

**AGENDA
REGIONAL TRANSPORTATION COMMITTEE
Tuesday, November 27, 2018
8:30 a.m.**

**1001 17th St.
1st Fl. Aspen Conference Room**

1. Call to Order
2. Public Comment
3. October 16, 2018 RTC Meeting Summary
(Attachment A)

ACTION ITEMS

4. Discussion on project recommendations for the 2020-2023 Transportation Improvement Program (TIP) Regional Share call for projects.
(Attachment B) Todd Cottrell
5. Discussion on Regional Air Quality Council (RAQC) proposed modeling funding request.
(Attachment C) Robert Spotts
6. Discussion on Fixing America's Surface Transportation (FAST Act) 2019 safety targets.
(Attachment D) Beth Doliboa
7. Discussion on Fixing America's Surface Transportation (FAST Act) transit asset management targets.
(Attachment E) Jacob Riger- Louis Cripps, RTD

INFORMATIONAL ITEMS

8. Briefing on Mobility Choice
(Attachment F) Jacob Riger – Rick Pilgrim, HDR
9. Briefing on 2017 Annual Report on Traffic Congestion in the Denver Region.
(Attachment G) Robert Spotts

ADMINISTRATIVE ITEMS

10. Member Comment/Other Matters
 - 2019 RTC meeting calendar
11. Next Meeting – January 15, 2019
12. Adjournment

Persons in need of auxiliary aids or services, such as interpretation services or assisted listening devices, are asked to contact DRCOG at least 48 hours in advance of the meeting by calling (303) 480-6744.



ATTACH A

ATTACHMENT A

MEETING SUMMARY REGIONAL TRANSPORTATION COMMITTEE Tuesday, October 16, 2018

MEMBERS PRESENT:

Paul Jesaitis (Alternate)	Colorado Department of Transportation
Karen Stuart	Colorado Department of Transportation
Ed Peterson	Colorado Department of Transportation
Douglas Rex	Denver Regional Council of Governments
Ron Rakowsky	Denver Regional Council of Governments
Herb Atchison (Chair)	Denver Regional Council of Governments
Bob Fifer	Denver Regional Council of Governments
David Beacom	Denver Regional Council of Governments
Jeff Kullman	Other
Mizraim Cordero	Other
Mike Silverstein	Regional Air Quality Council
Doug Tisdale	Regional Transportation District
Kate Williams (Alternate)	Regional Transportation District
David Genova	Regional Transportation District
Bob Broom	Regional Transportation District

Others Present:

Jim Dale (Alternate)	Denver Regional Council of Governments
Wynn Shaw (Alternate)	Denver Regional Council of Governments
Ron Papsdorf (Alternate)	Denver Regional Council of Governments
Natalie Menten *	Regional Transportation District
Bill Van Meter (Alternate)	Regional Transportation District

Public: Tim Kirby, CDOT; Jenny Godwin, CU Denver

DRCOG Staff: Todd Cottrell, Jacob Riger, Steve Cook, Beth Doliboa, Brad Calvert, Derrick Webb, Emily Lindsey, Matthew Helfant, Casey Collins

Call to Order

Chair Herb Atchison called the meeting to order at 8:32 a.m. Michael Silverstein was introduced as a new member for Regional Air Quality Council.

Public Comment

There was no public comment.

Summary of September 18, 2018 Meeting

The summary was accepted.

ACTION ITEMS

Discussion on amendments to the 2018-2021 Transportation Improvement Program (TIP).

Todd Cottrell presented the seven proposed amendments.

- **2012-116 Region 4 2013 Flood-Related Projects Pool** (Add funding)
- **2012-118 Region 1 2013 Flood-Related Projects Pool** (Add funding)
- **2016-055 I-25: 120th Ave to SH-7 Managed Lanes** (Add funding)

The following amendments provide clarity to the Wadsworth Blvd widening project from 35th Ave to 48th Ave, by moving existing TIP funds from various CDOT TIP projects and funding sources to the existing Wadsworth Blvd project. Of the \$7,200,000 being added to the Wadsworth Blvd project, only \$500,000 is new funding through this amendment.

- **2007-073 Region 1 Hazard Elimination Pool** (Remove funding)
- **2007-075 Region 1 Traffic Signal Pool** (Remove funding)
- **2007-096 Region 1 Surface Treatment Pool** (Remove pool project and funding)
- **2016-020 Wadsworth Blvd Widening: 35th Ave to 48th Ave** (Add funding)

Ron Rakowsky MOVED to recommend to the Board of Directors the attached amendments to the *2018-2021 Transportation Improvement Program* (TIP). The motion was seconded and passed unanimously.

Discussion on FAST Act performance targets.

Beth Doliboa presented the proposed infrastructure condition and system performance targets, as federally required by the FAST Act. They include 2-year and 4-year targets for NHS bridges by deck area; pavement infrastructure conditions for the interstate system and non-interstate systems; level of travel time reliability for interstate and non-interstate NHS routes; and truck travel time reliability index for the interstate system.

CDOT coordinated with DRCOG to develop statewide targets. DRCOG staff determined it would not be useful for DRCOG to set separate targets for the Denver region, as there are data and methodology limitations. Staff recommended supporting CDOT's targets for all measures applicable to DRCOG.

Tim Kirby, CDOT, presented an overview of CDOT's statewide targets.

The MPO deadline for submitting targets is November 15, 2018. The mid-year review of the first performance period is anticipated in 2020, when CDOT will have an opportunity to adjust 4-year targets, if necessary. The end of first four year performance period is 2022, when CDOT will submit the final performance report, and significant progress determination will be made by FHWA.

Doug Tisdale MOVED to recommend to the Board of Directors the proposed targets for infrastructure condition, system performance and air quality as part of the performance-based planning requirements of the *Fixing America's Surface Transportation* (FAST Act). The motion was seconded and passed unanimously.

Discussion on eligibility and evaluation criteria for the FY 2018 and FY 2019 Station Area Master Plan/Urban Center (STAMP/UC) set-aside.

Derrick Webb presented eligibility and evaluation criteria for use in selecting projects in the upcoming FY 2018 and FY 2019 STAMP/UC call for projects. The total set-aside funding amount available for fiscal years 2018 and 2019 is \$1.4 million (\$1.2 million in FY 2018-FY 2019 plus a \$200,000 rollover from FY 2016- FY 2017).

Mr. Webb reviewed the proposed criteria and noted it is very similar to previous Board-adopted versions that set eligibility and help guide evaluation and selection of proposed studies. The most significant proposed revisions to the previous STAMP/UC criteria are due to anticipated changes to program and contract administration (moving from RTD to CDOT); and a requirement for DRCOG

staff to be involved as a member of the project management team or equivalent group charged with study development.

Doug Tisdale MOVED to recommend to the Board of Directors the attached eligibility and evaluation criteria for the FY18-19 Station Area Master Plan/Urban Center funding. The motion was seconded and passed unanimously.

INFORMATIONAL ITEMS

Update on 2020-2023 Transportation Improvement Program (TIP) Regional Share project submittals. Chair Atchison noted 20 applications were received for the 2020-2023 TIP Regional Share call for projects that closed on September 21. He noted \$109.2 million was requested for the \$32.5 million in available Regional Share funding. Staff expects to bring the Regional Share recommendations to the RTC in November.

ADMINISTRATIVE ITEMS

The meeting ended at 9:04 a.m. The next meeting is scheduled for November 27, 2018.

ATTACH B

ATTACHMENT B

To: Chair and Members of the Regional Transportation Committee

From: Todd Cottrell, Senior Transportation Planner
303 480-6737 or tcottrell@drcog.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Action	4

SUBJECT

2020-2023 *Transportation Improvement Program* (TIP) Regional Share funding allocation.

PROPOSED ACTION/RECOMMENDATIONS

The Regional Share TIP Project Review Panel recommends the proposed Regional Share 2020-2023 TIP projects and waiting list to be included within the draft 2020-2023 TIP.

ACTION BY OTHERS

[November 19, 2018](#) – TAC recommended approval

SUMMARY

Applications for the 2020-2023 TIP Regional Share call for projects were received by DRCOG from subregional forums, RTD, and CDOT on or before September 21. Twenty projects totaling \$109,286,510 were submitted for \$31,955,000 (previously estimated at \$32,500,000) in available DRCOG-allocated Regional Share funds. These totals do not include the CDOT request for affirmation of DRCOG's previous commitment of \$25 million for the Central 70 project.

After DRCOG staff evaluated and scored the submittals, the Regional Share TIP Project Review Panel met to review the scores and identify the top tier of projects totaling approximately twice the amount of available funds. The panel consists of one technical staff representative from each of the eight subregions, one CDOT representative, one RTD representative, and three regional subject matter experts.

The panel recommends funding eight projects. The panel, recognizing the difficulty of comparing different project types against each other, developed a process whereby they separated the submittal list into studies, preconstruction projects and construction projects. Ultimately, the panel is recommending the two highest scoring studies, the top scoring preconstruction project and fully funding the construction projects in score order (except Denver's 16th Street Mall, which will receive partial funding) until the funds are exhausted.

The Review Panel also developed a waiting list of projects based on the following:

- Fund the remaining balance of the 16th Street Mall
- Fund Tier 1 projects first (Tier 1 projects are those that equal approximately 200% of the funding level of the Regional Share)
- Fund projects in score order
- Ties in scoring were handled by:
 - funding project type in this order: studies, preconstruction, and construction projects, then
 - highest score in regional significance

Projects recommended for funding and the ranked order waiting list can be found as Attachment 1.

PREVIOUS DISCUSSIONS/ACTIONS

[July 17, 2018](#) – RTC recommended approval of the 2020-2023 Policy on TIP Preparation
[September 18, 2108](#) – RTC recommended approval of the Regional Share Project Review Panel
[October 16, 2018](#) – RTC updated on Regional Share project applications received.

PROPOSED MOTION

Move to recommend to the Board of Directors Regional Share projects and ranked order waiting list to be included in the draft 2020-2023 TIP with Regional Share funds.

ATTACHMENTS

1. 2020-2023 Regional Share project recommendation
2. Link - [2020-2023 Regional Share project applications](#)

ADDITIONAL INFORMATION

If you need additional information please contact Douglas W. Rex, Executive Director, at 303 480-6701 or drex@drcog.org; or Todd Cottrell, Senior Transportation Planner, Transportation Planning and Operations, at 303-480-6737 or tcottrell@drcog.org.

TIP Regional Share Funding Recommendation

\$31,955,000 Available

Subregional Forum	Project Sponsor	Project Name	Regional Share Funding Request	Total DRCOG Weighted Score H=3, M=2, L=1	Tier	Project Activity	Regional Share Funding Level	Project Highlights	Waiting List Ranking
Boulder	Boulder County	SH-119 BRT Enhancements	\$ 8,150,000	2.5	1	Construction	\$ 8,150,000	1) Center busway in Longmont on Coffman St between 1st and 9th, 2) transit bypass lanes on SH119 at SH52, and 3) Bus Access Transit (BAT) lanes in Boulder on 28th St between Iris and Valmont.	
Denver	Denver	16th St Mall Rehabilitation	\$ 20,000,000	2.5	1	Construction	\$ 9,071,916	Reconstruct with new granite paver system, install bulb-outs, landscaping, realign transitway and sidewalks.	
Jefferson	Jefferson County	Peaks to Plains Trail - SH-6 Tunnel 1 to Huntsman Gulch	\$ 4,000,000	2.5	1	Construction	\$ 4,000,000	Build a 3-mile 10-foot ADA path along SH-6, including pedestrian bridges, parking lots, and creek access points.	
Arapahoe	Arapahoe County	High Plains Trail/Cherry Creek Trail Connector	\$ 2,000,000	2.4	1	Construction	\$ 2,000,000	New trail connecting existing High Plains and Cherry Creek Trails, including a grade separation over Parker Road.	
RTD	RTD	Mobility as a Service: Implementing an Open-Ticketing Platform	\$ 1,813,084	2.4	1	Construction	\$ 1,813,084	1) Upgrade back-end administration of fare payment system to account-based, and 2) install new fare validators on all RTD revenue vehicles.	
RTD	RTD	RTD Transportation Transformation Comprehensive Plan	\$ 1,420,000	2.3	1	Study	\$ 1,420,000	Study will provide a vision for base transit system and maximize FasTracks investments.	
Arapahoe	Arapahoe County	US-85 PEL Study	\$ 1,500,000	2.2	1	Study	\$ 1,500,000	Planning and Environmental Linkages study on US-85, between C-470 and Alameda Ave/I-25	
Broomfield	Broomfield	SH-7 Preliminary and Environmental Engineering	\$ 4,000,000	2.2	1	Preconstruction	\$ 4,000,000	Develop preliminary and environmental engineering, and identify ROW and utility needs on SH-7 from Folsom St in Boulder to US-85 in Brighton.	
							\$ 31,955,000		
Denver	Denver	16th St Mall Rehabilitation (remaining unfunded balance)	\$ 10,928,084	2.5	1	Construction			1
Denver	Denver	Broadway Station and I-25 Safety and Access Improvements	\$ 20,000,000	2.3	1	Construction			2
Adams	Commerce City	I-270 Corridor EA and Vasquez Blvd Construction	\$ 6,000,000	2.2	1	Construction			3
Jefferson	Wheat Ridge	Ward Rd and BNSF Grade Separation	\$ 1,000,000	2.0	1	Preconstruction			4
Boulder	Boulder County	US-287 BRT Feasibility and Corridor Safety Study	\$ 250,000	1.9	1	Study			5
Douglas	Lone Tree	I-25/Lincoln Interchange Traffic and Mobility Improvements	\$ 1,000,000	1.9	1	Preconstruction			6
Arapahoe	Englewood	US-285 Congestion Management and Operations Study	\$ 900,000	1.8	1	Study			7
Denver	Denver	I-25 Valley Highway Phase 2.0 (I-25 and Alameda)	\$ 15,000,000	2.0	2	Construction			8
Jefferson	Wheat Ridge	Wadsworth Blvd Widening: 48th Ave to I-70	\$ 3,300,000	2.0	2	Construction			9
Adams	Commerce City	US-85/120th Ave Interchange: Phase 1	\$ 8,819,426	1.9	2	Preconstruction			10
Broomfield	Broomfield	US-36 Bikeway Realignment and Safety Improvements	\$ 1,234,000	1.9	2	Construction			11
Adams	Bennett	I-70/SH79 Interchange Operational Improvements	\$ 750,000	1.7	2	Construction			12
Total Requested			\$ 101,136,510						
CDOT	CDOT	Central 70 (Part 2 of DRCOG's previous commitment)	\$ 25,000,000						

ATTACH C

ATTACHMENT C

To: Chair and Members of the Regional Transportation Committee

From: Robert Spotts, Senior Transportation Planner
303 480-5626 or rspotts@drco.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Action	5

SUBJECT

The Regional Air Quality Council (RAQC) is requesting the addition of \$125,000 of STP-Metro funds in FY2019 to meet an accelerated schedule for ozone modeling requirements in the Denver region, reducing their set-aside funding from FY2020 in the draft *2021-2023 Transportation Improvement Program (TIP)* by the same amount.

