areas with significant freight-related issues, economic development potential, target industry clusters, or future logistics-oriented development plans ongoing committees can provide valuable partnerships and support.

Industry Partnerships

Regional consortiums, partnerships, or joint efforts can be effective tools for advancing regional initiatives or studies. National examples include public-private groups formed to test alternative delivery solutions in urban areas, to jointly fund freight-related studies, or to jointly advocate for funding for freight improvements. Potential partners include chambers of commerce, economic development organizations, freight industry representatives, universities or colleges, and local or regional agencies.

6. Coordinating Investments

Safety, capacity, and connectivity issues across the region's road and rail infrastructure can impose significant additional costs and negative externalities in terms of wasted fuel, excess emissions, and additional time and end-costs to consumers and businesses. Inefficiencies in freight transport can impact the DRCOG region's economic competitiveness and attractiveness for major manufacturers and small entrepreneurial producers, as well as impacting the livability of communities and quality of transportation for all travelers across the region. Addressing these needs is critical to supporting the region's economy and livability.

Freight specific improvement needs across the DRCOG region include:

- Highway safety needs include geometric design and merge areas of roadways utilized by trucks and safety improvements to areas travelled by non-motorized users.
- Geometric design and access improvements at key local and regional freight connectors, to roundabouts or to intersections and interchanges can address truck safety risks.
- Rail crossing safety needs include upgrades to public at-grade crossings including signals, equipment, and crossing types.
- Rail grade separation needs exist in areas of heavy traffic, neighborhoods, connecting to hazardous material intermodal facilities, and in areas of expected new development.
- Rail capacity and maintenance needs, particularly for short-line railroads, can address degraded infrastructure and enable railroads to carry more products.
- Low-clearance and weight-restricted bridges present barriers to double-stack rail movements or require long detours for trucks. Upgrading bridge or rail overpasses can improve safety by reducing strike incidents.
- Highway maintenance and preservation in areas utilized by trucks are needed to maintain drivability life and reduce wear and tear on vehicles.
- Truck parking expansion is needed to safely accommodate drivers during mandatory resting periods and address short-term or emergency parking needs during operational closures or for truck staging around terminals, yards, and producers.
- Highway shoulder improvements are needed on regional roadways to provide safe emergency pullover spaces and provide buffer space for emergency vehicles and other road users.
- Highway reliability and delay issues on key freight corridors result in excess travel time and emissions costs. Eliminating freight bottlenecks at rail crossings, merge areas, or congested highway segments can improve travel time reliability.
- Connectivity and capacity expansions can address delay or safety issues at key access points to terminals or major freight generators. New highway or rail connectivity supports economic development or may be needed to support new intermodal terminals, distribution centers, or air cargo related development.
- Technology and operations improvements to signals, interchanges, connected infrastructure can help address reliability, safety, and connectivity needs.
- First and last mile delivery, technology for reservation systems for parking in congested areas, alternative mode or off-hours delivery programs.

Complete information on regional freight investments is currently underdeveloped and the scale of regional investments is not adequately captured within this 2020 MFP. Further need identification at the regional level and additional local and industrial area freight studies are necessary to identify targeted and priority improvement needs.

Funding for freight-specific investments is limited at the national, state, and regional level. The CDOT-administered NHFP and competitive national grant programs provide funding sources for large-scale projects of statewide and regional significance. However, these funding sources are often inadequate to address significant freight related improvements. For example, through the NHFP the State of Colorado received $83 million in Federal funding specific to freight investment needs. NHFP funding amounted to approximately $20 million annually over the four fiscal years of the program. This level of funding is far less than is required to address local improvements.

The North Metropolitan Industrial Area Connectivity Study and CDOT's recent NHFP funded projects provide cost estimates for priority project that illustrate the magnitude of investment required to address highway, rail, and intermodal connectivity needs in the region. Examples of project types and costs from these recent efforts are noted in the following table.

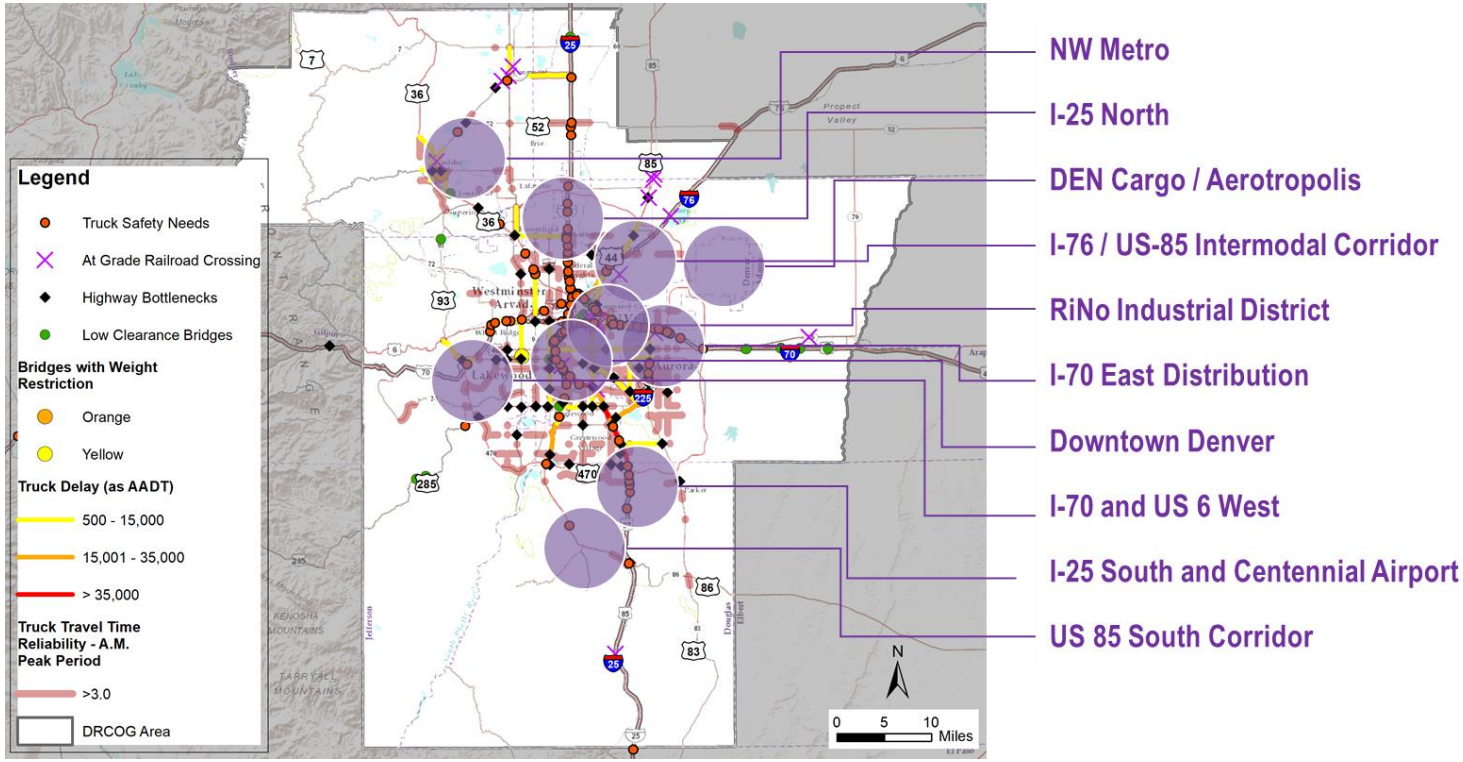
Example Project Type	Railroad Crossing Improvement	Local Freight Connectivity Improvement	Highway Freight Connectivity Improvement	Truck Parking Capacity Improvement
Example Project	Reconstruction of BNSF railroad bridge overpass over Brighton Boulevard to increase maximum clearance from 11 feet, 5 inches to industry standards.	Extension of 52nd Avenue from Brighton Boulevard to Colorado Boulevard to connect industrial areas, improve truck mobility, improve freight rail access, and address safety issues.	Proposed as part of the Vasquez Planning and Environmental Linkage Study, the addition of a ramp from I-270 to Vasquez Blvd would improve truck connectivity.	Improvements to existing rest area along I-25 at Larkspur to add truck parking spaces, improve lighting and security, and lengthen acceleration and deceleration lanes.
Estimated Cost	$45,000,000	$44,000,000	$8,700,000	$1,300,000

Regional and local improvements must be supported through existing funding sources and coordinated pursuits of Federal and state competitive grant opportunities in the absence of significant additional funding dedicated to freight transportation needs.

Freight Focus Areas

Based on the current highway and rail freight needs identified through this planning effort and coupled with local knowledge and engineering judgement of Advisory Committee members, this 2020 MFP highlights ten critical regional freight focus areas. These focus areas are general sub-regional locations that reflect: 1) clusters of existing trade, transportation, and logistics business activity; 2) concentrations of significant current freight-specific safety, mobility, reliability, and connectivity issues and needs; and 3) locations that are likely to experience future cargo and logistics-oriented development or that are likely to face significant future freight mobility and connectivity needs. Focus areas boundaries are described generally and can be refined through local area plans and additional analysis of data reflecting local truck, rail, and intermodal movements. Clusters are highlighted on the map below and key issues, assets, and future policy, planning, and project needs are identified in the current issues and needs section of this chapter.

Regional Freight Focus Areas



This analysis provides a ready framework for future regional and local freight planning and coordination. Coupled with the vision network of priority highway corridors and the needs and issues identified in this chapter, focus areas are intended to spotlight areas most in need of further study, of freight-specific project solutions and investments, and where coordination and collaboration with industry and planning partners may be effective.

Summary of Assets, Issues, and Actions in Freight Focus Areas

Northwest Metro

Context: Includes communities within Broomfield and Boulder counties, generally within the triangle formed by US 36, SH 119, and US 287. This area includes growing, mixed development communities with significant industrial, commercial, and agricultural freight generators and existing freight rail infrastructure.

Assets:
- Regional and local highway connectivity
- Freight rail lines and facilities
- Manufacturing clusters and agriculture producers

Needs and Issues:
- Safety of local truck movements and residential delivery demand
- Multimodal and non-motorized traveler safety
- Rail grade crossing safety
- Freight railroad asset and access preservation
- Growing consumer base and land use changes

Potential Strategies and Actions:
- Initiatives to address residential parcel delivery demand
- Coordinated land use planning near existing industrial clusters
- Preservation of freight rail assets for future utilization

I-25 North

Context: The I-25 corridor provides significant interstate connectivity to national markets and trade routes and is an important intraregional trade corridor with significant truck volumes. This areas is experiencing rapid growth of new distribution and fulfillment facilities in addition to existing freight-reliant retail, wholesale, and industrial businesses.

Assets:
- North-south interstate connectivity
- Freight rail lines and yards
- Major existing industrial and manufacturing clusters
- Emerging distribution, warehousing, and retail hubs

Needs and Issues:
- Truck parking and safety
- Truck reliability and delay
- Rail crossing safety and future grade-separation
- Changing land use and development patterns

Potential Strategies and Actions:
- Coordinated land use planning near existing industrial or distribution clusters and around significant freight corridors
- Public-private partnerships to utilize existing facilities for truck parking needs

DEN Cargo and Aerotropolis

Context: Air cargo facilities at DEN provide critical links for the region's residents and businesses. Future development plans for the Aerotropolis concept include significant cargo and logistics-oriented development.