PROPOSED ACTION/RECOMMENDATIONS

DRCOG staff recommends approval of the proposed TIP amendment allowing the RAQC to begin critical ozone modeling operations.

ACTION BY OTHERS

[November 19, 2018](#) – TAC recommended approval

SUMMARY

The RAQC is the lead air quality planning agency for the Denver Metro area and the lead air quality planning agency for ozone in 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 the causes and solutions for ozone pollution in close coordination 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) incorporates 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.

Ground-level ozone is formed when emissions from everyday items and industrial sources combine and "cook" in the heat and sunlight. Common sources of ozone forming emissions include gasoline and diesel-powered vehicles and lawn equipment, local industry, power plants, oil and gas production, and household paints, stains, and solvents.

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.

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 will likely result in a reclassification to a 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.

Because of the failure to attain the 2008 standard in 2018 and the recent court decision preventing the EPA from revoking the 2008 ozone standard, a Serious Area SIP needs to be completed by the end of 2019 for AQCC approval in 2020. This will require developing new emissions inventories and Attainment Demonstration modeling for 2020, which had not been anticipated in the existing budget. Funds have already been set aside for RAQC ozone modeling and strategy analysis in the draft *2020-2023 Transportation Improvement Program (TIP)*. Adding funds in FY2019 will initiate an administrative TIP amendment to add \$125,000 of STP-Metro funds to TIP project *2016-058 Ozone State Implementation Plan (SIP) Modeling Study* and reduce the set aside funds in FY2020 in the draft *2020-2023 TIP* by the same amount. DRCOG currently has funds available to carry out the advance due to remaining balances from project returns.

The RAQC will present a summary of the 2018 ozone season and the regulatory requirements of being nonattainment for multiple ozone standards.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

Move to recommend to the Board of Directors adding \$125,000 of STP-Metro in FY2019 to TIP project 2016-058, reducing the total set-aside funds for air quality modeling in FY2020 in the draft *2020-2023 TIP* by the same amount.

ATTACHMENTS

1. RAQC presentation
2. Link: [Regional Air Quality Council](#)

ADDITIONAL INFORMATION

If you need additional information, please contact Robert Spotts, Senior Transportation Planner, Transportation Planning and Operations at 303480-5626 or rspotts@drcog.org.

Ozone Planning Update

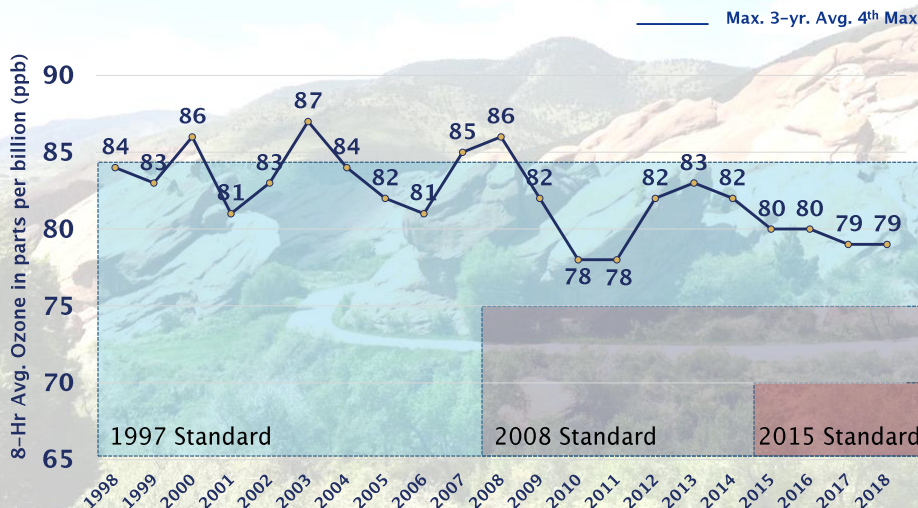
DRCOG – Regional Transportation Committee

November 27, 2018

Amanda Brimmer, E.I.T.
Technical Program Manager



8-Hour Ozone Trends and Federal Standards 3-Year Design Values in the Denver Metro/North Front Range

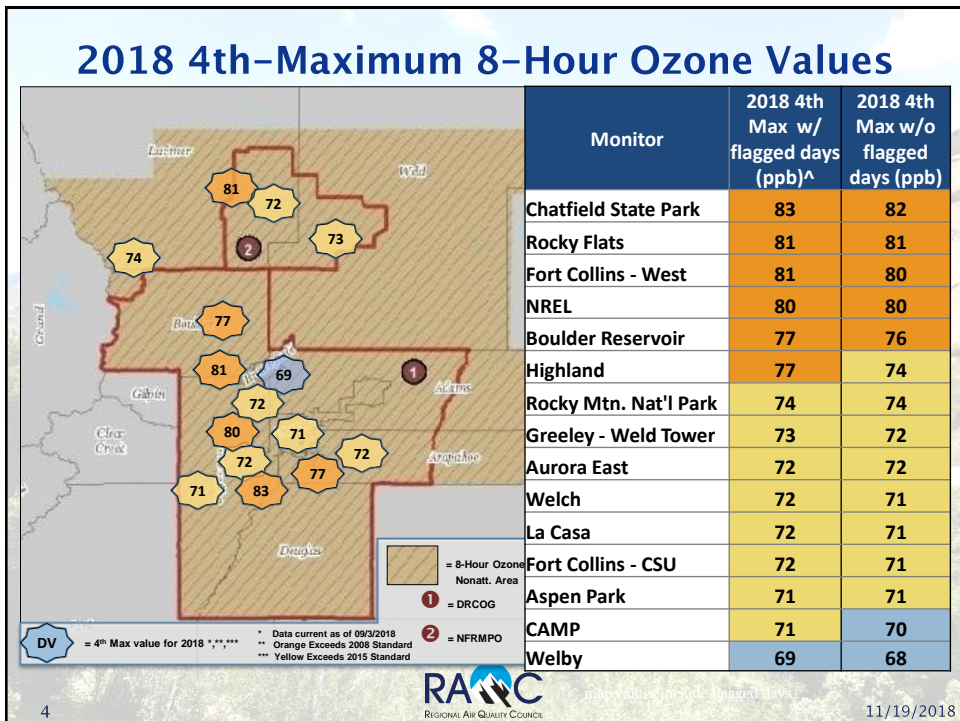
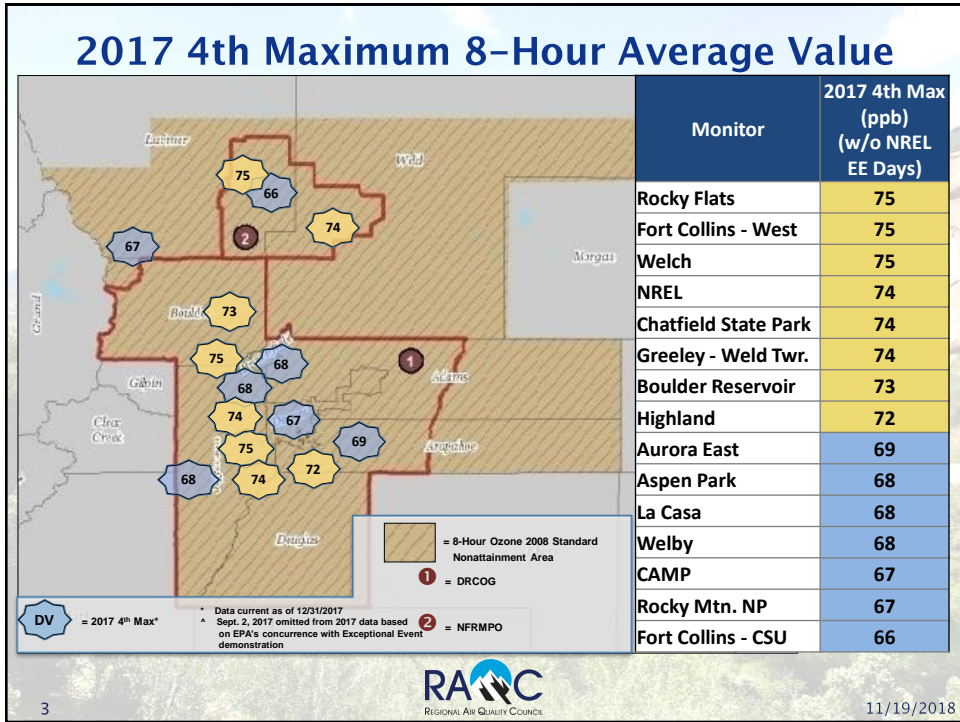


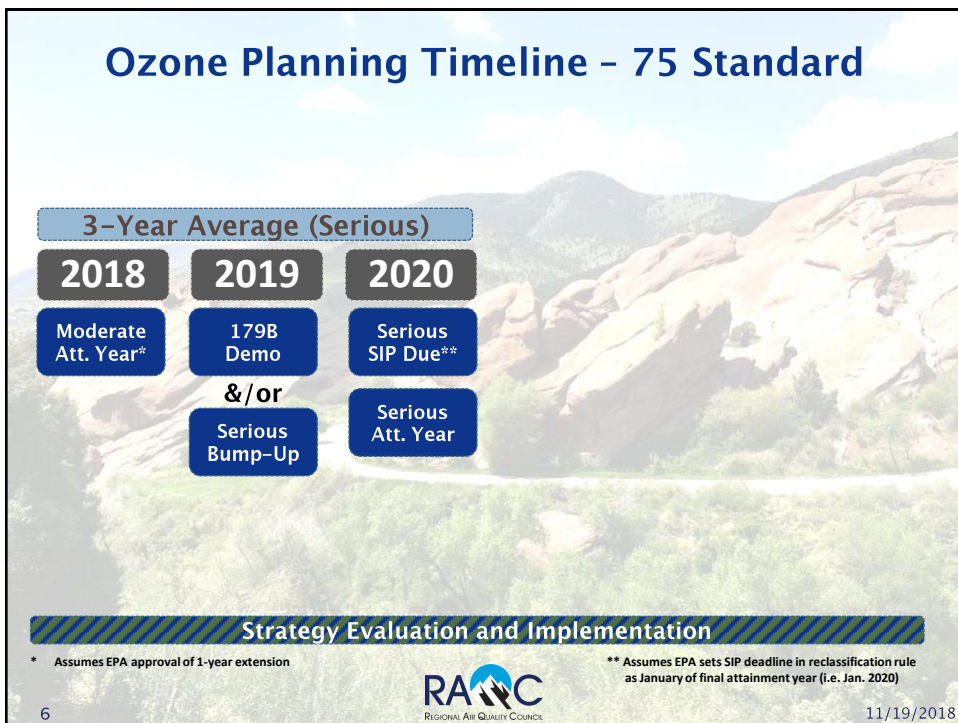
8-Hour Ozone Standard: Based on a three-year average of the annual fourth-highest daily 8-hour maximum ozone concentration. Current as of 9/4/15.

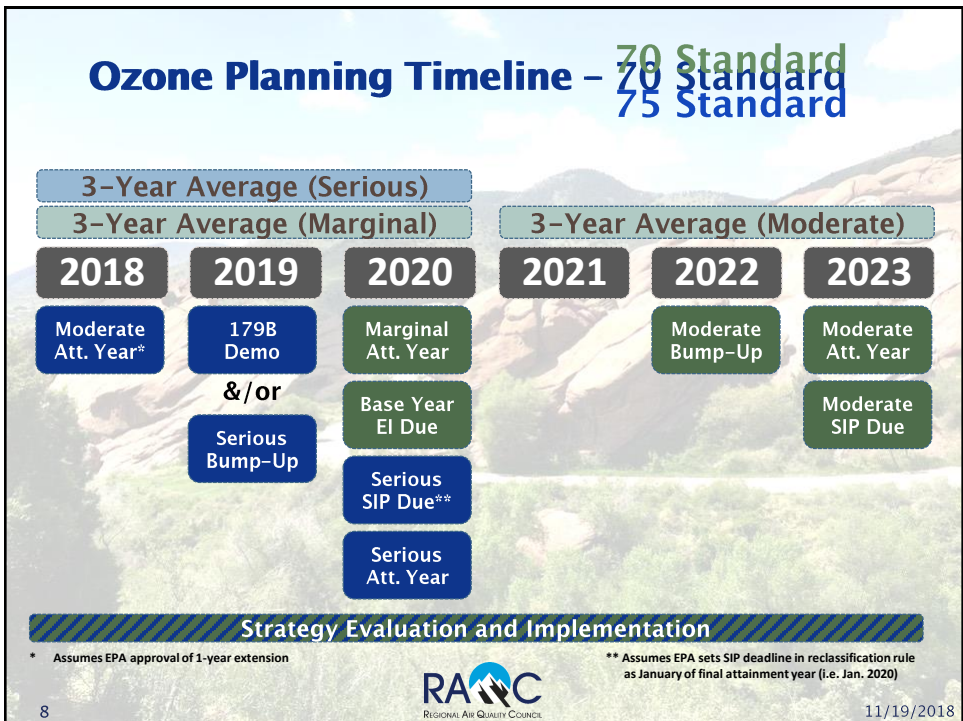
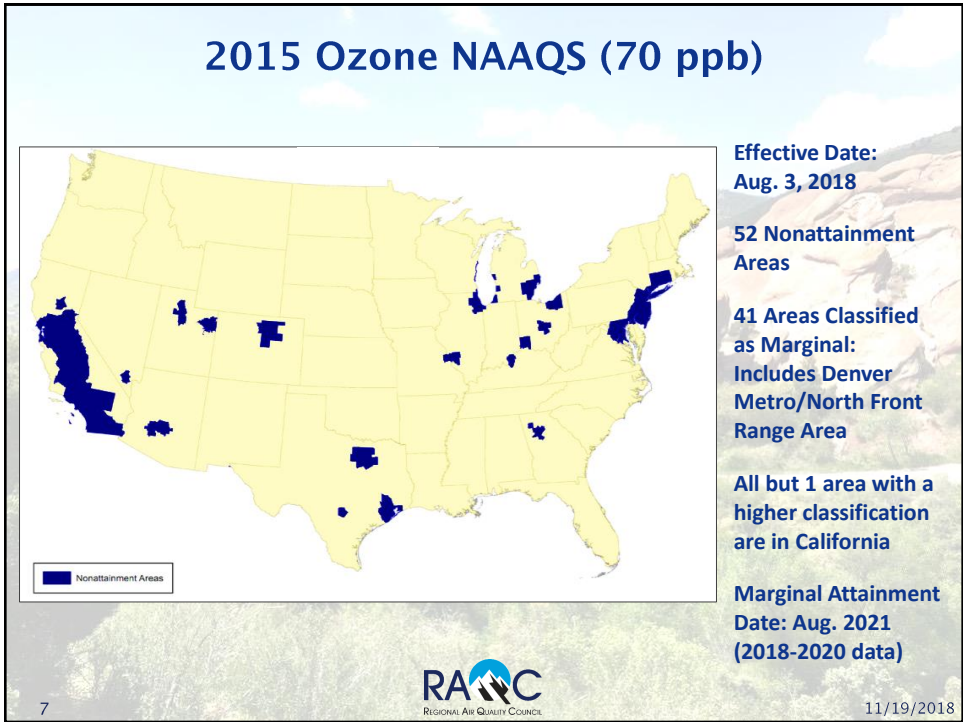


11/19/2018

ATTACHMENT 1







Next Steps – Ozone Planning

Modeling and Emissions Inventory Development

- Base and future year emissions inventory development for 2015 standard
- New base year modeling platform and future year modeling for 2015 standard
- Potential Serious Area SIP development including 2020 Attainment Demonstration modeling on 2011 platform
- “What if” photochemical modeling scenarios to evaluate strategies
- Analysis of impact of international emissions

Strategy Analyses

- Low Reid Vapor Pressure (RVP) gasoline fuels study
- Low Emission Vehicles (LEV)/Zero Emission Vehicles (ZEV) standards
- Commercial lawn and garden equipment
- Low-volatile organic compounds (VOC) architectural and industrial maintenance (AIM) coatings and consumer products
- Additional oil and gas and stationary source control options

Funding Needs

	DRCOG (FY16-19)	DRCOG (FY20-23)	NFRMPO (FY22)	CDPHE (FY20-22)	RAQC	TOTAL
Current Funding Available	\$263,000	\$0	\$0	\$25,000	\$19,000	\$307,000
Anticipated Funding	\$0	\$215,000	\$25,000	\$118,000	\$0	\$358,000
TOTALS	\$263,000	\$215,000	\$25,000	\$143,000	\$19,000	\$665,000

	DRCOG (FY16-19)	DRCOG (FY20-23)	NFRMPO (FY22)	CDPHE (FY20-22)	RAQC	TOTAL
75 ppb Standard	\$28,000	\$53,000	\$0	\$75,000	\$19,000	\$175,000
70 ppb Standard	\$235,000	\$162,000	\$25,000	\$68,000	\$0	\$490,000
TOTALS	\$263,000	\$215,000	\$25,000	\$143,000	\$19,000	\$665,000

	DRCOG (FY16-19)	DRCOG (FY20-23)	NFRMPO (FY22)	CDPHE (FY20-22)	RAQC	TOTAL
75 ppb-by end of 2019	\$28,000	\$53,000	\$0	\$75,000	\$19,000	\$175,000
70 ppb-by end of 2019	\$235,000	\$72,000	\$0	\$0	\$0	\$307,000
Subtotal	\$263,000	\$125,000	\$0	\$75,000	\$19,000	\$482,000
70 ppb- in 2020+	\$0	\$90,000	\$25,000	\$68,000	\$0	\$183,000
TOTALS	\$263,000	\$215,000	\$25,000	\$143,000	\$19,000	\$665,000

Requesting \$125K advanced to 2019; FY20-23 funds reduced to \$475K.

Contact Information

Amanda Brimmer
Technical Program Manager
abrimmer@raqc.org
(303) 629-5450 x 240



ATTACH D

ATTACHMENT D

To: Chair and Members of the Regional Transportation Committee

From: Beth Doliboa, Transportation Planner
303-480-6747 or bdoliboa@drcog.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Action	6

SUBJECT

Setting 2019 safety targets as part of the performance-based planning requirements of the *Fixing America's Surface Transportation* (FAST Act).

PROPOSED ACTION/RECOMMENDATIONS

Staff recommends setting the proposed 2019 safety targets for the DRCOG Transportation Management Area.

ACTION BY OTHERS

[November 19, 2018](#) – TAC recommended approval

SUMMARY

The FAST Act requires state DOTs and MPOs to annually set targets and report on progress towards achieving those targets for several topics in support of a performance-based approach to transportation planning and programming. These topics include safety, infrastructure (pavement and bridge condition), system performance, and transit asset management. DRCOG has until February 2019 to set and report its 2019 safety targets to CDOT. The proposed 2019 targets are:

Safety Measures	2019 Targets (2015-2019 Five Year Averages)
• Number of fatalities	256
• Rate of fatalities (<i>per million VMT</i>)	0.93
• Number of serious injuries	1,935
• Rate of serious injuries (<i>per million VMT</i>)	6.97
• Number of combined non-motorized fatalities and serious injuries	344

The proposed fatality-related safety targets are based on the “Metro Vision” methodology and serious injury-related targets are based on the “hold the line” methodology used to set the 2018 targets last year. At the November RTC meeting, staff will review the proposed 2019 safety targets and methodologies. As a reminder, FAST Act safety targets are prescribed by federal regulations to be short-term and pragmatic. Accordingly, staff will also provide an overview of DRCOG’s upcoming Vision Zero Action Plan.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

Move to recommend to the Board of Directors the proposed 2019 safety targets for the DRCOG Transportation Management Area as required by the FAST Act.

ATTACHMENT

1. Staff presentation

ADDITIONAL INFORMATION

If you need additional information, please contact Beth Doliboa, Transportation Planner, at 303-480-5647 or bdoliboa@drcog.org.



Presented by:
Beth Doliboa

RTC-November 27, 2018

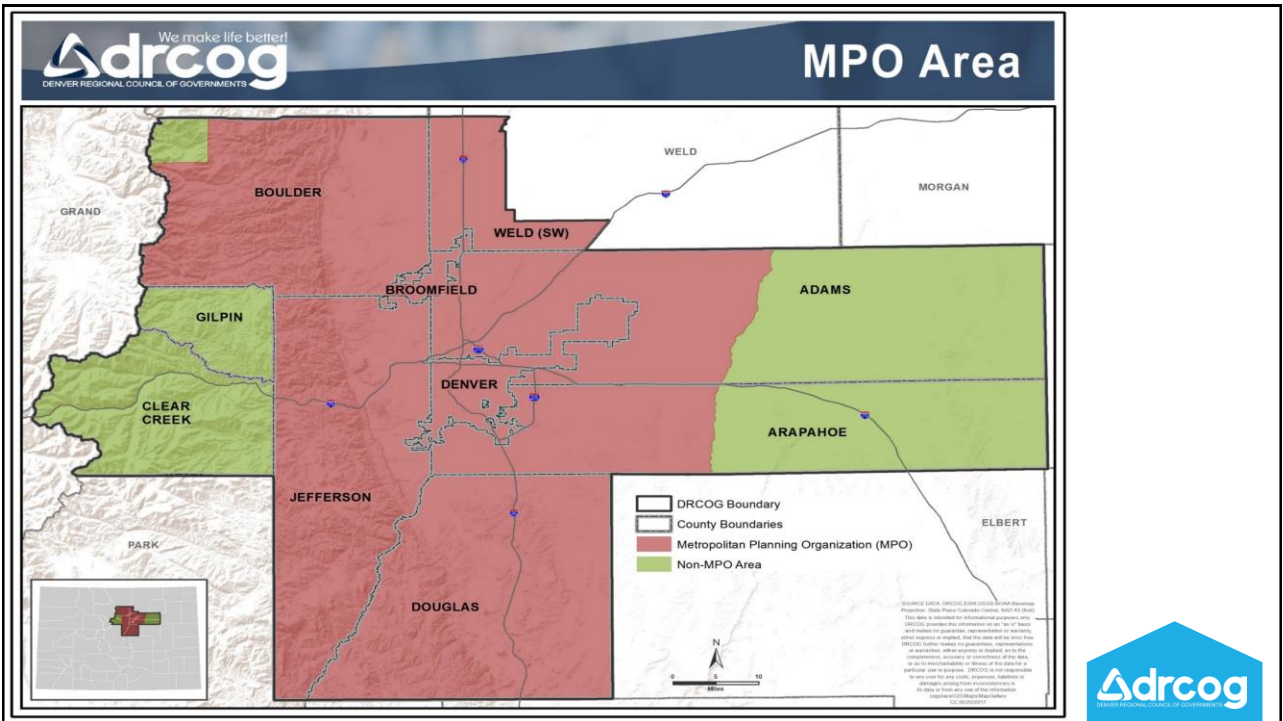
FAST Act 2018 Safety Target Progress and Recommended 2019 Safety Targets





Annual Safety Target Setting

Measure Area	Performance Measures
Safety	<ul style="list-style-type: none"> • Number of fatalities • Fatalities per million vehicle miles traveled • Number of serious injuries • Serious injuries per million vehicle miles traveled • Number of non-motorized fatalities and non-motorized serious injuries



ATTACHMENT 1



2018 Safety Targets Review

2018 SAFETY TARGETS (2014-2018 Five Year Average)		METHODOLOGY	TARGET
1	DRCOG FATALITIES	METRO VISION	242
2	DRCOG FATALITY RATE PER 100 MILLION VMT	METRO VISION	0.90
3	DRCOG SERIOUS INJURIES	HOLD THE LINE	1,948
4	DRCOG SERIOUS INJURY RATE PER 100 MILLION VMT	HOLD THE LINE	7.20
5	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES	METRO VISION (fatalities) + HOLD THE LINE (serious injuries)	59 + 287 = 346



2018 Fatality and Fatality Rate Target Setting Methodology Recap

“METRO VISION” SAFETY TARGET SETTING METHODOLOGY

Regional Objective 5: Operate, manage and maintain a safe and reliable transportation system.