Assets:
- DEN cargo facilities
- Colorado Air and Space Port
- Freight rail access
- Aerotropolis development potential

Needs and Issues:
- Future land use and development
- Air-to-truck mobility and connectivity
- Growing delay and congestion; potential truck bottlenecks
- Air cargo capacity and facilities

Potential Strategies and Actions:
- Local area studies of key corridors and essential roadways such as Pena Blvd, Tower Rd, Smith Rd, and Airport Rd
- Coordinating future cargo-oriented development and land use decisions
- Master planning efforts for DEN and Air and Space Port potential trade and logistics activity, including rail-to-air and intermodal needs

RiNo Industrial District

Context: One of the region's oldest industrial, freight rail, and warehousing clusters, the River North district is now experience significant redevelopment and transforming into a mixed use activity centers.

Assets:
- Freight railroad terminals and yards
- National Western Stock Show complex
- Existing distribution centers and warehousing facilities
- Interstate accessibility and local freight corridors

Needs and Issues:
- Future land use and development coordination
- Preservation of freight assets and access
- Local truck movements
- Truck and multimodal roadway safety
- Air quality and community livability impacts

Potential Strategies and Actions:
- Coordinated land use planning near existing industrial or distribution clusters and around significant freight corridors
- Freight specific local area studies
- Integration of freight considerations and perspectives within future corridor and area studies and project development concepts

I-76 and US 85 Intermodal Corridor

Context: A major trade gateway to the region, the I-76 and US 85 intermodal corridor is likely to experience significant future logistics-oriented development and future rail and truck volume increases.

Assets:
- Interstate highway access and critical national trade corridors
- Freight railroad lines, terminals, and yards
- Manufacturing and industrial generators
- Access to planned logistics-oriented developments in Hudson and eastern communities

Needs and Issues:
- Future land use and development coordination
- Preservation of freight assets and access
- Truck access and connectivity
- Truck parking and safety

Potential Strategies and Actions:
- Coordinated land use and development planning to preserve access to existing freight clusters and promote future economic development potential
- Safety assessments of future growth near at-grade rail crossings and continued improvements to existing crossings or future grade separation projects
- Public-private partnerships to utilize existing facilities for truck parking needs

I-70 East Distribution Hub

Context: Existing retail, wholesale, warehouse, and distribution centers adjacent to I-70 from I-25 to Pena Blvd make this focus area on of the most dense distribution and industrial corridors in the region.

Assets:
- Distribution, logistics, industrial and commercial cluster
- Interstate access and interregional connectivity
- Freight rail lines and connections

Needs and Issues:
- Truck mobility, access, and connectivity
- Truck parking and safety
- Future land use and development coordination
- Rail grade crossing safety

Potential Strategies and Actions:
- Coordinated land use planning near existing industrial or distribution clusters and around significant freight corridors
- Safety assessments of future growth near at-grade rail crossings along mainline national railroads
- Integration of freight considerations and perspectives within future interchange and local area studies

Downtown Denver

Context: Denver's central business district and surrounding mixed-use, residential, and commercial neighborhoods generate significant demand for residential and business parcel delivery and commercial deliveries to restaurant and retail businesses.

Assets:
- Significant regional economic center and growing mixed use activity and redevelopment centers
- Interstate and intraregional connectivity

Needs and Issues:
- Urban parcel delivery demand management
- Alternative commercial delivery demand management
- Curb management, parking, and roadway design
- Truck and multimodal roadway user safety

Potential Strategies and Actions:
- Initiatives to address residential parcel delivery demand and alternative delivery programs
- Collections and analysis of data to assess delivery demand, patterns, and needs including parking and curb management
- Assessment of local codes for building access and parking
- Coordination of truck safety plans and strategies

I-70 and US 6 West

Context: A critical east-west interregional corridors, I-70 and US 6 provide highway access to major manufacturers, commercial, and retail centers. Key local corridors, particularly north-south connectors, experience significant truck volumes and rising delivery demand.

Assets:
- Interstate connectivity and local freight access
- Commercial, retail, and industrial clusters

Needs and Issues:
- Truck mobility, reliability, and delay
- Truck and multimodal roadway user safety
- Local business access and freight connectivity

Potential Strategies and Actions:
- Coordinated land use planning near existing commercial, retail, or distribution clusters
- Integration of freight considerations and perspectives within future interchange and local area studies
- Safety assessments of recurring truck crash locations

I-25 South and Centennial Airport

Context: Major interstate and intraregional corridor provides east-west and north-south connectivity for growing commercial clusters, south central business district, and residential communities. Highway access to key freight corridors including SH 470, US 83, and along I-25.

Assets:
- Commercial and retail clusters and freight generators
- Interstate connectivity to I-25, E-470, C-470
- Centennial Airport

Needs and Issues:
- Truck mobility, reliability, and delay
- Truck and other roadway user safety
- Local freight access and connectivity
- Future economic development and land use coordination
- Growing population and consumer base

Potential Strategies and Actions:
- Coordinated land use planning near existing commercial, retail, or distribution clusters
- Integration of freight considerations and perspectives within future interchange and local area studies
- Evaluation of future cargo and logistics-oriented development potential around Centennial airport

US 85 South Corridor

Context: Major intraregional and interregional corridor providing access to SH 470, I-25, and local connectors. Freight rail access and highway connectivity provide potential for future cargo-oriented development.

Assets:
- Commercial and retail clusters
- Connectivity to 85, 285, I-25, 470

Needs and Issues:
- Truck safety hotspots
- Truck parking
- Truck mobility, reliability, and delay
- Future economic development and land use coordination

Potential Strategies and Actions:
- Coordinated land use planning near existing commercial, retail, or distribution clusters
- Integration of freight considerations and perspectives within future interchange and local area studies
- Study of potential new or expanded truck parking facilities
- Evaluation of future cargo and logistics-oriented development potential and rail intermodal facilities

Inventory of Current Needs by Project Type

The following section provides a summary of freight-related needs and identified issue areas using available data. These potential future project needs are generally limited to roadways on the National Highway System due to data availability. Needs on locally-owned roadways or privately-owned infrastructure, such as rail overpasses, may not be fully captured.

Existing studies such as the North Metropolitan Industrial Access Connectivity Study are important in identifying specific improvements that are locally or regionally-significant. CDOT and DRCOG are also working to better integrate freight considerations into regional corridor studies, planning and environmental linkage studies, and other regional planning processes which will support better freight-related project identification moving forward.

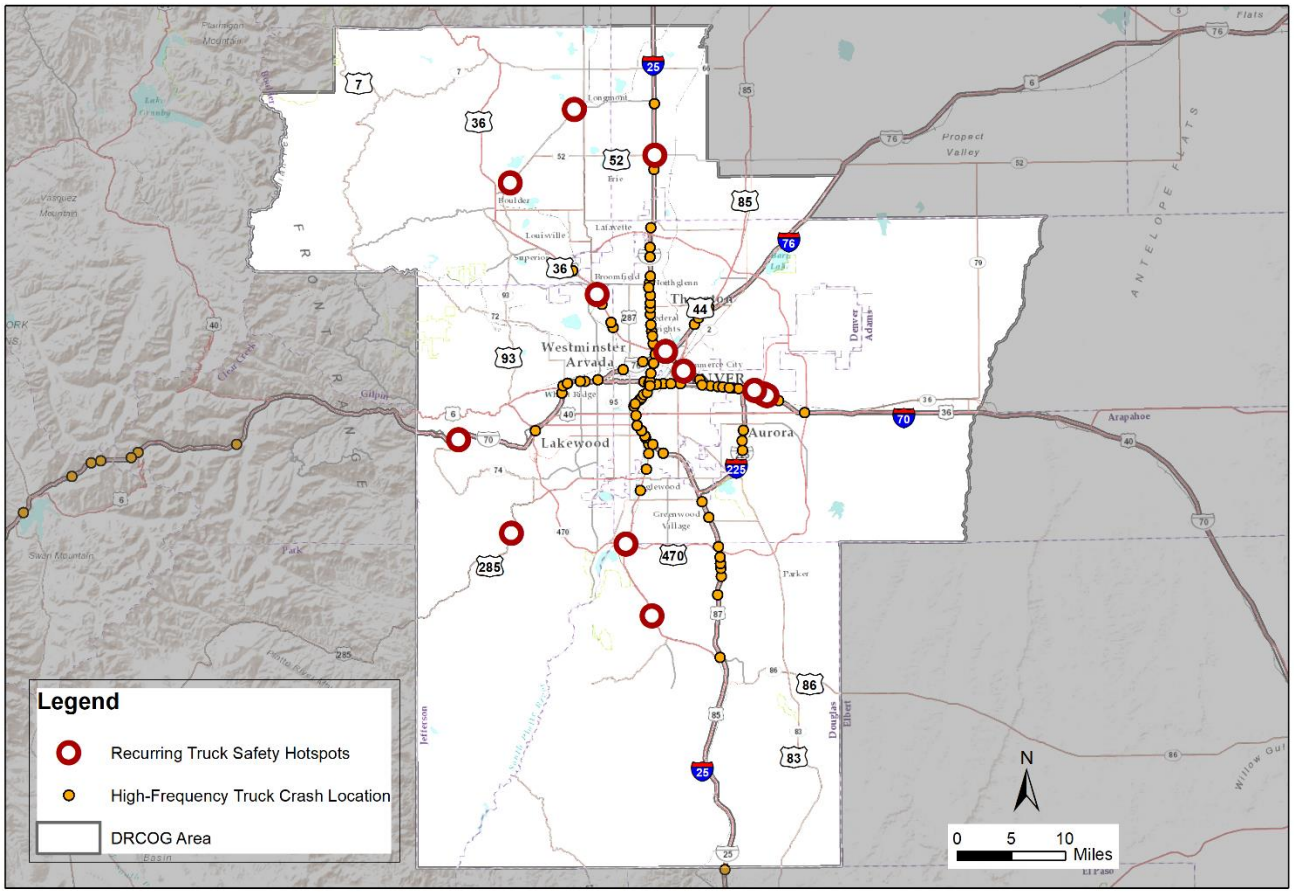
As additional freight-specific data and information is developed at the regional and local level, future needs and problem areas can be identified, prioritized, and bundled into projects. In areas with significant freight safety, delay, connectivity, or access needs, multiple needs may be addressed by bundling into strategic corridor improvements that may be competitive for Federal grant programs. The needs and project types illustrated in the following maps and tables provide a base for identifying future freight investments and pursuing Federal and state funding sources.

Highway Safety

Highway safety needs and potential investment areas are identified using available CDOT data on statewide commercial vehicle crash patterns. Consistent crash and incident data for commercial vehicles is not readily available at the regional level. Trucks are defined within these datasets as heavy commercial trucks and may not fully capture incidents involving light-duty commercial trucks, including parcel delivery vans. Data is consistent with CDOT Colorado Freight Plan.