Performance Measures

Measure	Where are we today? (Baseline)	Where do we want to be? (2040 Target)
Non-single occupant vehicle (Non-SOV) mode share to work	25.1 percent (2014)	35.0 percent
Daily vehicle miles traveled (VMT) per capita	25.5 daily VMT per capita (2010)	10.0 percent decrease from 2010
Average travel time variation (TTV) (peak vs. off-peak)	1.22 (2014)	Less than 1.30
Daily person delay per capita	6 minutes (2014)	Less than 10 minutes
Number of traffic fatalities	185 (2014)	Fewer than 100 annually

DRCOG TMA Fatalities	DRCOG TMA Fatalities 5 Year Moving Average	Year	DRCOG TMA Fatality Rate	DRCOG TMA Fatality Rate 5 Year Moving Average
183	167	2014	0.73	0.71
229	180	2015	0.91	0.76
274	204	2016	1.01	0.82

267	224	2017	0.96	0.87
259	242	2018	0.91	0.90
252	256	2019		
245	259	2020		
238	252	2021		
230	245	2022		
223	238	2023		
216	230	2024		
208	223	2025		
201	216	2026		
194	208	2027		
187	201	2028		
179	194	2029		
172	187	2030		
165	179	2031		
157	172	2032		
150	165	2033		
143	157	2034		
135	150	2035		
128	143	2036		
121	135	2037		
114	128	2038		
106	121	2039		
99	114	2040		

64% REDUCTION TO HIT 2040 TARGET



ATTACHMENT 1

Progress towards 2018 Fatality and Fatality Rate Targets

2018 Fatality and Fatality Rate Targets

DRCOG TMA Fatalities	DRCOG TMA Fatalities 5 Year Moving Average	Year	DRCOG TMA Fatality Rate	DRCOG TMA Fatality Rate 5 Year Moving Average
183	167	2014	0.73	0.71
229	180	2015	0.91	0.76
274	204	2016	1.01	0.82
267	224	2017	0.96	0.87
259	242	2018	0.91	0.90
252	256	2019		
245	259	2020		
238	252	2021		
230	245	2022		
223	238	2023		
216	230	2024		
208	223	2025		
201	216	2026		
194	208	2027		
187	201	2028		
179	194	2029		
172	187	2030		
165	179	2031		
157	172	2032		
150	165	2033		
143	157	2034		
135	150	2035		
128	143	2036		
121	135	2037		
114	128	2038		
106	121	2039		
99	114	2040		

64% REDUCTION TO HIT 2040 TARGET

Progress Towards

2018 Fatality and Fatality Rate Targets

DRCOG TMA Fatalities	DRCOG TMA Fatalities 5 Year Moving Average	Year	DRCOG TMA Fatality Rate	DRCOG TMA Fatality Rate 5 Year Moving Average
183	167	2014	0.73	0.71
229	180	2015	0.91	0.76
274	204	2016	1.01	0.82
264	223	2017	0.95	0.87



Recommended 2019 Fatality and Fatality Rate Target

"METRO VISION" SAFETY TARGET SETTING METHODOLOGY

Regional Objective 5: Operate, manage and maintain a safe and reliable transportation system.

Performance Measures

Measure	Where are we today? (Baseline)	Where do we want to be? (2040 Target)
Non-single occupant vehicle (Non-SOV) mode share to work	25.1 percent (2014)	35.0 percent
Daily vehicle miles traveled (VMT) per capita	25.5 daily VMT per capita (2010)	10.0 percent decrease from 2010
Average travel time variation (TTV) (peak vs. off-peak)	1.22 (2014)	Less than 1.30
Daily person delay per capita	6 minutes (2014)	Less than 10 minutes
Number of traffic fatalities	185 (2014)	Fewer than 100 annually

62% REDUCTION TO HIT 2040 TARGET

DRCOG TMA Fatalities	DRCOG TMA Fatalities 5 Year Moving Average	Year	DRCOG TMA Fatality Rate	DRCOG TMA Fatality Rate 5 Year Moving Average
229	180	2015	0.91	0.76
274	204	2016	1.01	0.82
264	223	2017	0.95	0.87
259	242	2018	0.91	0.90
252	256	2019	0.85	0.93
245	259	2020		
238	252	2021		
230	245	2022		
223	238	2023		
216	230	2024		
208	223	2025		
201	216	2026		
194	208	2027		
187	201	2028		
179	194	2029		
172	187	2030		
165	179	2031		
157	172	2032		
150	165	2033		
143	157	2034		
135	150	2035		
128	143	2036		
121	135	2037		
114	128	2038		
106	121	2039		
99	114	2040		

Why 5 Year Moving Average is Increasing

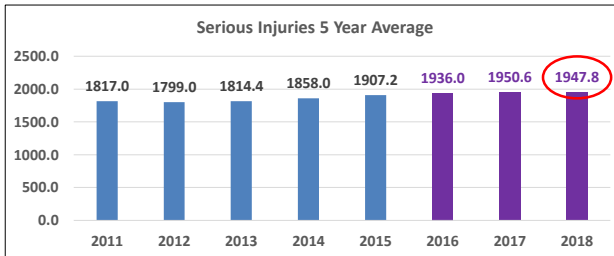
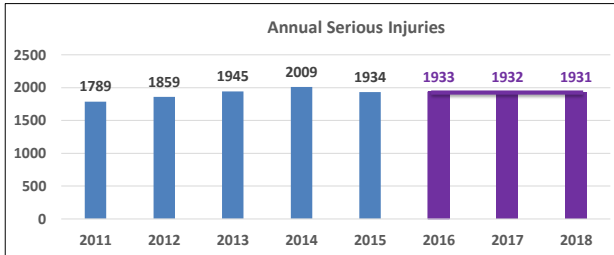
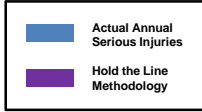
Year	DRCOG TMA Fatalities	Year	DRCOG TMA Fatalities
2014	183	2015	229
2015	229	2016	274
2016	274	2017	264
2017	264	2018	259
2018	259	2019	252



ATTACHMENT 1

2018 Serious Injury and Serious Injury Rate Target Setting Methodology Recap

3. SERIOUS INJURIES - 5 Year Moving Average



Year	DRCOG TMA Serious Injuries	DRCOG TMA SI 5 Year Moving Average	DRCOG TMA Serious Injury Rate	DRCOG TMA SI Rate 5 Year Moving Average
2011	1789	1817	7.53	7.55
2012	1859	1799	7.73	7.49
2013	1945	1814	7.92	7.52
2014	2009	1858	7.99	7.63
2015	1934	1907	7.39	7.71
2016	1933	1936	7.14	7.63
2017	1932	1951	6.94	7.48
2018	1931	1948	6.75	7.20



Progress Towards 2018 Serious Injury and Serious Injury Rate Targets and Recommended 2019 Serious Injury and Serious Injury Rate Targets

2018 Serious Injury and Serious Injury Rate Targets					Progress Towards 2018 Serious Injury and Serious Injury Rate Targets					Staff Recommended 2019 Serious Injury and Serious Injury Rate Targets				
Year	DRCOG Serious Injuries	DRCOG SI 5 Year Moving Average	DRCOG Serious Injury Rate	DRCOG SI Rate 5 Year Moving Average	Year	DRCOG Serious Injuries	DRCOG SI 5 Year Moving Average	DRCOG Serious Injury Rate	DRCOG SI Rate 5 Year Moving Average	Year	DRCOG Serious Injuries	DRCOG SI 5 Year Moving Average	DRCOG Serious Injury Rate	DRCOG SI Rate 5 Year Moving Average
2011	1789	1817	7.53	7.55	2011	1789	1817	7.53	7.55	2011	1789	1817	7.53	7.55
2012	1859	1799	7.73	7.49	2012	1859	1799	7.73	7.49	2012	1859	1799	7.73	7.49
2013	1945	1814	7.92	7.52	2013	1945	1814	7.92	7.52	2013	1945	1814	7.92	7.52
2014	2009	1858	7.99	7.63	2014	2009	1858	7.99	7.63	2014	2009	1858	7.99	7.63
2015	1934	1907	7.39	7.71	2015	1934	1907	7.39	7.71	2015	1934	1907	7.39	7.71
2016	1933	1936	7.14	7.63	2016	1948	1939	7.20	7.65	2016	1948	1939	7.20	7.65
2017	1932	1951	6.94	7.48	2017	1932	1954	6.97	7.50	2017	1932	1954	6.97	7.50
2018	1931	1948	6.75	7.20	2018	1931	1951	6.75	7.26	2018	1931	1951	6.75	7.26
						+15	+3	+0.06	+0.02	2019	1930	1935	6.54	6.97



ATTACHMENT 1

2018 Target Non-Motorized Fatality and Serious Injury Target Setting Methodology Recap

METRO VISION METHODOLOGY FOR NON-MOTORIZED FATALITIES

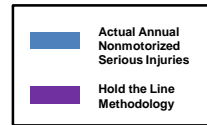
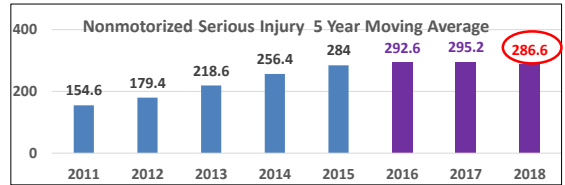
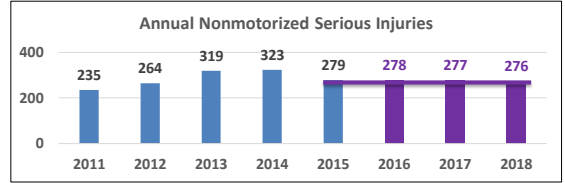
DRCOG TMA Fatalities	DRCOG TMA Fatalities 5 Year Moving Average	Year
183	167	2014
229	180	2015
274	204	2016

DRCOG Bike/Ped TMA Fatalities	DRCOG Bike/Ped TMA Fatalities 5 Year Moving Average	Year
49	42	2014
51	47	2015
67	53	2016

267	224	2017
259	242	2018
252	256	2019
245	259	2020
238	252	2021
230	245	2022
223	238	2023
216	230	2024
208	223	2025
201	216	2026
194	208	2027
187	201	2028
179	194	2029
172	187	2030
165	179	2031
157	172	2032
150	165	2033
143	157	2034
135	150	2035
128	143	2036
121	135	2037
114	128	2038
106	121	2039
99	114	2040

65	54	2017
63	59	2018
62	62	2019
60	63	2020
58	62	2021
56	60	2022
55	58	2023
53	56	2024
51	55	2025
49	53	2026
48	51	2027
46	49	2028
44	48	2029
42	46	2030
40	44	2031
39	42	2032
37	40	2033
35	39	2034
33	37	2035
32	35	2036
30	33	2037
28	32	2038
26	30	2039
24	28	2040

HOLD THE LINE METHODOLOGY FOR NON-MOTORIZED SERIOUS INJURIES



59 + 287 = 346



Progress Towards 2018 Non-Motorized Fatalities and Serious Injuries Targets and Recommended 2019 Non-Motorized Fatalities and Serious Injuries Targets

2018 Non-Motorized Fatality and Serious Injury Targets

Progress Towards 2018 Non-Motorized Fatality and Serious Injury Targets

Year	DRCOG Non-motorized Bike/Ped Fatalities	DRCOG Non-motorized Bike/Ped Fatalities 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Serious Injuries	DRCOG Non-motorized Bike/Ped Serious Injury 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Fatalities and Serious Injuries 5 Year Moving Average
2011	38	38.4	235	154.6	193
2012	56	40.0	264	179.4	219
2013	40	39.2	319	218.6	258
2014	49	42.0	323	256.4	298
2015	51	46.8	279	284.0	331
2016	67	52.6	278	292.6	345
2017	65	54.4	277	295.2	350
2018	63	59.0	276	286.6	346

Year	DRCOG Non-motorized Bike/Ped Fatalities	DRCOG Non-motorized Bike/Ped Fatalities 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Serious Injuries	DRCOG Non-motorized Bike/Ped Serious Injury 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Fatalities and Serious Injuries 5 Year Moving Average
2011	38	38.4	235	154.6	193
2012	56	40.0	264	179.4	219
2013	40	39.2	319	218.6	258
2014	49	42.0	323	256.4	298
2015	51	46.8	279	284.0	331
2016	67	52.6	303	297.6	350
2017	57	52.8	277	300.2	353.0
2018	63	57.4	276	291.6	349.0

Recommended 2019 Non-Motorized Fatality and Serious Injury Target

Year	DRCOG Non-motorized Bike/Ped Fatalities	DRCOG Non-motorized Bike/Ped Fatalities 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Serious Injuries	DRCOG Non-motorized Bike/Ped Serious Injury 5 Year Moving Average	DRCOG Non-motorized Bike/Ped Fatalities and Serious Injuries 5 Year Moving Average
2011	38	38.4	235	154.6	193
2012	56	40.0	264	179.4	219
2013	40	39.2	319	218.6	258
2014	49	42.0	323	256.4	298
2015	51	46.8	279	284.0	331
2016	67	52.6	303	297.6	350
2017	65	54.4	277	300.2	355
2018	63	59.0	276	291.6	351
2019	62	62.0	275	282.0	344

62 + 282 = 344



ATTACHMENT 1

SAFETY TARGETS (Five Year Averages)		2018 TARGETS 2014-2018 Five Year Averages	2019 TARGETS 2015-2019 Five Year Averages
1	DRCOG FATALITIES	242	256
2	DRCOG FATALITY RATE PER 100 MILLION VMT	0.90	0.93
3	DRCOG SERIOUS INJURIES	1,948	1,935
4	DRCOG SERIOUS INJURY RATE PER 100 MILLION VMT	7.20	6.97
5	NON-MOTORIZED FATALITIES AND SERIOUS INJURIES	346	344



DRCOG Vision Zero Action Plan

- RFP to be released this month
- Project kick-off early 2019
- Project Purpose
 - Reduce fatalities and serious injuries in the Denver Region
 - Support DRCOG's various safety performance measures and targets
 - Increase awareness of Vision Zero to influence safer behaviors on roadways
 - Provide policies, standards, and strategies to encourage safety in planning and design of the regional transportation system





QUESTIONS?