Truck Crash Hotspots - this analysis identifies locations where the truck crash rate, based on vehicle miles travelled, is higher than the statewide truck crash rate for five consecutive years in a row (2008 to 2014). These locations tend to identify problem areas with recurring crash patterns and causes or where geometric roadway design may be a contributing factor. Top locations are located along interstates and significant US routes and state highways.

Recurring Truck Crash Locations – this analysis identifies locations with greater than 20 commercial vehicle crash locations over a three year period between 2013 and 2015. These locations indicate problem areas that are likely to have higher truck volumes along with higher general traffic volumes. Top locations are located on interstate highways and significant US routes and state highways.



Highway Safety

Truck Crash Hotspots					
Route ID	**Location**	**Facility Type**	**2008-2014 Total Truck Crashes**	**Truck VMT**	**Incident Types (and Number of Crashes)**
I-70A	I-70E and Airport Blvd	Interchange	42	64.6	Sideswipe (37), Rear End (2), Approach Turn (1), Overtaking Turn (1), Guard Rail (1)
SH 52A	I-25N and SH 52 / CR 14	Interchange	23	165.9	Sideswipe (17), Rear End (5), Broadside (1)
I-270A	I-270 and US 85N	Interchange	12	538.7	Sideswipe - Same Direction (4), Rear End (3), Overturning (2), Vehicle Debris/Cargo (1), Guard Rail (1), Light/Utility Pole (1)
I-70A	I-70E and Chambers/Pena	Interchange	6	833.6	Sideswipe (3), Rear End (2), Vehicle Debris/Cargo (1)
US 85B	US 85S and Airport Rd (Louviers)	Highway, Merge	6	661.3	Overturning(1), Rear End(1), Approach Turn(1), Overtaking Turn(1), Guard Rail(1), Other Fixed Object (1)
SH 119B	CO 119 N and 63rd	Intersection	4	116.2	Railroad Crossing Equip (3), Sideswipe (1)
US 285D	US 285 and CO 8	Interchange	4	150.3	Overturning (2), Approach Turn (1), Animal (1)

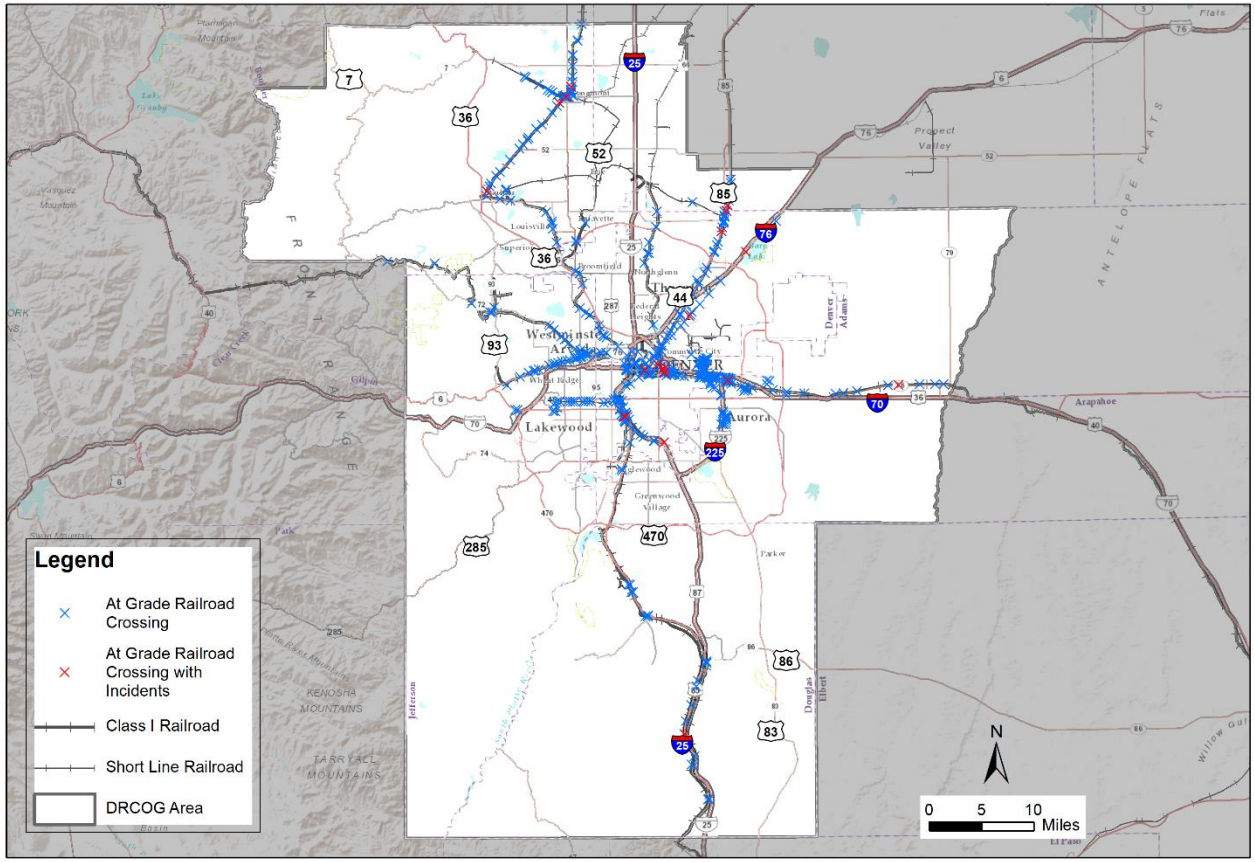
Recurring Truck Crash Locations							
Route ID	MP Start	MP End	2013 Crashes	2014 Crashes	2015 Crashes	Truck VMT	2013-2015 Total Truck Crashes
I-70A	281	282	20	15	18	768.2	53
I-25A	208	209	13	18	11	436.0	42
I-25A	208	209	8	19	15	949.0	42
I-70A	279	281	6	12	16	1182.4	34
I-70A	282	283	1	18	14	78.7	33
I-76A	12	12	0	19	12	784.0	31
I-70A	285	286	0	20	7	600.1	27
I-70A	276	276	9	8	10	199.8	27
I-76A	10	12	6	15	5	1134.0	26
I-70A	277	277	8	7	11	36.5	26
I-70A	279	279	8	7	10	278.6	25
I-70A	281	282	16	5	3	1012.6	24
I-25A	191	193	10	6	8	98.8	24
I-25A	191	193	6	7	11	224.6	24
I-25A	211	211	8	10	6	502.4	24
I-070A	273	274	7	10	6	339.1	23
I-25A	208	208	2	11	10	281.9	23
I-70A	283	284	3	11	8	602.1	22
I-76A	4	6	2	12	8	426.4	22
I-70A	266	267	4	7	11	427.6	22
I-70A	275	276	3	9	9	455.4	21
I-25A	217	218	8	7	6	814.3	21
I-52A	11	13	10	5	5	34.3	20
I-25A	220	221	5	8	7	789.5	20

Rail Crossing Safety

Railroad safety and security policies help ensure that railroad operations and property remain secure, highway-rail crossings are safe, and hazardous materials movements protect life and property. Incidents generally occur at public at-grade rail crossings and involve accidental crashes when vehicles attempt to circumvent safety devices, when vehicles stall on tracks, or when pedestrians or vehicle drivers do not respond to warning signals. Other incidents may occur because of intentional behavior by a driver. Commercial trucks may be at a greater risk at rail crossings. Trucks stall on railway-highway crossings or fail to completely clear a crossing on a congested roadway. Railroad crossing safety projects are funded through the Federal Railroad Administration's Section 130 program. This program is administered by CDOT which evaluates incident history, safety risk, train traffic, and highway and pedestrian traffic to prioritize ongoing investments.

Highway-Railroad Crossing Incidents

- this dataset highlights highway-rail crossings with incidents, including fatalities and serious injuries to highway users and railroad employees as well as reported incidents, including trespassing or near misses. At-grade crossings with incidents reported for 2015-2019 calendar years are shown in the following table.



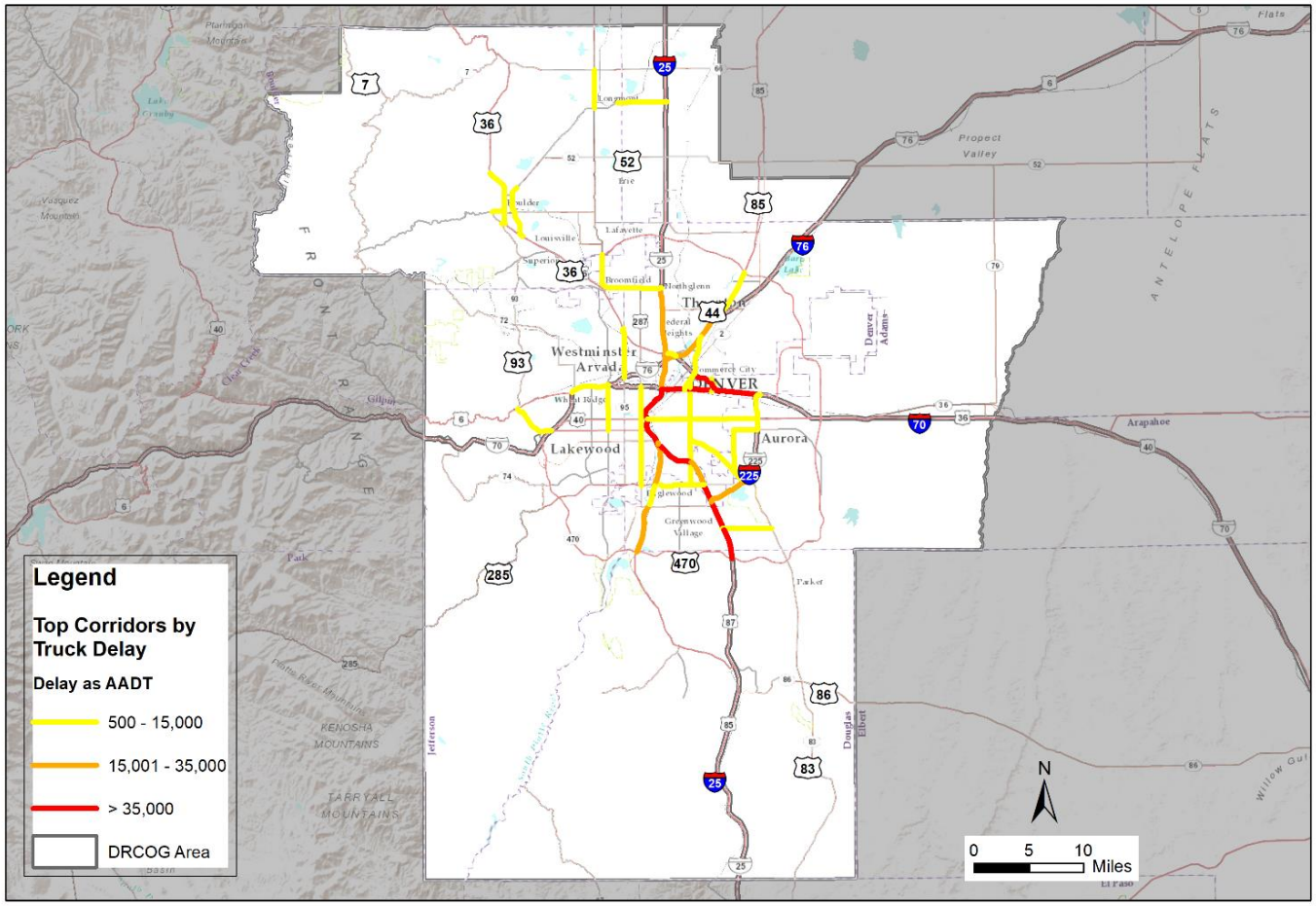
Rail Crossing Safety

FRA Crossing Number	Highway Crossing	Railroad Owner	City, County	Fatality	Injury	Reported Incident
003591R	Sky View Lane	BNSF	Unincorporated, Douglas			4
804480L	County Road 2 1/2	UP	Brighton		2	1
003617R	Private	BNSF	Louviers	2		
804614H	Holly	UP	Denver		1	1
057063P	Dahlia at 47th	BNSF	Denver			1
057064W	East 48th, West of Forest	BNSF	Denver			1
057197N	East 136th Ave	BNSF	Brighton			1
094499P	Yosemite Street	BNSF	Commerce City			1
244818W	Valmont Road	BNSF	Boulder	1		
244845T	Diagonal Highway	BNSF	Longmont	1		
244847G	Coffman Street	BNSF	Longmont			1
245007B	9th Avenue	BNSF	Longmont			1
245288M	50th Avenue	BNSF	Denver			1
245392G	Santa Fe Avenue	BNSF	Denver		1	
245394V	Kalamath Avenue	BNSF	Denver			1
253060H	Private	BNSF	Unincorporated, Douglas		1	
253265B	West 56th Avenue	UP	Unincorporated, Adams			1
440170H	Yard Crossing	UP	Denver			1
594882K	East 52nd Avenue.	DRIR	Commerce City		1	
594898G	Holly Street	DRIR	Denver			1
804385R	Carman's Crossing	UP	Denver			1
804479S	168th Avenue	UP	Brighton			1
804487J	Bromley Lane	UP	Brighton			1
804603V	37th Street	UP	Aurora			1
804609L	Monaco Street	UP	Denver			1
805515N	County Road 29	UP	Unincorporated, Adams		1	
805532E	Peoria Road	UP	Deer Trail	1		
906049P	East 33rd Place	UP	Aurora			1
926715G	Private	BNSF	Denver			1

Highway Delay

Recurring delay on congested corridors and at freight bottlenecks impose direct costs on the freight transport industry in terms of lost time and excess fuel consumption and imposes greater costs on communities and travelers throughout the region in terms of related safety, air quality emissions, stress, and lost time. Congestion on regional roadways is expected to worsen and cannot readily be managed through additional roadway capacity. Potential improvements and investments to address these needs may include demand management strategies, roadway and geometric improvements to eliminate bottlenecks, managed lanes and other solutions.

Truck Delay - this analysis identifies key corridors segments ranked by average annual truck delay. Developed by the Texas Transportation Institute these data are drawn from INRIX and processed to identify total estimated truck congestion costs and hours of delay for highway segments across the state. Congestion costs are products of time, fuel, and associated economic activity. Data shown are for 2016. The region's top 20 segments ranked on annual truck delay per mile are shown in the following table.



Highway Delay

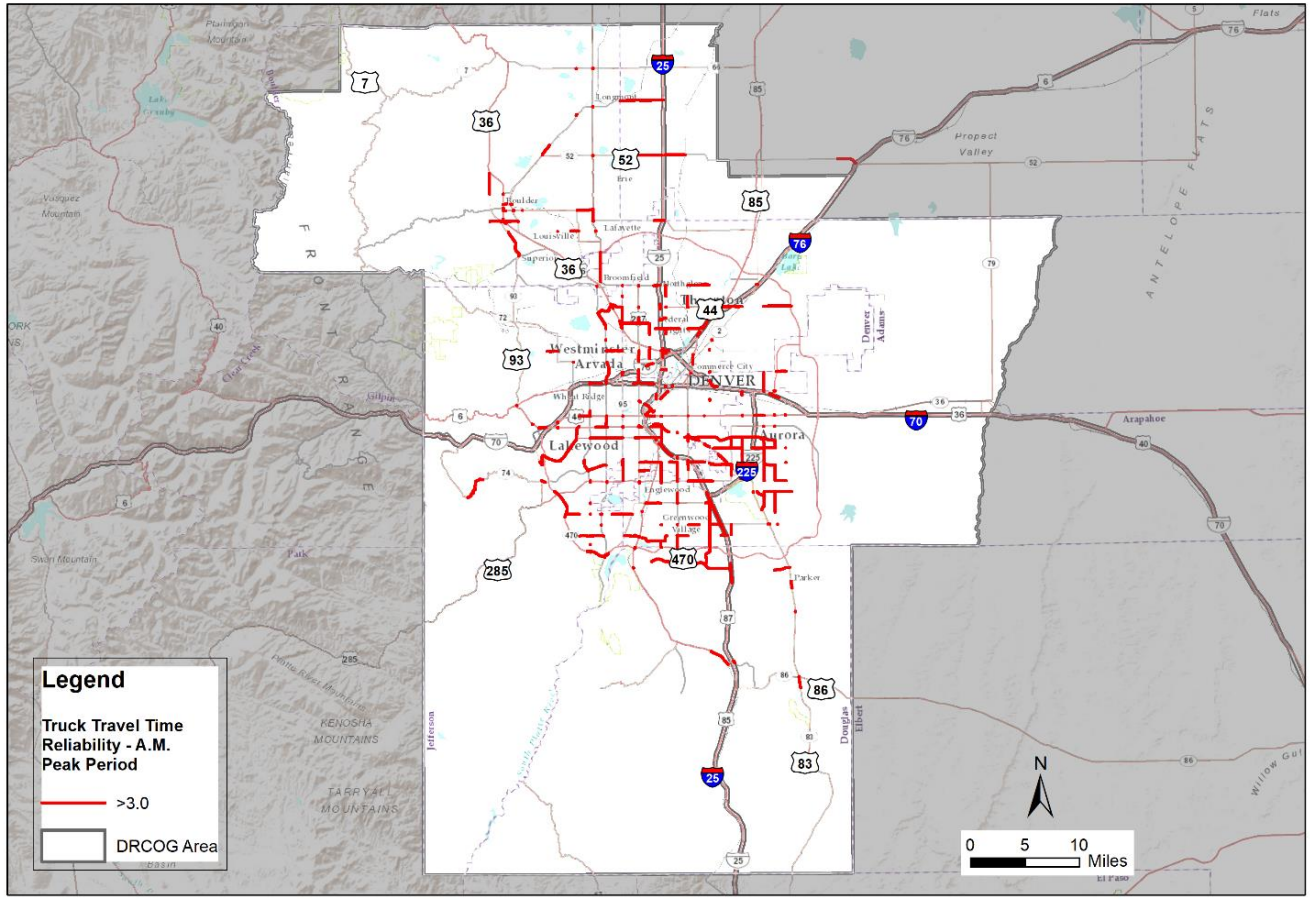
Truck Delay Ranked by Annual Hours, 2016		
Route – Corridor Limits	Annual Truck Delay per Mile (person-hours)	Annual Truck Congestion Cost ($)
I-25 – Santa Fe Drive (US 85) to Colfax Ave (US 40)	33,253	$4,535,101
I-70 – I-25 to I-270	30,939	$7,725,558
I-25 – Colfax Ave (US 40) to I 70	29,650	$5,099,139
I-270 – I-70 to CanAm Hwy (US 6)	25,188	$4,231,402
I-25 – Colorado Blvd (SH 2) to Santa Fe Drive (US 85)	23,128	$4,097,898
I-70 – I-270 to I-225	21,831	$4,465,656
I-270 – I-76 to I 25	20,771	$524,712
US 85 – W Hampden Ave (US 285) to I 25	19,272	$3,920,474
Quebec St (SH 35) – I 70 to E 53rd Pl	15,680	$1,039,614
I-225 – I-25 to S Parker Rd (SH 83)	12,926	$2,563,115
I-25 – Hampden Ave (SH 30/SH 285) to Colorado Blvd (SH 2)	11,675	$1,412,649
Colorado Blvd (SH2) – I-25 to Colfax Ave	10,110	$1,987,171
US 85 – SH 470 to W Belleview Ave (SH 88)	9,783	$2,149,959
I-25 – I-270/US 36 to 120th Ave (SH 128)	9,025	$2,722,487
US85 – I-76 to E 470 (SH 470)	8,263	$1,908,304
I-225 – E 6th Ave (SH 30) to I 70	7,731	$387,765
I-70 – SH 58 to Wadsworth Blvd (SH 121)	7,305	$1,256,337
1-25 – C 470 to Hampden Ave (SH 30/SH 285)	7,033	$2,505,409
US 85 – W Belleview Ave (SH 88) to W Hampden Ave (US 285)	6,939	$742,383
Vasquez Blvd (US 6) – I-70 to I-76	6,177	$1,653,031

Highway Reliability

Travel time reliability is a key measure of the expected additional time that should be planned for to ensure an on-time arrival. For example, a reliability measure of 2.0 for a corridor means that for a trip that takes 30 minutes in free flow traffic, a driver should plan on 60 minutes of travel to arrive on time, during peak periods. Travel time reliability is impacted by recurring congestion during peak travel times and by unexpected events such as crashes or weather. Commercial motor carriers must meet high standards for the on-time delivery of products and inputs to customers. Delays can mean missing delivery times to businesses or missing cutoff times for delivering goods or exceeding hours of service regulations which can impact entire supply chain operations. Potential improvements and investments to address these needs may include demand management strategies, roadway and geometric improvements to eliminate bottlenecks, managed lanes and other solutions.

Truck Reliability - this analysis identifies key routes and corridor segment ranked by travel time reliability measures. Developed by the Texas Transportation Institute these estimates are drawn from INRIX data and processed consistent with standards for calculating Truck Travel Time Reliability and Planning Time Index measures as reported by DRCOG and CDOT. Data shown are for 2016 and for the morning peak period.

The region's top 20 unreliable segments are shown in the table below.