ATTACHE

ATTACHMENT E

To: Chair and Members of the Regional Transportation Committee

From: Jacob Riger, Long Range Transportation Planning Manager
303-480-6751 or jriger@drcog.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Action	7

SUBJECT

Proposed *Fixing America's Surface Transportation* (FAST) Act-required targets for Transit Asset Management (TAM).

PROPOSED ACTION/RECOMMENDATIONS

Staff recommends approval of the TAM targets shown below.

ACTION BY OTHERS

[November 19, 2018](#) – TAC recommended approval

SUMMARY

The FAST Act requires state DOTs and MPOs to set targets and report on progress towards achieving those targets for several topics in support of a performance-based approach to transportation planning and programming. These topics include safety, infrastructure (pavement and bridge condition), system performance, and transit asset management (TAM).

For the purposes of TAM, RTD is federally required to set its own targets. Seven smaller transit agencies in the DRCOG region elected to participate in a statewide group TAM plan sponsored by CDOT. The statewide plan establishes one statewide set of targets for the 53 participating agencies based on the averages of all their targets.

DRCOG has the option to support the TAM targets set by the transit agencies operating in the DRCOG region or to set its own targets. In coordination with FTA, staff believes it is appropriate to support RTD's targets while acknowledging (but not adopting) the statewide targets for the smaller agencies that participate in CDOT's group plan. The transit assets for the smaller agencies are important but quantitatively very minor compared with RTD's transit assets. Similarly, the statewide group plan targets are not meaningful to the DRCOG region.

RTD's 2019 performance targets for all measures are shown in the tables below in the column on the far right:

Percentage of Nonrevenue, Support-Service & Maintenance Vehicles that have either met or exceeded their Useful Life Benchmark (ULB).¹

Vehicle Class	ULB (Years)	# of Assets (11/09/2018)	Target % at or exceeding ULB
Automobile	8	82	15.9%
Truck & Other Rubber Tire	14	280	6.6%
Steel Wheel Vehicles	25	3	0.0%

Percentage of Rolling Stock that have met or exceeded their Useful Life Benchmark (ULB).

Vehicle Class	ULB (Years)	# of Assets (11/09/2018)	Target % at or exceeding ULB
Articulated Bus - AB	14	116	0.0%
Over-the-Road Bus - BR	14	170	5.3%
Bus - BU	14	770	14.8%
Cutaway - CU	10	405	2.5%
Light Rail Vehicle -LR	31	172	0.0%
Commuter Rail Self-Propelled Passenger car -RS	39	66	0.0%

Percentage of Fixed Guideway Directional Route Miles with Performance Restrictions

Mode of Guide Way	Total Track Mile (11/09/2018)	Target % with performance Restrictions
Light Rail	106.7	1.7%
Commuter Rail	71.91	0.8%

Percentage of Facilities with a Condition Rating of Less than 3.0 on the TERM Scale 1(poor) to 5²(excellent)

Types of Facility	Number of facilities (11/09/2018)	Target % with condition rating below 3.0
Stations & Parking	198	5.6%
Maintenance & Administration	12	0.0%

At the November 27th RTC meeting, RTD staff will give an overview of their TAM Plan and target setting process.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

Move to recommend to the Board of Directors the proposed targets for Transit Asset Management as part of the performance-based planning requirements of the *Fixing America's Surface Transportation* (FAST Act).

¹ ULB is defined as the expected lifecycle of a capital asset for a particular transit provider's operating environment, or the acceptable period of use in the service for a particular transit provider's operating environment.

² TERM scale means the five-category rating system used in the Federal Transit Administration's Transit Economic Requirements Model (TERM) to describe the condition of an asset: 5.0 - Excellent, 4.0 - Good; 3.0 - Adequate, 2.0 - Marginal, and 1.0 - Poor.

ATTACHMENTS

1. RTD presentation
2. Link - [RTD 2018 Transit Asset Management Plan](#)
3. RTD 2019 Transit Asset Management Targets

ADDITIONAL INFORMATION

If you need additional information, please contact Jacob Riger, Long Range Transportation Planning Manager at 303 480-6751 or jriger@drcog.org; or Matthew Helfant, Senior Transportation Planner at 303-480-6731 or mhelfant@drcog.org or Louis Cripps, RTD Asset Management Senior Manager at 303-299-2202 or Lou.Cripps@rtd-denver.com

DRCOG / FTA Region 8: RTD TAMP Summary

RTC Meeting - November 27, 2018

Presentation Goals

- Asset Management – what are
 - AM / TAM / SGR
- Background
 - FTA MAP21 / FAST Act and TAM Final Rule Making
 - TAM Requirements
- TAMP (Transit Asset Management Plan)
 - Assets deliver our agency objective



Section 1 - Fundamentals

Managing Assets vs. Asset Management



Asset Management involves the balancing of costs, opportunities and risks against the desired performance of assets, to achieve the organizational objectives.

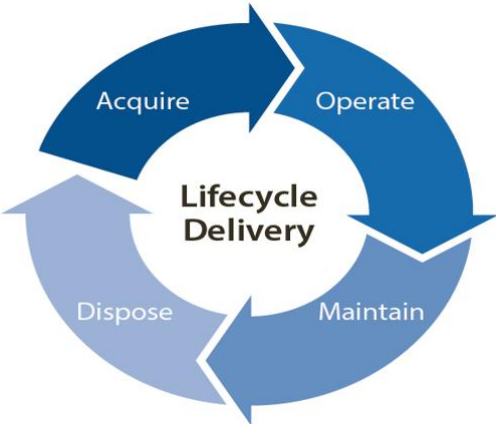
Source: ISO 55000

State of Good Repair

The condition in which a capital asset is able to operate at a **full level of performance**. This means the asset:

1. Is able to perform its designed function,
2. Does not pose a known unacceptable safety risk, and
3. Its **lifecycle investments** have been met or recovered.

Managing Assets



Systematic Approach: Asset Management





RTD Regional Transportation District safely connecting
your city

Section 2 – MAP21 / FAST Act

Compliance

FTA Themes

Prescriptive

TAM Plan Requirements

- ✓ Asset Inventory
- ✓ Condition Assessments
- ✓ Decision Support Tools
- ✓ Investment Prioritization
- ✓ TAM & SGR Policy
- ✓ Implementation Strategy
- ✓ List of Key Annual Activities
- ✓ Identification of Resources
- ✓ Evaluation Plan

Accountable

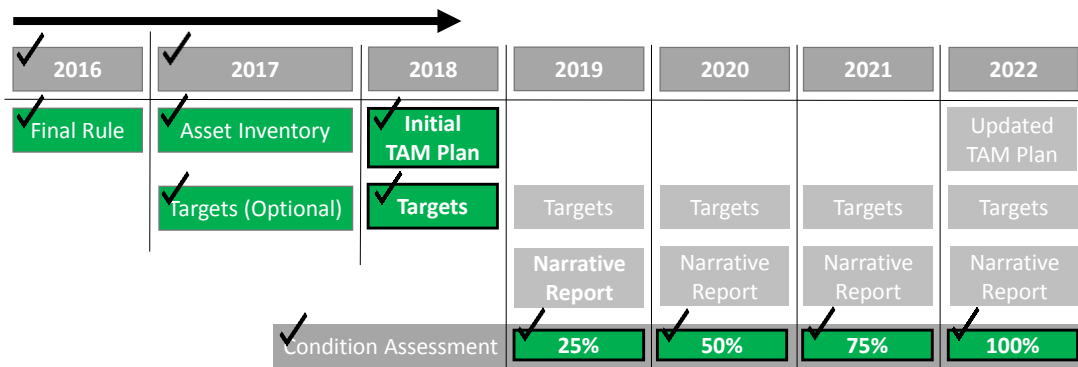
- ✓ Accountable Executive
- ✓ Deadlines
- ✓ Grant Eligibility

MAP 21: FTA requirements 9 TAM elements

No.	TAMP Element	Description
1	Asset inventory	All capital assets owned by agency, including equipment (construction, maintenance, service vehicles), rolling stock (rail cars, buses, ferries), infrastructure (fixed guideway, signal systems, structures, power), facilities (support, passenger, parking)
2	Condition assessment	A rating of the inventoried assets with direct capital responsibility (age, condition, percentage of residual life, vulnerability to natural/climate hazards etc). At the individual or asset class level.
3	Decision-making approach / support tools	List analytical processes used to make investment prioritization, does not have to be software tool
4	Investment prioritization	A financially constrained ranked listing of proposed projects ordered by year of planned implementation, prioritized based on local policy, needs, safety risks, etc
5	TAM and SGR Policy	The agency's vision for TAM, SMART objectives, roles and responsibilities
6	Implementation strategy	Operational level process for implementing TAM Plan
7	Roadmap activities	Description of actions needed to implement TAM Plan for each year of the plan's horizon
8	Needed resources	Staffing, technology, funding, etc
9	Evaluation plan for continuous improvement	How TAM activities will be monitored, evaluated, and updated to ensure the continuous improvement of TAM practices

* Source: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/TAMFinalRule_Presentation.pdf

Today in Context – Compliant



Shifting Perspective



- *"MAP-21 fundamentally shifted the focus of Federal investment in transit to emphasize the need to maintain, rehabilitate, and replace existing transit investments."*
- *"Deciding how to best balance and prioritize reasonably anticipated funds (revenues from all sources) towards improving asset condition and achieving a sufficient level of asset performance within those means"*

Shifting Focus



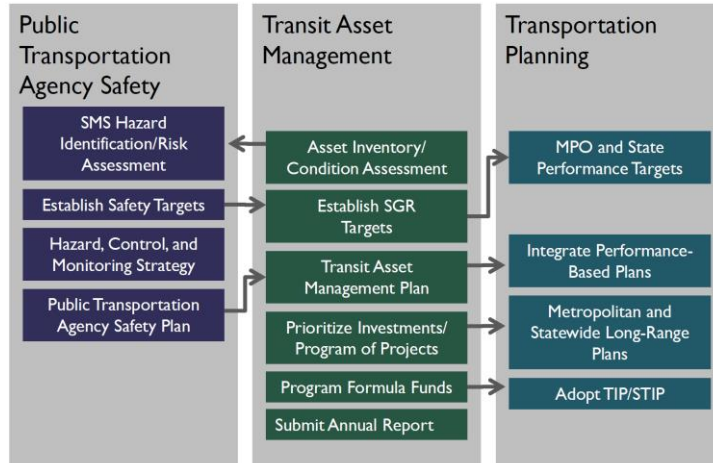
Benefits of a TAM culture

- Better business investments
- Mission alignment across all departments
- Flexible reaction to changes
- Stakeholder confidence increases

Phil Jackson

“Before a vision can become a reality, it must be owned by every member of the group”

Linking Proposed Regulations



FEDERAL TRANSIT ADMINISTRATION

Transit Asset Management Background 14

Constraints



"...the SGR grants alone *will not be enough* to address the backlog." FTA 49 CRF Parts 625 and 630

"In these financially constrained times, transit agencies will need to be *more strategic* in the use of all available funds." FTA 49 CRF Parts 625 and 630

<https://www.gpo.gov/fdsys/pkg/FR-2016-07-26/pdf/2016-16883.pdf>

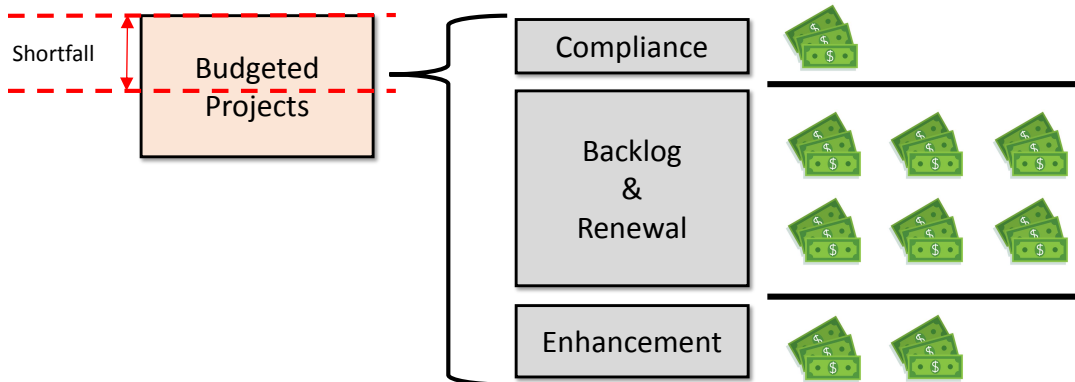
Priorities & Options



*"...set meaningful transit SGR performance targets and to achieve those targets is critically dependent upon the ability of all parties to **work together to prioritize the funding** of SGR projects from existing funding sources."* FTA 49 CFR Parts 625 and 630

<https://www.gpo.gov/fdsys/pkg/FR-2016-07-26/pdf/2016-16883.pdf>

Strategically Manage



Alignment to Purpose

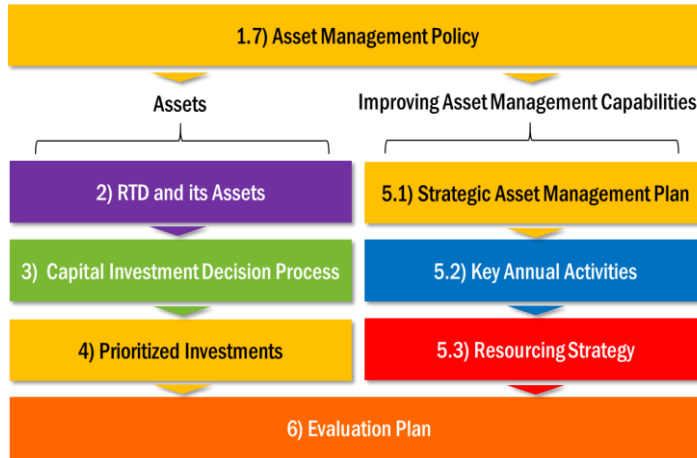


***Moving
People***

Section 3 – TAMP

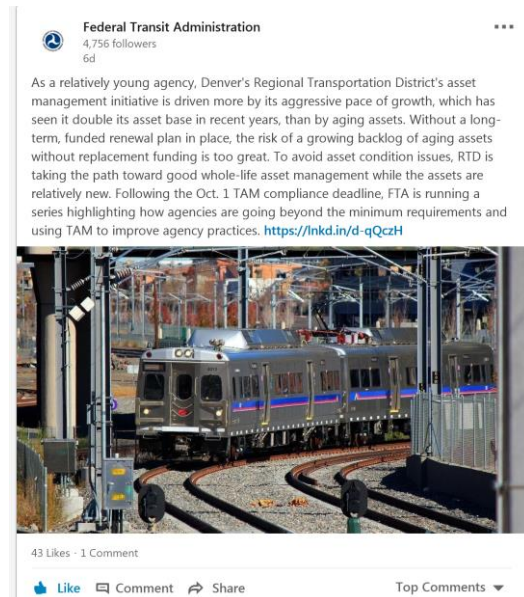
Compliance

RTD TAMP Structure




We are Compliant

- Accountable Executive certified TAM compliance.
- Compliance during a comprehensive oversight review (Triennial or State Management)
- FTA holding RTD up as an example.