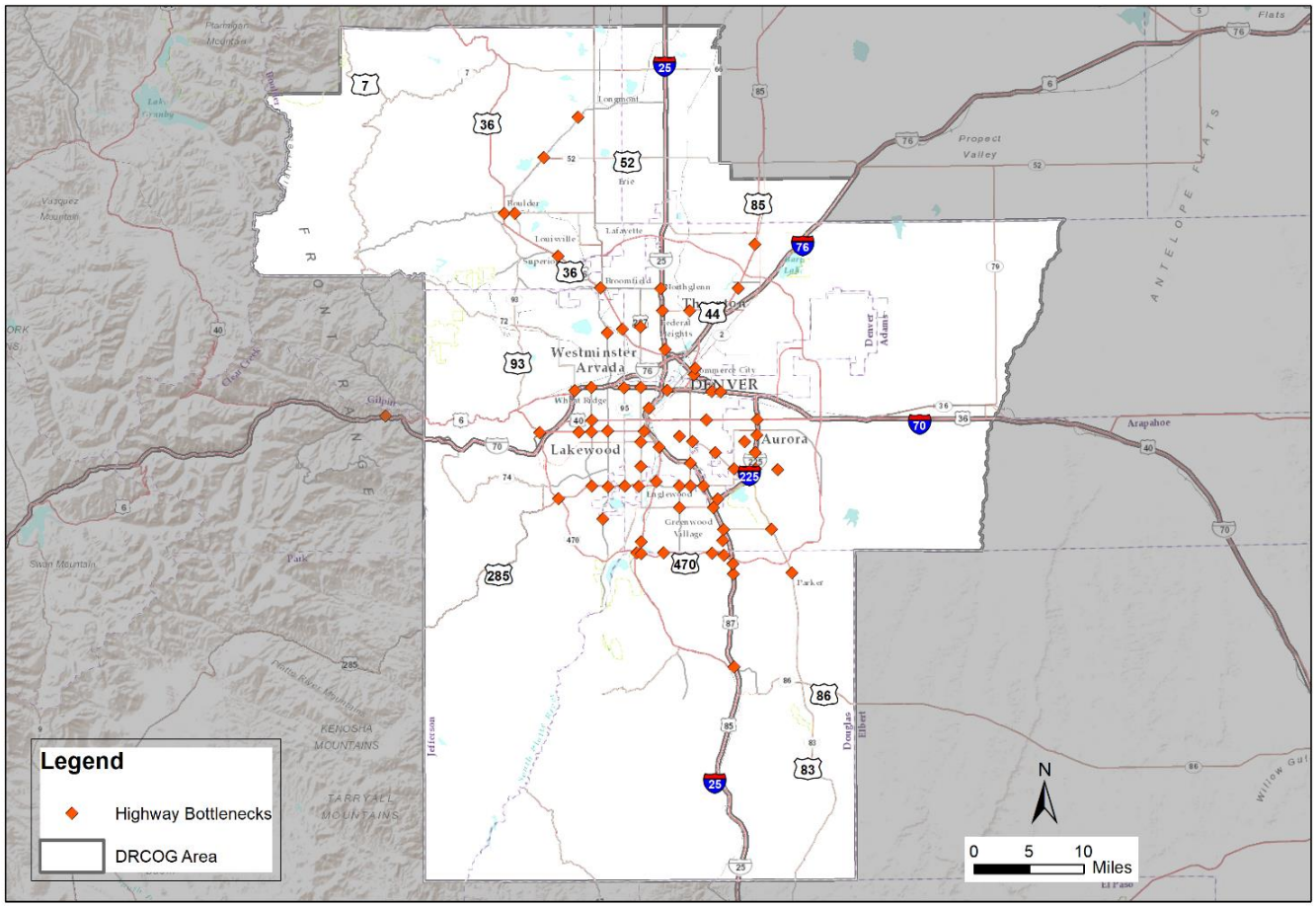
Highway Reliability

Truck Travel Reliability, 2016		
Route – Corridor Limits	Reliability Truck Travel Time Index	Planning Time Index (95 Percentile)
I-270 – I-76 to I-25	1.98	5.18
I-270 – I-70 to CanAm Hwy (US 6)	1.85	4.04
I-70 – I 25 to I-270	1.76	4.02
I-25 – Colorado Blvd (SH 2) to Santa Fe Drive (US 85)	1.76	4.8
I-25 – Santa Fe Drive (US 85) to Colfax Ave (US 40)	1.72	4
I-225 – I-25 to S Parker Rd (SH 83)	1.54	3.09
Colorado Blvd (SH 2) – I-25 to Colfax Ave	1.5	2.68
I-70 – I-270 to I-225	1.44	2.87
E Hampden Ave (US 285) – CanAm Hwy (US 85) to I-25	1.41	2.57
I-25 – Colfax Ave (US 40) to I-70	1.4	2.92
I-25 – Hampden Ave (SH 30/SH 285) to Colorado Blvd (SH 2)	1.39	2.34
Baseline Rd – Broadway (SH 7) to Denver Boulder Turnpike (US 36)	1.39	2.72
S Santa Fe Dr/ CanAm Hwy (US 85) – W Hampden Ave (US 285) to I-25	1.38	2.58
Quebec St (SH 35) – I-70 to E 53rd Pl	1.38	2.16
Canyon Blvd (US 7) – SH 93 to US 36	1.38	2.04
W Colfax Ave (US 40) – I-25 to Colorado Blvd (SH 2)	1.37	2.62
S Santa Fe Dr/ CanAm Hwy (US 85) – SH 470 to W Belleview Ave (SH 88)	1.36	2.32
E Colfax Ave (US 40) – Colorado Blvd (SH 2) to I-225	1.35	2.2
28th St (US 36) – Broadway (SH 7) to Baseline Rd	1.34	2.18
S Parker Rd (SH 83) – I-225 to Colorado Blvd (SH 2)	1.33	2.19

Highway Bottlenecks

Identifying congested bottlenecks, particularly those located on critical regional freight corridors and are important to goods movement, can help inform investment decisions, target operational approaches, and examine safety improvements. A traffic jam is typically caused by more vehicles on a roadway at the same time than the road can accommodate. A traffic bottleneck is different and is often a specific disruption caused by the physical design of the road (e.g. sharp curve), lane reduction or merge area, traffic signals, weather hazards, or temporary situations, such as a traffic crash or a construction work zone. Traffic slowing at the start of the bottleneck can have ripple effects for following traffic, often for many miles over relatively minor incidents or issues. Potential solutions can include geometric or design improvements, additional merge areas to accommodate truck traffic or safety improvements.

Highway Bottlenecks - this analysis was performed by CDOT in 2017 utilizing INRIX data to identify specific locations with a 10 percent reduction from posted speeds for a period of three consecutive months. Bottleneck segments with high average annual daily truck traffic are located along key urban corridors that are routinely severely congested. Bottlenecks in areas with relatively high percentage of truck traffic may indicate key connectors or specific design or operational features that could be improved. The region's top 25 bottlenecks ranked by percent truck traffic are shown in the following table.



Highway Bottlenecks

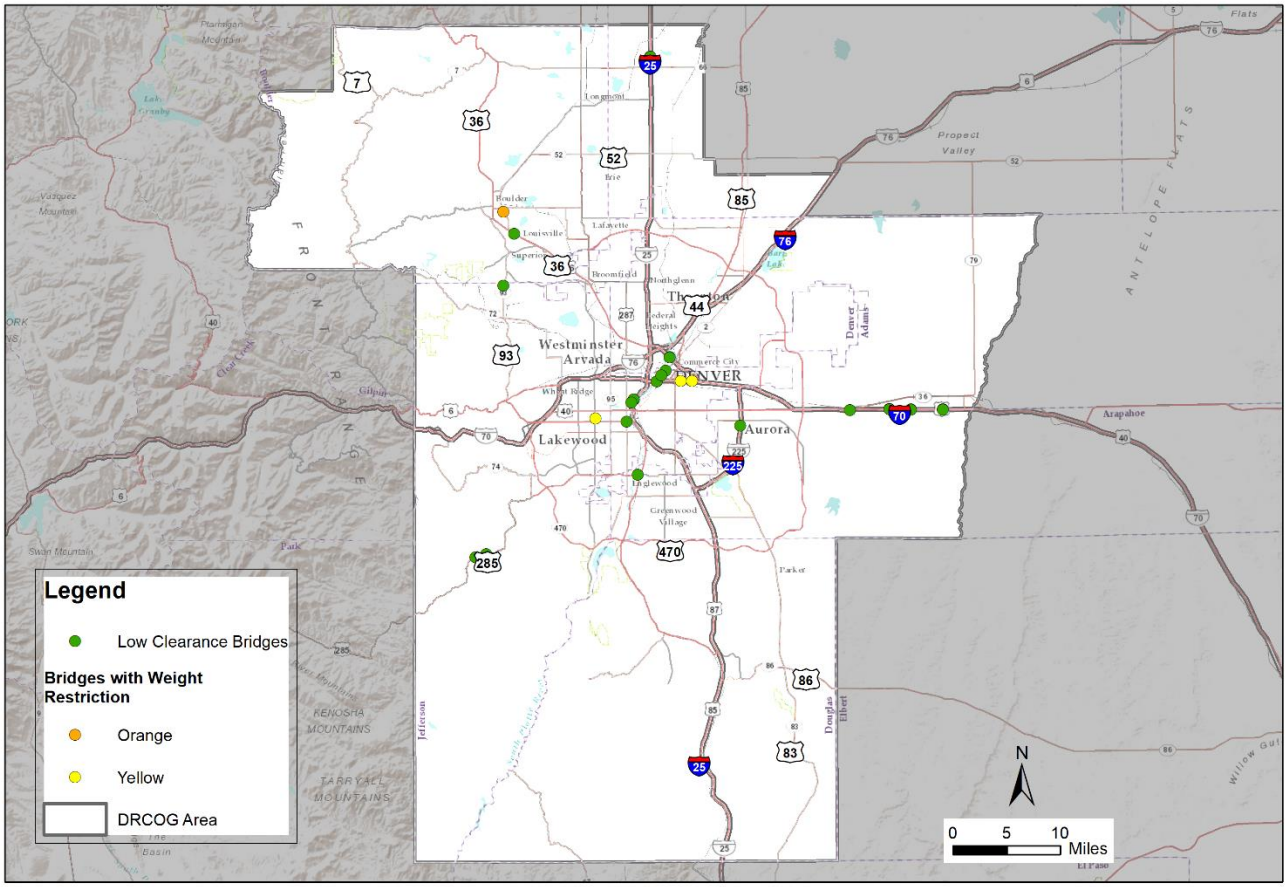
Route and Direction	Milepost Begin - End	Average Annual Daily Truck Traffic	Percent of Truck Traffic
I-76 Eastbound	12-13	5,190	19.9%
I-70 Westbound	288-288	1,723	14.8%
US 85 Northbound	227-229	3,622	13.6%
US 85 Southbound	227-229	2,211	13.6%
US 85 Northbound	229-229	3,528	13.2%
I-76 Westbound	12-13	3,102	13.2%
US 85 Southbound	229-230	2,124	13.2%
I-76 Eastbound	7-8	6,270	13.2%
I-76 Westbound	7-8	4,730	13.2%
I-270 Westbound	2-3	5,394	13.0%
I-270 Eastbound	1-2	6,102	13.0%
I-270 Eastbound	0-1	6,102	11.2%
I-270 Westbound	1-2	5,198	11.0%
I-70 Eastbound	276-276	8,321	11.0%
I-70 Westbound	276-276	7,379	10.9%
I-76 Westbound	1-2	3,960	10.9%
US 85 Northbound	230-230	2,090	10.9%
I-70 Westbound	275-276	7,415	10.9%
I-25 Northbound	214-215	13,500	10.8%
I-70 Westbound	275-275	7,452	10.7%
I-25 Southbound	215-216	10,580	9.8%
SH 83 Northbound	36-38	198	9.8%
SH 83 Northbound	40-42	198	9.8%
I-25 Northbound	212-212	12,480	9.7%
I-25 Southbound	212-212	11,520	9.7%

Low-Clearance and Weight-Restricted Bridges

The design of bridges, tunnels, or overpasses along regional freight corridors and other key routes may restrict truck or rail movements. Older bridges or bridges not designed to handle heavier vehicles may have restrictions on the total gross vehicle weight that may cross. Some bridges may require a permit for heavier loads while others cannot be used by commercial vehicles even with permits. Bridge and tunnel vertical clearances may also restrict truck travel along certain routes or prohibit rail lines from carrying high loads, such as double-stack containers. Weight restricted or low-clearance bridges cannot be used by certain vehicles or may require oversize trucks to detour long distances which imposes travel time costs and inefficiencies on businesses.