ATTACHMENT 1

	<p>Regional Transportation District</p>	<p>safely connecting your city</p>
<p>Regional Transportation District 1660 Blake Street, BLK-40 Denver, CO 80202 Lou.Cripps@RTD-Denver.com</p>		

Safety, Security & Asset Management

Physical Assets Performance Targets for 2019

Introduction

Section 20019 of Moving Ahead for Progress in the 21st Century Act (MAP-21) amended Federal transit law by adding a new section 5326 to Chapter 53 of title 49 of the United States Code. The provisions of 49 U.S.C. § 5326 require the Secretary of Transportation to establish and implement a national Transit Asset Management (TAM) System which establishes annual reporting requirements.

The Secretary also must establish State of Good Repair (SGR) performance measures, and recipients must set performance targets based on the measures. 49 U.S.C. § 5326(c)(1) and (2). Each designated recipient must submit two annual reports to the Secretary:

- one report on the condition of their recipients' public transportation systems, including a description of any change in condition since the last report,
- and another describing its recipients' progress towards meeting performance targets established during that fiscal year and a description of the recipients' performance targets for the subsequent fiscal year.

The Accountable Executive for a transit provider that develops an individual TAM Plan must approve the provider's performance targets. (Federal Transit Administration, 2016)

2019 Performance Targets for Equipment

Subsection 625.43(a) requires a measure for equipment, which is limited to non-revenue service vehicles. The performance measure for nonrevenue, support-service, and maintenance vehicles equipment is the percentage of those vehicles that have either met or exceeded their Useful Life Benchmark (ULB). (Federal Transit Administration, 2016)

Useful Life Benchmark (ULB) is defined as the expected lifecycle of a capital asset for a particular transit provider's operating environment, or the acceptable period of use in service for a particular transit provider's operating environment.

In compliance with this federal regulation, RTD establishes a ULB for equipment using FTA recommendations (nonrevenue, support-service and maintenance vehicles equipment) as:

Vehicle Class	ULB (Years)	# of Assets (11/9/2018)	Target % at or exceeding ULB
Automobile	8	82	15.9%
Truck & Other Rubber Tire	14	280	6.6%
Steel Wheel Vehicles	25	3	0.0%

RTD has years of vehicle data and standing practices regarding the expected useful life of vehicle assets. The target % of each asset class under the ULB will change each year based on the age of each asset class, the service demand for each class and economic factors.

2019 Performance Targets for Rolling Stock

Subsection 625.43(b) requires a measure for rolling stock that is based on the percentage of rolling stock that have met or exceeded their ULB. This performance measure is applicable to all asset classes of revenue vehicles. For example, a transit provider operating buses, replica trolleys, paratransit vans, and light rail vehicles would establish a performance target for each asset class. Each performance target would quantify the percentage of rolling stock in each class that is over the transit provider's ULB for that asset class. (Federal Transit Administration, 2016)

In compliance with this federal regulation, RTD establishes a ULB for rolling stock (revenue vehicles) as:

Vehicle Class	ULB (Years)	# of Assets (11/9/2018)	Target % at or exceeding ULB
Articulated Bus - AB	14	116	0.0%
Over-the-Road Bus - BR	14	170	5.3%
Bus - BU	14	770	14.8%
Cutaway - CU	10	405	2.5%
Light Rail Vehicle -LR	31	172	0.0%
Commuter Rail Self- propelled Passenger car -RS	39	66	0.0%

RTD has years of vehicle data and standing practices regarding the expected useful life of vehicle assets. The target percentage of each asset class under the ULB will change each year based on the age of each asset class, the service demand for each class and economic factors.

Performance Targets for Fixed Guideway

Subsection 625.43(c) requires a measure for infrastructure based on the percentage of guideway track miles with performance restrictions. This performance measure would be applicable to all rail fixed guideway infrastructure. Most transit providers already collect data on slow zones-this performance measure would standardize their reporting. (Federal Transit Administration, 2016)

In compliance with this federal regulation, RTD establishes the number of track miles of guideway as:

Mode of Guide Way	Total Track Mile (11/9/2018)	Target % with performance Restrictions
Light Rail	106.7	1.7%
Commuter Rail	71.91	0.8%



RTD has historical records of performance restrictions on its fixed guideway. This data is the source for establishing the 2019 target percentage of fixed guideway with performance restrictions. Succeeding year's targets will be adjusted based on condition and age of the fixed guideway components, and economic factors.

Performance Targets for Facilities

Subsection 625.43(d) requires a condition-based performance measure for facilities based on the percentage of facilities with a condition rating of less than 3.0 on the Transit Economic Requirements Model (TERM) Scale. The TERM Scale rates asset condition on a scale where a "1" is "poor" and a "5" is "excellent." This condition-based approach would require a transit provider to conduct periodic condition assessments of its assets using a set of standardized procedures and criteria. This approach directly identifies the condition of each asset based upon its actual usage and maintenance history. (Federal Transit Administration, 2016)

To clarify, FTA proposed a broad definition of facility that encompassed any buildings or structures used in providing public transportation, including passenger stations, operations, maintenance, and administrative facilities. In compliance with this federal regulation, RTD establishes the number of facilities as:

Types of Facility	Number of facilities (11/9/2018)	Target % with condition rating below 3.0
Stations & Parking	198	5.6%
Maintenance & Administration	12	0.0%

RTD has condition data on the facilities which are most critical to service delivery based on condition assessments performed by the Asset Management Division. This data is the basis for the 2019 target % of facilities with a condition rating below 3.0, using the TERM scale.

Succeeding year's targets will be adjusted based on the criticality of each facility and economic factors.

Accountable Executive

General Manager and CEO

References

Federal Transit Administration.(2016).*49 CFR Parts 625 and 630 Transit Asset Management; National Transit Database Final Rule*. Department of Transportation. Washington, DC: Department of Transportation.Retrieved 2016

ATTACH F

ATTACHMENT F

To: Chair and Members of the Regional Transportation Committee

From: Jacob Riger, Long Range Transportation Planning Manager
303-480-6751 or jriger@drcog.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Information	8

SUBJECT

Briefing on the Mobility Choice Blueprint project.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

The Mobility Choice Blueprint is a collaborative strategy to help the metro Denver region identify how to best prepare for the rapidly changing technology that is revolutionizing transportation mobility. Mobility Choice is a unique planning and funding partnership of CDOT, DRCOG, RTD, and the Denver Metro Chamber of Commerce. The 2030 Blueprint will analyze travel trends and technologies in the region, explore and evaluate various technologies and their implications for mobility, align transportation investments of multiple public agencies, and create new planning and implementation partnerships.

Since the last Mobility Choice Blueprint briefing to RTC in September, project stakeholders and the consultant team have continued to prepare content for the 2030 Blueprint plan document, with a focus on finalizing “tactical actions” to provide specific process, program, and pilot project implementation guidance. More information is available at the project website: <http://www.mobilitychoiceblueprintstudy.com/>.

At the November RTC meeting, staff from HDR, the project’s lead consultant, will provide an update on the Mobility Choice Blueprint project, process, and schedule. RTC input will be sought to help shape the final report and other work products. The Mobility Choice process will conclude at the end of 2018.

PREVIOUS DISCUSSIONS/ACTIONS

[April 17, 2018 – RTC](#)

[September 18, 2018 – RTC](#)

PROPOSED MOTION

N/A

ATTACHMENT

Consultant presentation

ADDITIONAL INFORMATION

If you need additional information, please contact Jacob Riger, Long Range Transportation Planning Manager, at 303 480-6751 or jriger@drcog.org



MOBILITY CHOICE BLUEPRINT

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MOBILITY CHOICE: A PUBLIC-PRIVATE PARTNERSHIP FOR NEW MOBILITY

The New Mobility CASE: *Connected-Automated-Shared-Electric*

Mobility Choice: *A partnership of public and private organizations addressing the new future of mobility – and making the Denver metro area a better place to work and live.*



EMERGING MOBILITY SYSTEMS



Shared Mobility

- Ridehailing
- Microtransit
- Car Sharing
- Bike sharing
- Mobility as a Service

Traveler Information and Payment

- Mobile Transit App
- Intermodal Trip Planner App
- Mobile Travel Incentives App

Transportation Systems Optimization

- V2X
- Active Travel Demand Management
- Integrated Corridor Management
- Smart Parking

Freight and Delivery

- Courier Services
- Driverless Delivery
- Drone Delivery
- 3D Printing

Vehicle Technology

- Autonomous Vehicles Levels 1-5
- Electric Drive-train
- Battery Technology



What type of new mobility do you already use regularly?

- Ridehailing (Uber and Lyft)
- Ridesharing (Uber pool)
- Mobility Apps (Waze, RTD Trip Planner, Google)
- Shared E-bikes and Scooters
- Advanced Vehicle Technology (lane assist, electric)

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COMMUNITY & STAKEHOLDER ENGAGEMENT

GROUPS

- Metro Ambassadors
- Global Thought Leaders
- Local Technical Experts
- The Public

➔

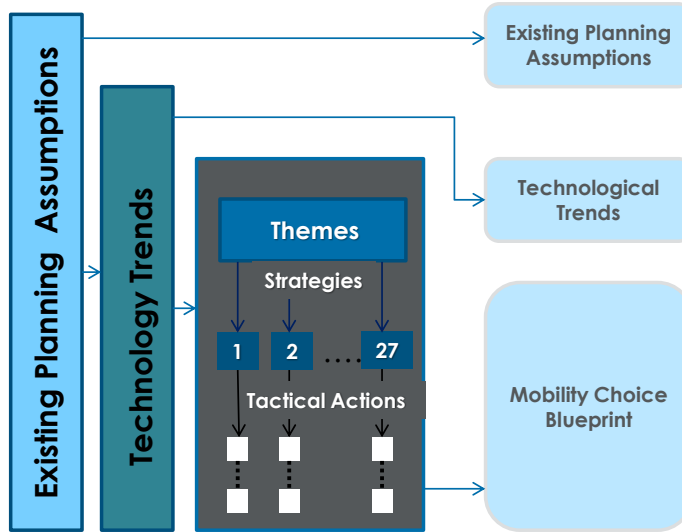
EVENTS

- Ethnography
- Workshops
- Digital Engagement



6

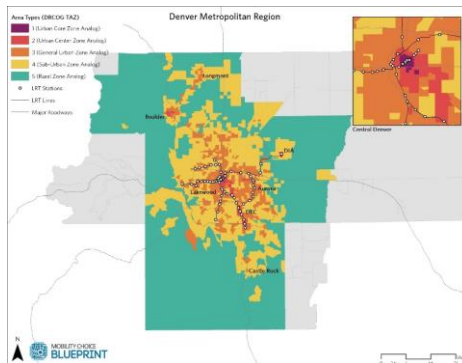
PROCESS FLOW FOR THE DEVELOPMENT OF RECOMMENDED TACTICAL ACTIONS



THEMES

Metro Vision

- Connected, multimodal region
- Safe, reliable, well maintained transportation system
- Clean, resilient environment
- Healthy, inclusive active community
- Economic viability via economic investment



Mobility Choice

- Sustainable Mobility
- System Efficiency
- Safety
- Human Experience
- Infrastructure
- Funding and Finance
- Governance
- Data

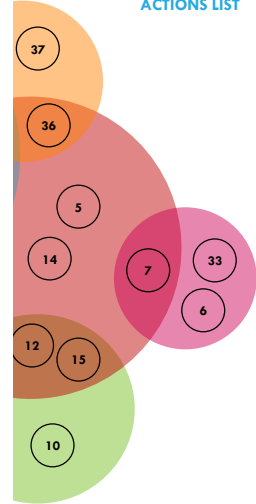
ATTACHMENT 1

Tactical Actions		Safety	Human Experience	Sustainable Mobility	Funding & Finance	Infrastructure	Governance	Data	System Efficiency
1	Engage university resources to develop technology mobility research and development	✓							✓
2	Establish Mobility Technology Advisory Committee			✓		✓	✓		
3	Evaluate technology upgrades and interoperability in TIP funded transportation construction projects					✓			
4	Prepare for technology upgrades and interoperability in transportation construction projects					✓			✓
5	Support Legislative efforts to ensure that automated vehicles operate safely	✓					✓		
6	Expand DRCOG funding earmark for a mobility technology innovation fund				✓				
7	Explore the concept of a Road Usage Charge for Colorado				✓				
8	Establish a public-private partnership to pursue mobility technology implementation			✓	✓	✓	✓	✓	✓
9	Make mobility as a service available to all	✓							✓
10	Develop a universal mobility app for trip planning and payment		✓						✓
11	Establish a Regional Mobility Data Platform							✓	✓
12	Establish common regional standards for micromobility services	✓				✓			
13	Adopt a Regional Compact defining common standards for micromobility services	✓				✓			
14	Develop regional guidelines for drone delivery and drone passenger travel	✓	✓			✓			
15	Establish data sharing requirements for private sector roadway uses						✓	✓	
16	Establish a Regional Smart Mobility Negotiator						✓	✓	
17	Develop incentives to improve TNC operations	✓	✓						
18	Pilot private sector point to point mobility	✓							✓
19	Implement Curbside Management Standards	✓	✓						✓

Tactical Actions		Safety	Human Experience	Sustainable Mobility	Funding & Finance	Infrastructure	Governance	Data	System Efficiency
20	Pilot neighborhood scale mobility hubs		✓	✓					✓
21	Pilot modular lanes	✓	✓			✓			✓
22	Accelerate testing of bicycle/pedestrian detection on arterials	✓	✓	✓					
23	Pilot driverless microtransit to increase public exposure to AV technology		✓	✓					
24	Partner with the private sector to provide transportation in mobility challenged communities	✓	✓	✓					✓
25	Pilot smart parking at Park-and-Rides				✓		✓		✓
26	Implement Universal Transit Priority	✓	✓	✓		✓			✓
27	Pilot integrated corridor management (ICM) on 10 arterial corridors	✓							✓
28	Implement traffic signal control technology on all major regional arterial corridors			✓		✓			✓
29	Implement "smart corridor" operations on all metro area highways	✓	✓	✓		✓			✓
30	Coordinate Transportation System Management and Operations (Traffic Management Centers)	✓			✓		✓		✓
31	Pilot connected vehicle technologies	✓	✓	✓		✓			✓
32	Implement regional actions to enable high shared use of driverless outstationed vehicles			✓			✓		✓
33	Support Legislative efforts to ensure that automated vehicles generate appropriate funding				✓		✓		
34	Minimize zero occupant driverless automated vehicle use		✓						✓
35	Incentivize TNCs to use electric vehicles		✓						
36	Create an electrified mobility development program and implement key actions		✓						
37	Establish an aggressive, agreed-upon goal to transition government fleets to zero-emission vehicles		✓						



COMPLETE TACTICAL ACTIONS LIST





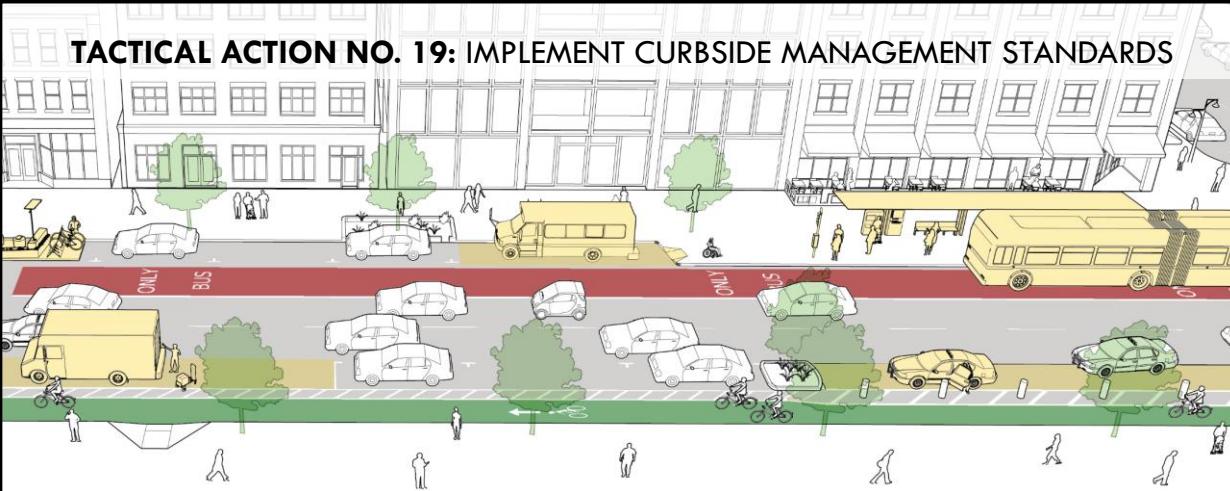

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ATTACHMENT 1

TACTICAL ACTION NO. 19: IMPLEMENT CURBSIDE MANAGEMENT STANDARDS



Themes: System Efficiency, Human Experience, Safety

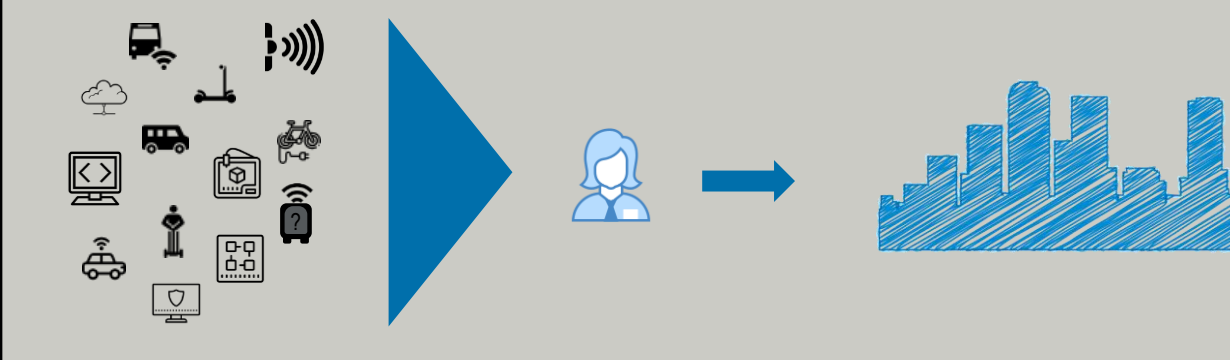
Level of Policy Development/Coordination:

Initiator:  

Cost: \$\$\$\$\$


Image source: NACTO, 2017

TACTICAL ACTION NO. 16: ESTABLISH A REGIONAL SMART MOBILITY NAVIGATOR



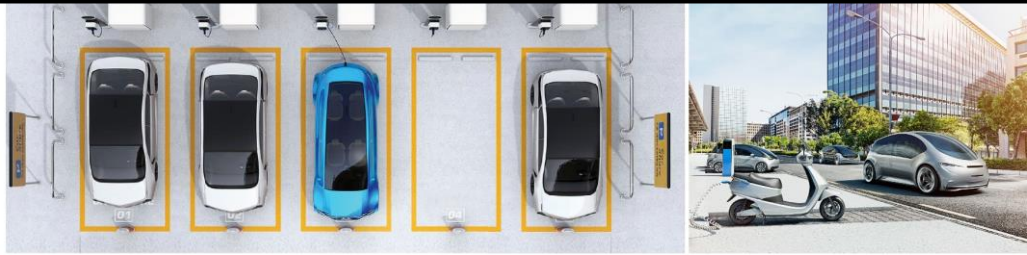
Themes: Governance, Data

Level of Policy Development/Coordination:

Initiator: 

Cost: \$\$\$\$\$

Skyline illustration source: Vecteezy



Objective 5

Encouraging Mobility Electrification

Technologies related to the electric drivetrain of vehicles have progressed rapidly in recent years. Original Equipment Manufacturers (OEMs) like Honda, Volvo, Ford, GM and others have already made corporate decisions to prioritize electric vehicles (EVs). The EPA estimates that conventional internal-combustion vehicles are responsible for anywhere between 50 and 90 percent of air pollution in urban areas like Denver. But the benefits of encouraging a regional shift to EVs go beyond a reduction in greenhouse gas emissions and noise pollution. Recent research from the University of Michigan suggests that owning and operating an electric vehicle could prove about half as expensive as owning and operating a gasoline powered vehicle. Still, the shift away from internal-combustion vehicles is just beginning. The 7,220 EVs registered in Colorado at the end of 2016 represented 0.1% of all vehicles (hybrid vehicles made up 1.6%). Several institutional and infrastructure barriers currently prevent the widespread adoption of EVs. Even as the technology becomes more readily available, the region will have to actively encourage the switch if we hope to realize the environmental benefits of electrification.

Colorado is already a leader in mobility electrification. The state ranks fifth in electric vehicle sales, after California, Hawaii, Washington, and Oregon.

OUTCOMES

The following outcomes describe a mobility future for the year 2030 where there region has successfully encouraged mobility electrification.



New mobility systems improve the livability of our communities and enhance quality of life for all people.



Technology integration improves air quality and lowers costs.



Increased access to new mobility options does not result in an increase in greenhouse gas emissions

ELECTRIC MISSIONS

The state's current electric program will be replaced by a goal of 40% of new light-duty vehicles sold in the state to be electric by 2030. The city of Denver is currently aiming to reach 100% of public transit vehicles to be electric by 2030.

INVESTING IN POLLUTION REDUCTION

In 2015, the state of Colorado created a goal to spend \$600 million on clean energy and climate change. The state is currently investing in clean energy and climate change through the state's clean energy fund.

Objective 5 | Encouraging Mobility Electrification

MEASURED EFFECTS OF TACTICAL ACTIONS

By implementing the policies, programs, and initiatives introduced in this section, the region could expect to see the following quantitative improvements:

Electric vehicles have zero tailpipe emissions, and cause no reduction in air quality in areas where they operate. EVs do generate emissions from making the fuel they use (electricity) and in building the cars themselves, the same as with gasoline cars. The Argonne National Lab has developed a model that takes into account all these factors and calculates how much pollution each type of vehicle generates during its lifecycle.

THIS MODEL INDICATES THE FOLLOWING:

- ◆ EVs in the Denver area generate **4% less carbon dioxide (CO₂)** or Greenhouse Gas – (GHG) per mile compared to gasoline powered vehicles
- ◆ Electric vehicles in Colorado generate **87% less CO₂, 23% less NO_x, and 36% less VOCs** than gasoline powered vehicles
- ◆ In Colorado, EVs do result in **slightly more Particulate Matter (PM) generation**, mostly in the vicinity of the electricity generation plants



OBJECTIVE 5

Tactical Actions

These tactical actions represent the priorities of the region's primary transportation agencies.

34

Incentivize TNCs to use electric vehicles

Develop a goal, create a policy and incentivize the deployment and use of electric and other zero-emission vehicles by TNCs.

THEMES

Sustainable Quality of Life

TACTIC INITIATOR

2000C

ADDITIONAL PARTICIPANTS

Non-profits, private

ADDITIONAL OBJECTIVES

Reduce greenhouse gas emissions

RELATED TACTICS

2000A

35

Create an electrified mobility development program

Identify regulatory hurdles and develop recommendations to encourage the adoption of electrified vehicles by public and private fleets.

THEMES

Sustainable System

TACTIC INITIATOR

2000B

ADDITIONAL PARTICIPANTS

Public, private, non-profit

ADDITIONAL OBJECTIVES

Reduce greenhouse gas emissions

RELATED TACTICS

2000A

36

Transition government fleets to electric and other zero-emission vehicles

Work with public agencies to create an aggressive and agreed-upon goal for converting a portion of their fleets to zero-emission vehicles. The goals may be tailored to fleet types as well as available vehicle technology.