Low Clearance Bridges - CDOT maintains detailed bridge inventories for structures across the state. Statutory requirements for bridges over Interstates, U.S. Routes and State Highways is a vertical clearance of 14 feet-6 inches. Clearances less than this are considered to be very low clearance and may restrict freight movements. Bridges considered to be low clearance are those less than minimum design requirement of 16 feet-6 inches. Not captured in this needs analysis are privately-owned structures such as rail overpasses or underpasses and some locally-owned bridge structures.

Weight-Restricted Bridges – Bridges not adequately designed for heavier truck traffic are identified as either posted for load or with load restriction. All vehicles exceeding specified weights on bridges posted for load are prohibited, including those with overweight permits. Overweight vehicles may use weight restricted bridges with permits.



Low-Clearance and Weight-Restricted Bridges

Very Low-Clearance Bridges (Clearance under 14' 6")		
Route	Intersecting Facility	Clearance (feet)
SH 265 Mainline	BNSF RR	11.3
South Boulder Creek Rd	US 36 Mainline	11.7
County Road 32	I-25 Southbound	12.7
County Road 32	I-25 Northbound	12.8
Ditch Road, Burlington	I-270 Westbound	12.8
I-25 Mainline	Speer Blvd Southbound	13.0
I-25 Mainline	Speer Blvd Northbound	13.5
South Platte River Roadway	US 285 Mainline	13.7
Aggregate Road	SH 93 Mainline	13.8
I-25 Mainline	23rd Avenue	13.8
I-70 Service Road	Cattle Overpass	14.0
Race Street	SS 265 Mainline	14.0
Ditch Rd, Burlington Canal	I-270 Eastbound	14.0
North Access Road	US 285 Mainline	14.0
County Road 31 / 125 (Brick Center Rd)	I-70 Eastbound	14.0
County Road 22 / 89 (Hayesmount Rd)	I-70 Eastbound	14.2
Conifer Road	US 285	14.2
County Road 26 / 105 (Quail Run Rd)	I-70 Eastbound	14.2
US 6 Mainline	SH 88	14.2
County Road 26 / 105 (Quail Run Rd)	I-70 Westbound	14.2
County Road 31 / 125 (Brick Center Rd)	I-70 Westbound	14.2
County Road 28 / 113 (Manilla Rd)	I-70 Eastbound	14.4

2nd Avenue	I-225 Northbound	14.5
County Road 22 / 89 (Hayesmount Rd)	I-70 Westbound	14.5
County Road 28 / 113 (Manilla Rd)	I-70 Westbound	14.6

Weight Restricted Bridges

Route (Milepost)	Intersecting Facility	Current Weight Restrictions
SH 7 Eastbound (53.2)	Boulder Creek	Orange
US 6 (125.5)	SH 121 Mainline	Yellow
I-70 Eastbound (276.9)	Dahlia Street	Yellow
I-70 Westbound (277.9)	Monaco Street	Yellow

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ATTACH F

ATTACHMENT F

To: Chair and Members of the Regional Transportation Committee

From: Beth Doliboa, Transportation Planner
303-480-5647 or bdoliboa@drcog.org

Meeting Date	Agenda Category	Agenda Item #
March 17, 2020	Informational Briefing	8

SUBJECT

Update and information on the draft of Taking Action on Regional Vision Zero.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

Vision Zero is a multi-national safety project with the core principal that "it can never be ethically acceptable that people are killed or seriously injured when moving within the road transport system."

Over the last year DRCOG has been working with stakeholders to develop a plan that focuses specially on reducing the preventable killed and serious injury crashes in the Denver region. Taking Action on Regional Vision Zero will:

- Reduce fatalities and serious injuries in the Denver region, with a goal of achieving zero fatalities and serious injuries per year.
- Support DRCOG's various safety performance measures and targets.
- Increase awareness of Vision Zero to influence safer behaviors on roadways.
- Provide tools and strategies to local jurisdictions to encourage safety in planning and design of the regional transportation system.

The final stakeholder committee meeting was March 4th since appropriate stakeholder comments have been incorporated in the draft. The Taking Action on Regional Vision Zero includes existing analysis as to why Vision Zero is needed for the Denver region, a summary of public engagement that directed plan development, a toolkit on how to use the plan to implement zero throughout communities, action initiatives with a timeline for implementation and measures to track progress as the plan is implemented in upcoming years.

Please review the draft plan and submit comments and suggestions to be incorporated in the final document.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

ATTACHMENTS

1. Staff presentation

ADDITIONAL INFORMATION

For additional information, please contact Beth Doliboa, Transportation Planner, Long Range Transportation Planning, at 303-480-5647 or bdoliboa@drcog.org

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taking action on regional vision zero

SAFER STREETS FOR METRO DENVER

Draft Review

Presented by:
Beth Doliboa

March 17, 2020

What is Vision Zero?

Vision Zero is a transportation safety philosophy based on the principle that loss of life is not an acceptable price to pay for mobility.

Reframes traffic deaths as

preventable.

Integrates

human error

into the approach.

Focuses on

preventing fatal and severe crashes

rather than eliminating all crashes.

Aims to

establish safe systems

prioritizing human life first and foremost when designing a road network.

Applies

DATA DRIVEN

decision making.

Establishes road safety as a

social equity issue.

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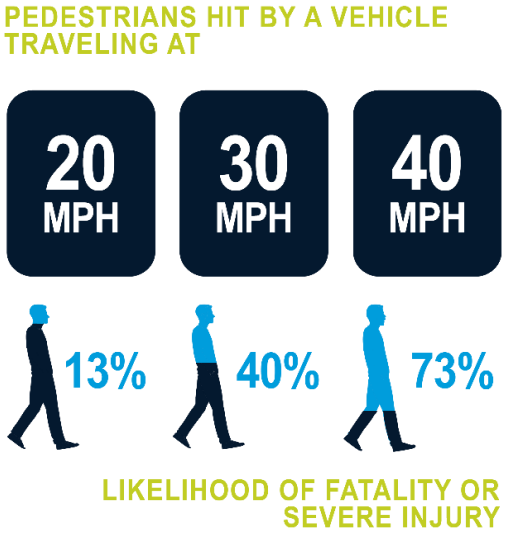
Vision Zero Principles

Complete Streets

Design Complete Streets that accommodate people using all methods of transportation, prioritizing safe travel for all users over expeditious travel of motor vehicles.

Context-appropriate Speeds



The American Automobile Association Foundation for Traffic Safety shows that the likelihood of a fatality or severe injury is 13 percent for a person walking struck by a vehicle traveling at 20 miles per hour, but this likelihood increases to 40 percent at 30 miles per hour and 73 percent at 40 miles per hour.

Equity

41 percent of the regional High Injury Network occurs in areas with higher than average numbers of households in poverty and minority populations.

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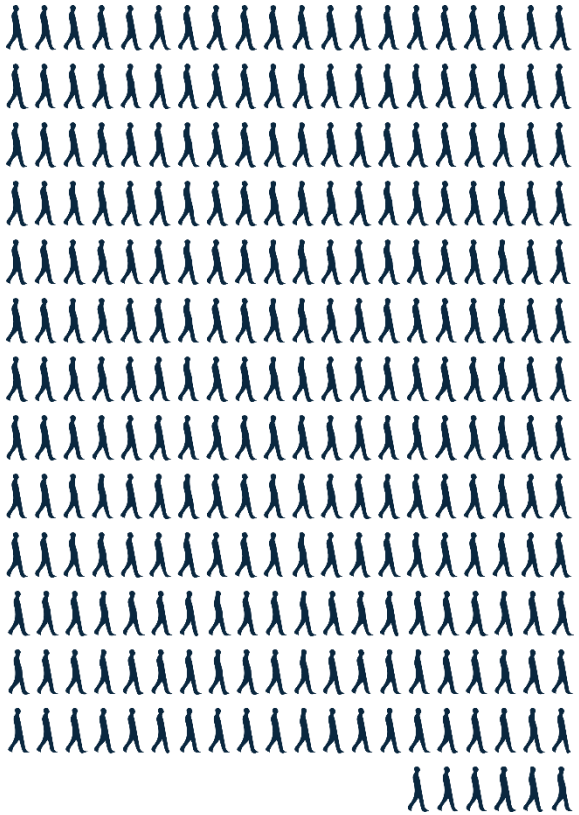
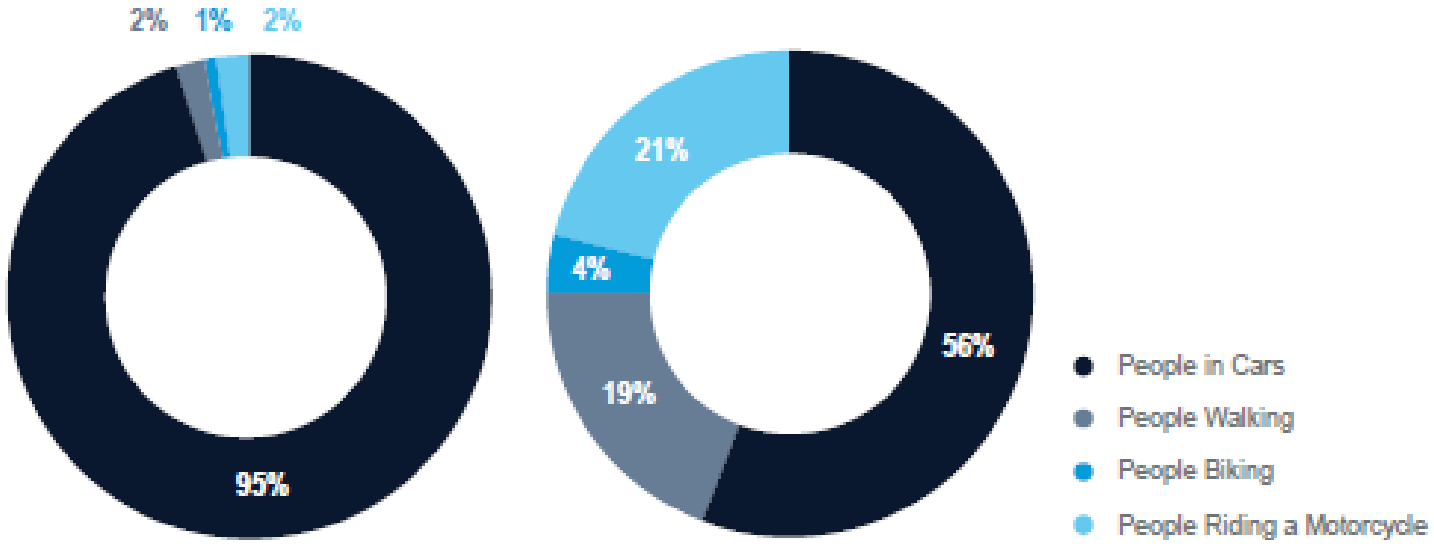
Why the Denver Region Needs Vision Zero



In 2017, 266 people were killed on the Denver region's streets and highways

Percent of all crashes by travel mode vs. percent of fatal crashes by travel mode



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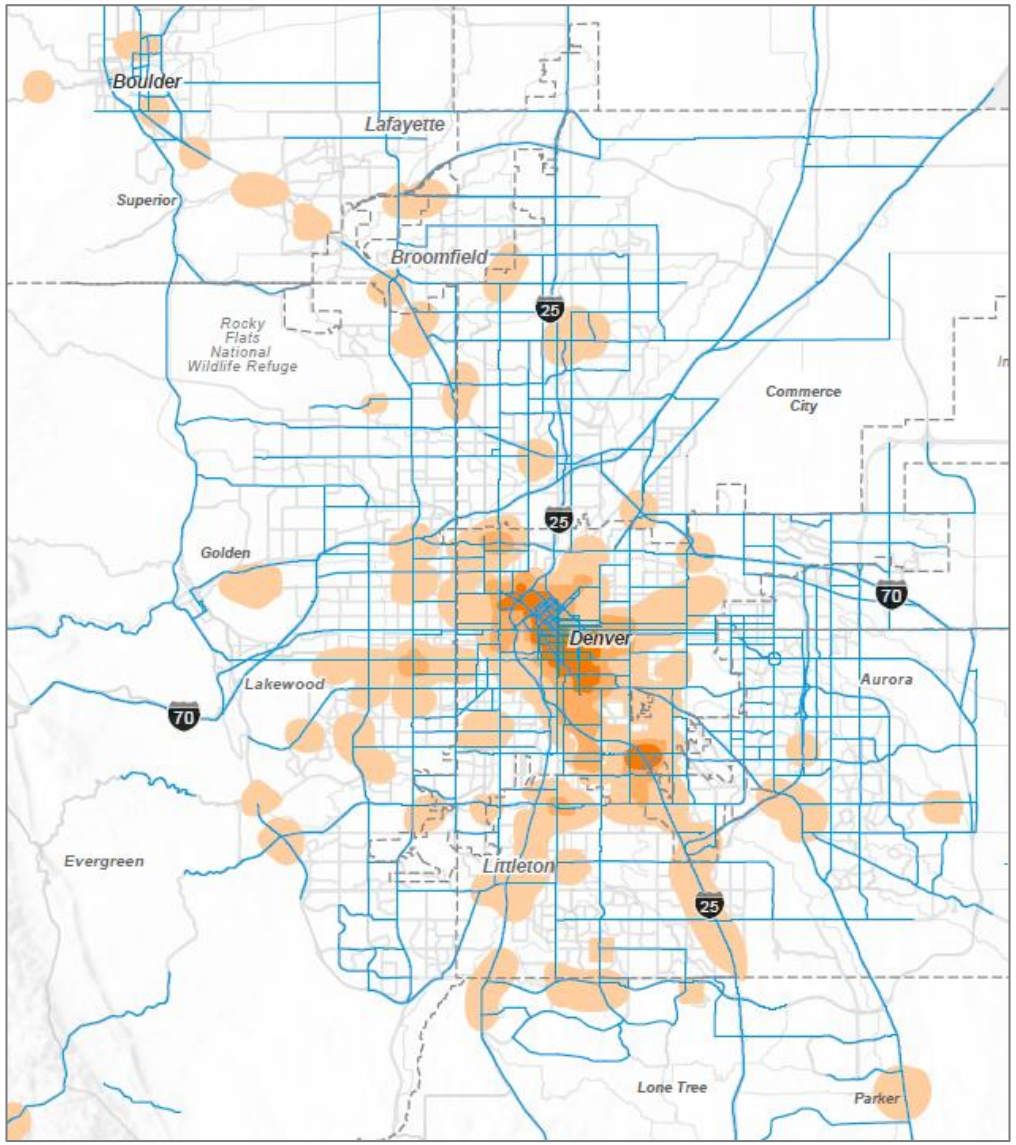
Engaging the Community

The community identified over 1,000 locations on the Regional Vision Zero web map.



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REGIONAL VISION ZERO TOOLKIT

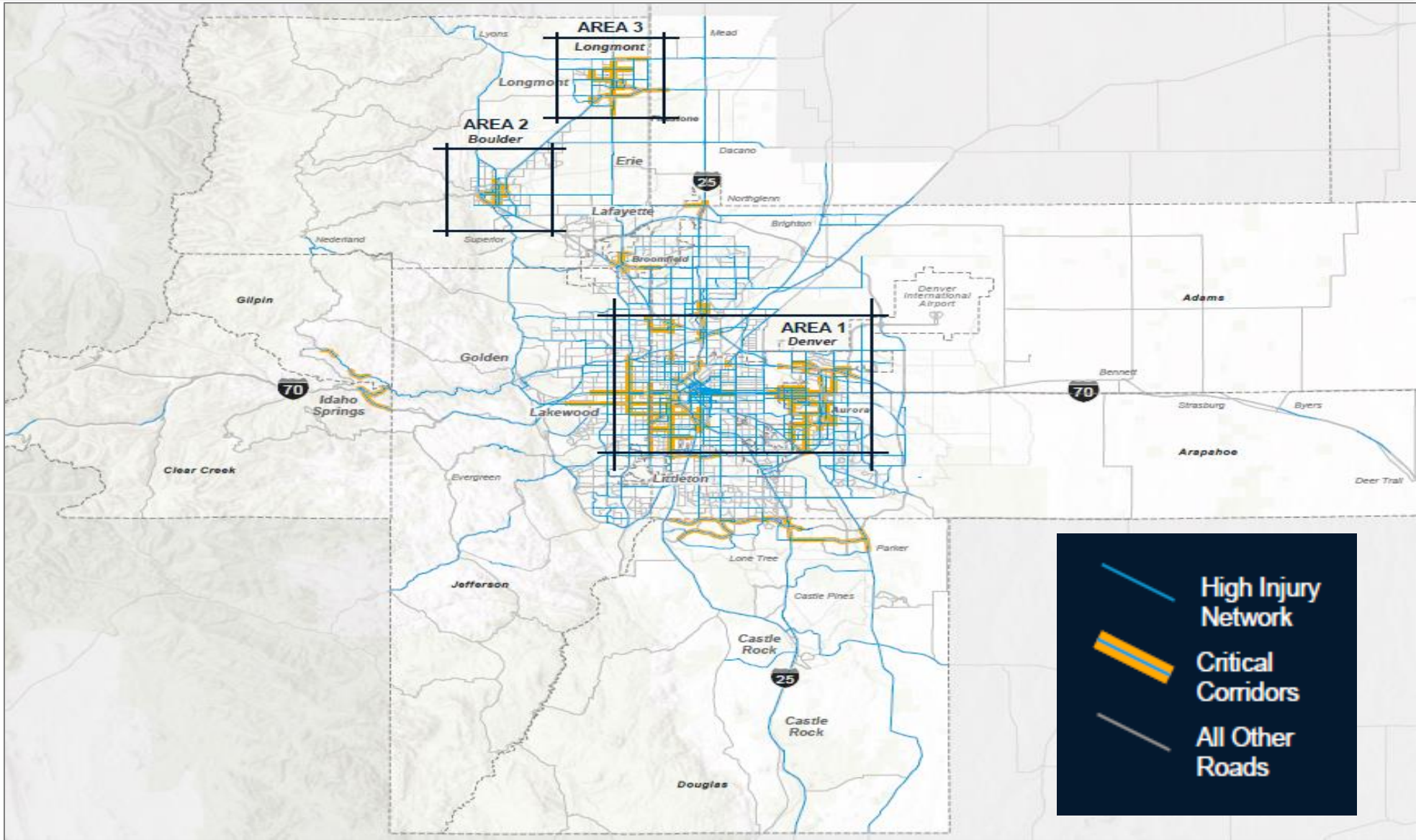
Regional Vision Zero Toolkit – Regional High Injury Network

Regional HIN developed by…

- Identifying the road segments with the highest KSI crash density.
- Connecting the network by adding links based on proximity to high KSI crash density segments and road segment continuity.

Critical Corridors

- Additional analysis done for each county to identify the most dangerous corridors in terms of KSI crashes



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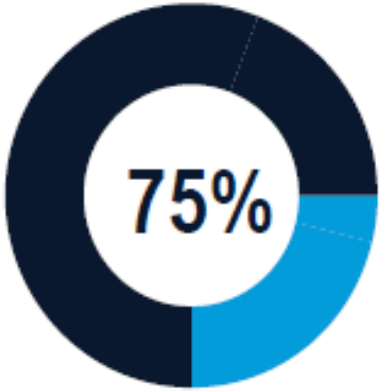
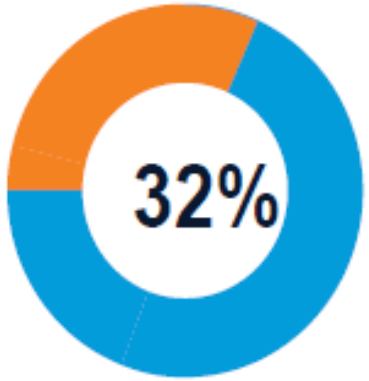
Regional HIN Statistics

Percent of KSI crashes:



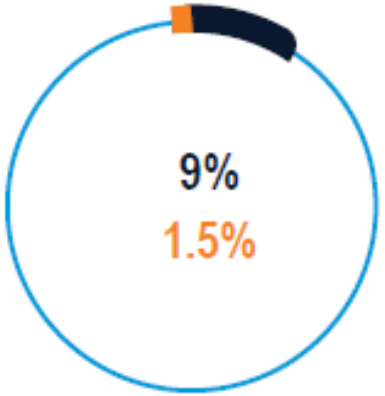
OF FATAL AND SEVERE INJURY CRASHES IN THE DENVER REGION ARE INCLUDED ON THE REGIONAL HIGH INJURY NETWORK



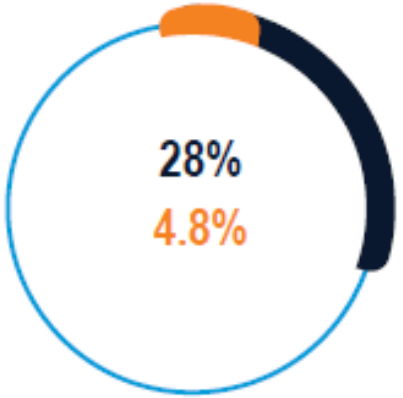
ARE INCLUDED ALONG CRITICAL CORRIDORS

The network includes:

OF ALL ROADS IN THE DENVER REGION



OF HIGHWAYS AND MAJOR ROADS IN THE DENVER REGION



Source: DRCOG-CDOT Crash Database, 2013 - 2017

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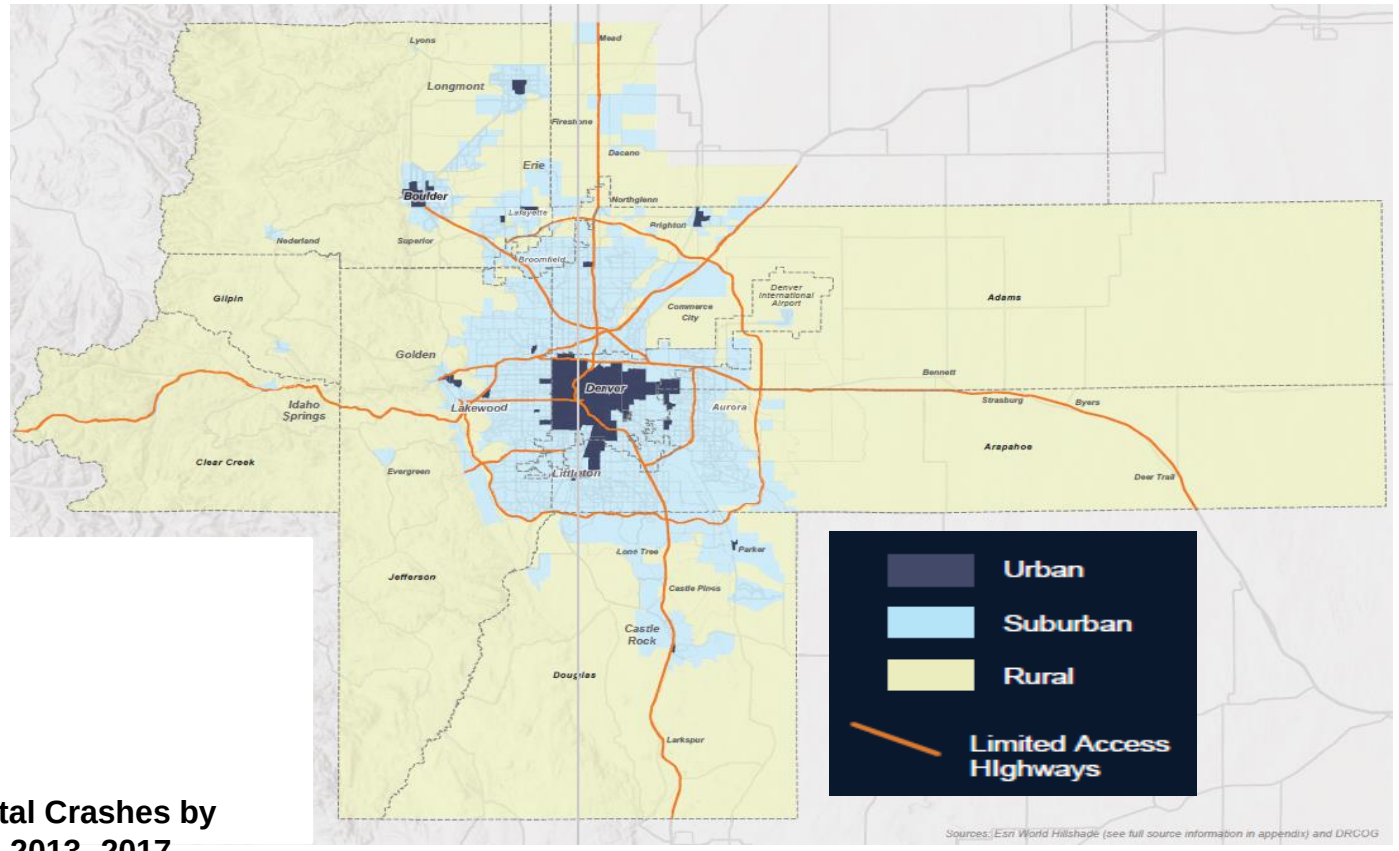
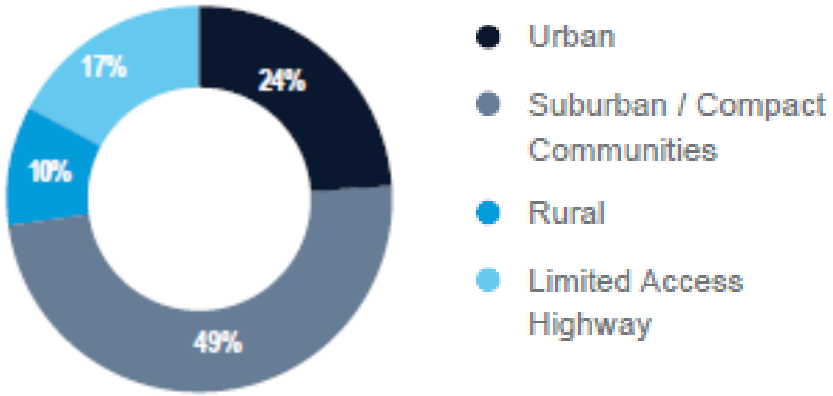
Regional Vision Zero Toolkit – Crash/Behavior Profiles & Area Types

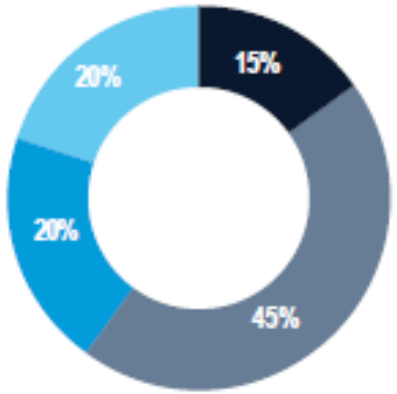
AREA TYPE	DEFINING FEATURES	EXAMPLE LOCATIONS
Urban	• High population/employment density • High density of low-speed (pedestrian-oriented) street intersections • Or, within an existing DRCOG Urban Center	Core Denver neighborhoods, Aurora around Colfax Avenue, Englewood around Broadway, core Boulder neighborhoods, other downtown areas
Suburban/ Compact Communities	• Medium population/employment density	Denver Tech Center, Broomfield, southeast Aurora, Firestone, Idaho Springs
Rural	• Low population/employment density	Clear Creek County (excluding Idaho Springs), eastern Arapahoe County, parts of Boulder County
Limited Access Highways	• Interstates or other limited access state highways or other roads	Interstate 25, Interstate 70, U.S. Route 36 (between Denver and Boulder), Peña Boulevard



Percent of KSI Crashes by Area Type, 2013 -2017



Percent of Fatal Crashes by Area Type, 2013 -2017



Regional Vision Zero Toolkit – Crash/Behavior Profiles & Area Types

Created by analyzing KSI crash data trends for years 2013 through 2017 by area types

Crash Profiles

- Describe the most frequently occurring crash types that result in fatalities or severe injuries in the Denver region
- Describe the specific events that occur in KSI crashes

Behavior Profiles

- Describe human behavior that led to a crash happening

Countermeasures

- *Strategies with a documented crash reduction factor or otherwise recognized as a best practice for addressing certain crash types.*

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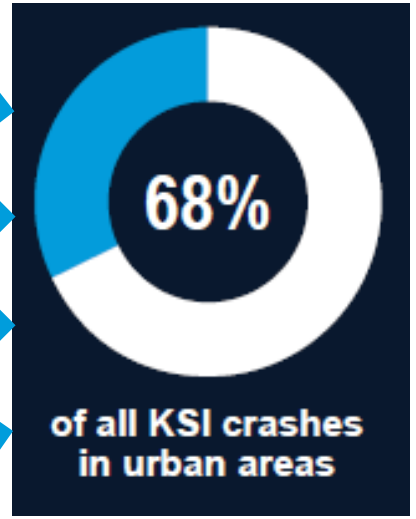
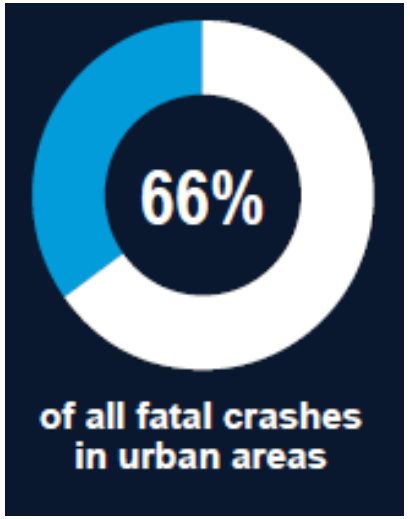
Urban Area Crash Profiles Example

CRASH PROFILES	% KSI IN URBAN AREAS	% FATAL IN URBAN AREAS
Failed to Yield Right-of-Way and Left Turn	35%	20%
Pedestrian-Involved	27%	43%
Bicyclist-Involved	12%	6%
Red Light or Stop Sign Running	12%	8%

4 CRASH PROFILES INCLUDE:





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TAKING ACTION

Taking Action on Regional Vision Zero – Objectives

Improve collaboration between allied agencies

Increase awareness and adoption of Vision Zero

Design and retrofit roadways to prioritize safety

Improve data collection and reporting

Increase funding and resources

Increase legislative support

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Objective 4 – Improve data collection and reporting

ACTION INITIATIVES	SUB-ACTIONS	RESPONSIBILITY	ACTION YEAR
Conduct and prepare crash analysis, including updating crash profiles and the regional High Injury Network.	Analyze crashes to understand high-risk actions, pre-crash activities, and demographics to further build out crash profiles.	DRCOG	2021
	Create a story data platform on the Regional Data Catalog.	DRCOG	2021
	Facilitate training sessions to local jurisdictions on how to download and use the regional crash data for detailed analysis of crash locations in local jurisdictions.	DRCOG CDOT Local Governments	2021
Update publicly available crash database and improve timeliness of fatal and severe injury crash data processing and reporting.	Work with the Colorado Department of Revenue to periodically update the crash form to improve value of data analysis, emphasizing data collection on speed, impairment, distractions and use of emerging mobility options like e-scooters and TNCs at KSI crash locations.	CDOT DOR DRCOG	2020
Establish and deploy a regional or local response team to investigate fatal crashes and evaluate crash locations for safety enhancements.	Create data to track crash investigation findings.	DRCOG CDOT Local Governments Local Police Advocacy Groups	2021
Annually perform posted speed data collection on the regional High Injury Network.	Develop and maintain a database of collected posted speed data.	DRCOG CDOT	2022

How to Stay Engaged

- Participate in the regional Vision Zero Working Group
- Participate in training opportunities
- Collect and analyze local data or work with the regional crash data sets
- Apply for grants
- Join the Vision Zero network

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STEPS TO ADOPTION

May 20th Adoption

- March 17th – RTC informational item / draft review
- March 18th – Board informational item / draft review
- March 19th – 30 day public comment period opens
- March 23rd - TAC informational item / draft review
- April 18th – Comment period closes
- April 27th – TAC Action on final plan
- May 19th – RTC Action on final plan
- May 20th – Board Adoption of final plan

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QUESTIONS?