THEMES

Sustainable System

TACTIC INITIATOR

2000C

ADDITIONAL PARTICIPANTS

Public, private, non-profit

RELATED TACTICS

2000A

IMPLEMENTATION SUMMARY

PUBLIC INVESTMENT AND POLICY DEVELOPMENT COORDINATION CHART

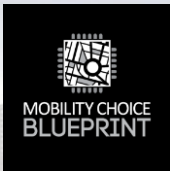
For Each Tactical Action

 COMPLETE TACTICAL ACTIONS LIST



Tactical Actions	Themes						
	Safety	Human Experience	Sustainable Mobility	Funding & Finance	Infrastructure	Data	System Efficiency
1 Engage university resources to develop technology mobility research and development	✓				✓	✓	✓
2 Establish Mobility Technology Advisory Committee				✓			
3 Evaluate technology upgrades and interoperability in TIP funded transportation construction projects				✓			
4 Prepare for technology upgrades and interoperability in transportation construction projects				✓			✓
5 Support Legislative efforts to ensure that automated vehicles operate safely	✓				✓		
6 Expand DRCOG funding earmark for a mobility technology innovation fund				✓			
7 Explore the concept of a Road Usage Charge for Colorado				✓			
8 Establish a public-private partnership to pursue mobility technology implementation				✓	✓	✓	✓
9 Make mobility as a service available to all	✓						✓
10 Develop a universal mobility app for trip planning and payment				✓			✓
11 Establish a Regional Mobility Data Platform						✓	✓
12 Establish common regional standards for micromobility services	✓				✓		
13 Adopt a Regional Compact defining common standards for micromobility services	✓				✓		
14 Develop regional guidelines for drone delivery and drone passenger travel	✓	✓			✓		
15 Establish data sharing requirements for private sector roadway uses					✓	✓	
16 Establish a Regional Smart Mobility Negotiator					✓	✓	
17 Develop incentives to improve TNC operations	✓	✓					
18 Pilot private sector point to point mobility	✓						✓
19 Implement Curbside Management Standards	✓	✓					✓

Tactical Actions	Themes						
	Safety	Human Experience	Sustainable Mobility	Funding & Finance	Infrastructure	Data	System Efficiency
20 Pilot neighborhood scale mobility hubs			✓				✓
21 Pilot modular lanes	✓				✓		✓
22 Accelerate testing of bicycle/pedestrian detection on arterials	✓	✓	✓				
23 Pilot driverless microtransit to increase public exposure to AV technology			✓	✓			
24 Partner with the private sector to provide transportation in mobility challenged communities			✓	✓			✓
25 Pilot smart parking at Park-n-Rides					✓		✓
26 Implement Universal Transit Priority			✓	✓	✓		✓
27 Pilot integrated corridor management (ICM) on 10 arterial corridors	✓						✓
28 Implement traffic signal control technology on all major regional arterial corridors					✓	✓	✓
29 Implement "smart corridor" operations on all metro area highways	✓	✓	✓				✓
30 Coordinate Transportation System Management and Operations (Traffic Management Centers) on interstate corridors	✓				✓		✓
31 Pilot connected vehicle technologies on interstate corridors	✓	✓	✓		✓		✓
32 Implement regional actions to enable high shared use of driverless automated vehicles			✓			✓	✓
33 Support Legislative efforts to ensure that automated vehicles generate appropriate funding				✓	✓		
34 Minimize zero occupant driverless automated vehicle use			✓				✓
35 Incentivize TNGs to use electric vehicles			✓				
36 Create an electrified mobility development program and implement key actions			✓				
37 Establish an aggressive, agreed-upon goal to transition government fleets to zero-emission vehicles			✓				



Thank You

Questions

ATTACH G

ATTACHMENT G

To: Chair and Members of the Regional Transportation Committee

From: Robert Spotts, Senior Transportation Planner
(303) 480-5626 or rspotts@drcog.org

Meeting Date	Agenda Category	Agenda Item #
November 27, 2018	Information	9

SUBJECT

Briefing on the *2017 Annual Report on Traffic Congestion in the Denver Region*.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

DRCOG maintains a federally-required congestion management process (CMP). One component of the process is the calculation of congestion measurements for roadways in the DRCOG region, and presentation within an annual report on traffic congestion. The annual reports have been prepared since 2006.

Staff will provide an overview of the *2017 Annual Report on Roadway Traffic Congestion in the Denver Region*, including topics such as vehicle miles traveled in the region, the impacts of economic growth on congestion, results and benefits of past mitigation projects, and the potential impacts of emerging vehicle, roadway, and mobility service technologies. The report will be made available at the meeting.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

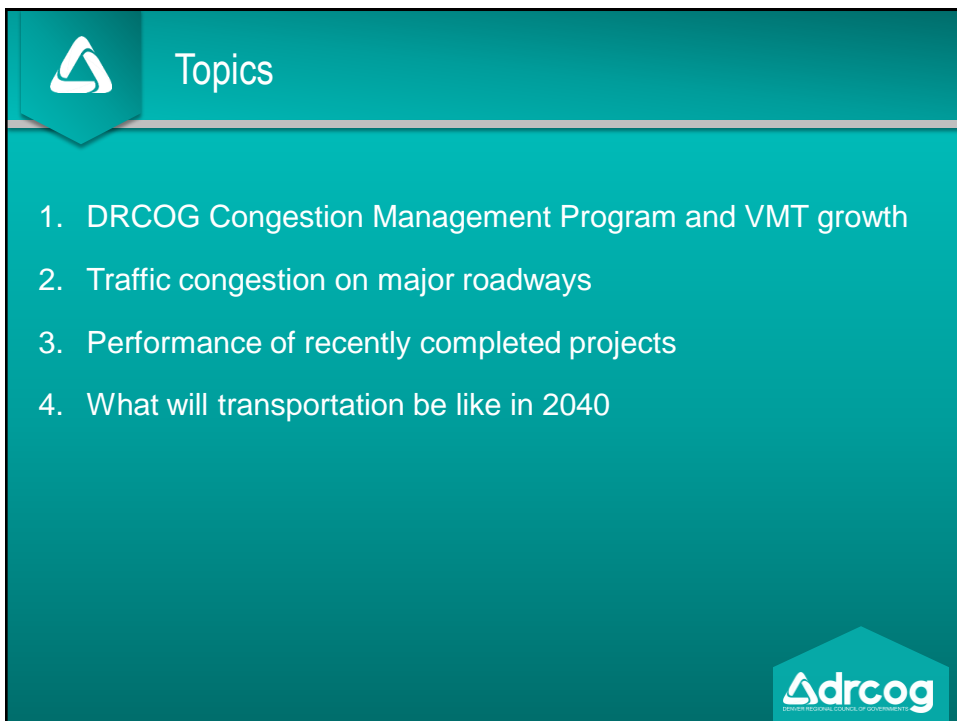
ATTACHMENT

1. Staff presentation

ADDITIONAL INFORMATION

If you need additional information, please contact Robert Spotts, Senior Transportation Planner, at 303 480-5626 or rspotts@drcog.org.


ATTACHMENT 1




1. CONGESTION MANAGEMENT PROGRAM AND VMT GROWTH

DRCOG Congestion Management Process

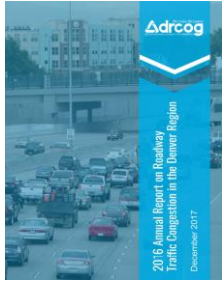
- MPOs are federally required to monitor congestion.
- DRCOG Annual Reports on Congestion since 2006
 - Report regional vehicle (VMT) and person (PMT) miles traveled
 - Roadway network info: physical traits, traffic volumes, transit routes
 - Used for TIP and RTP planning and project evaluation

 **Figure 3**
DRCOG Regional Roadway System




Facility Type

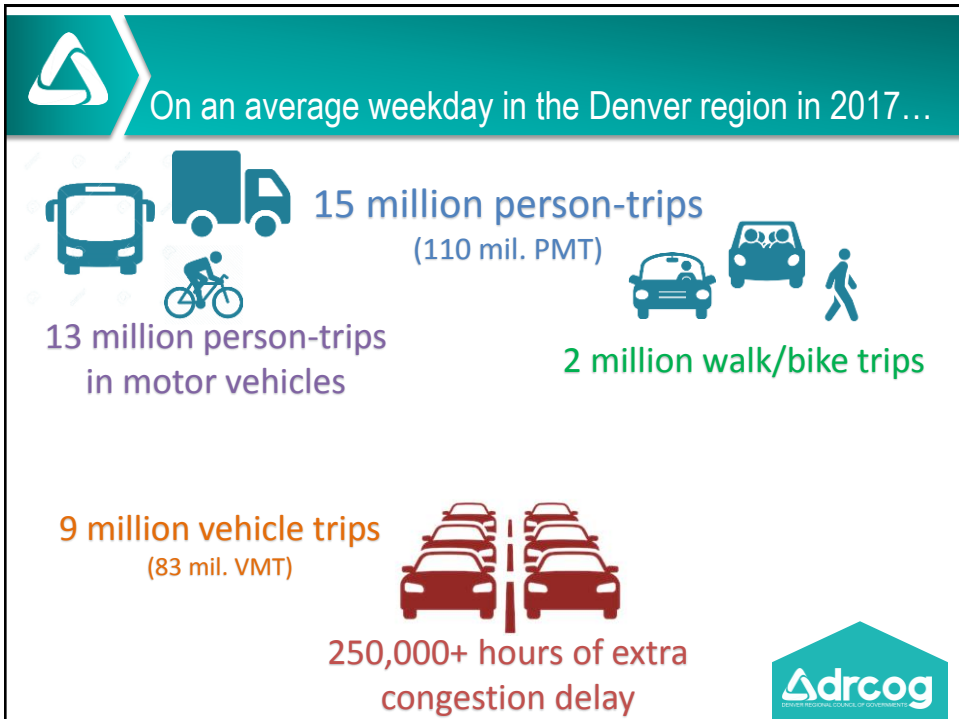
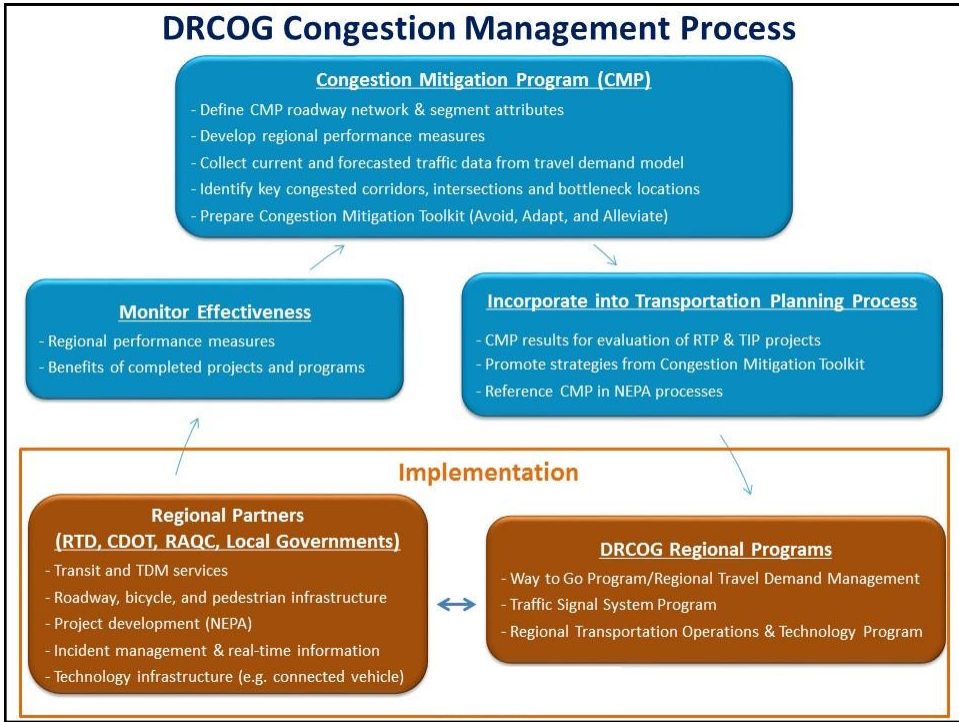
- Interchanges
- State-Regional/Arterial
- Major-Regional/Arterial
- Minor-Regional/Arterial
- Collector
- District International Arterial



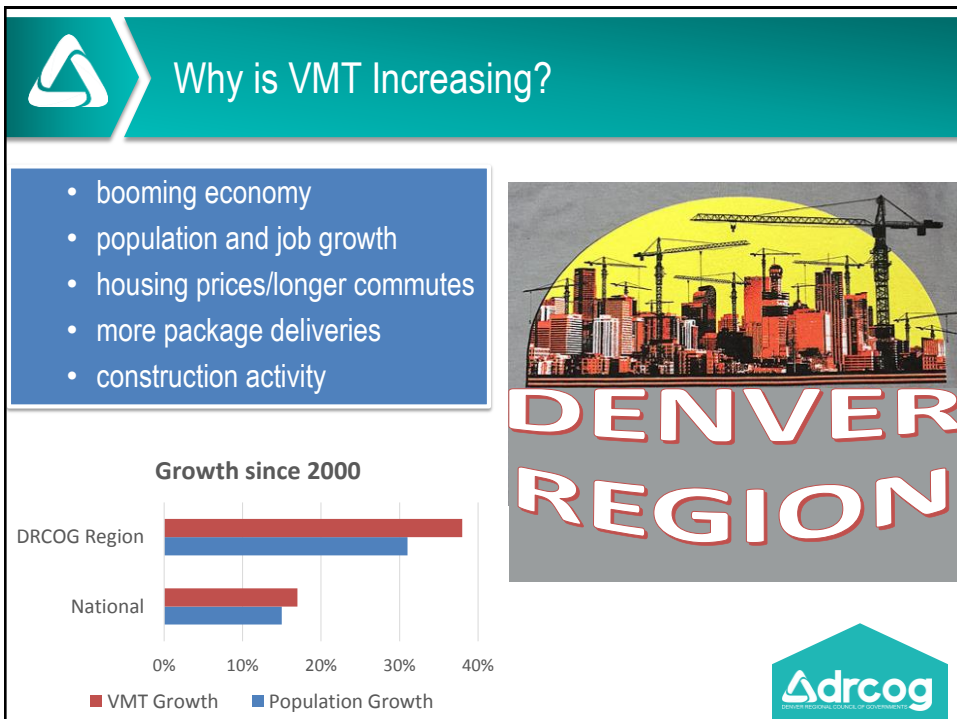
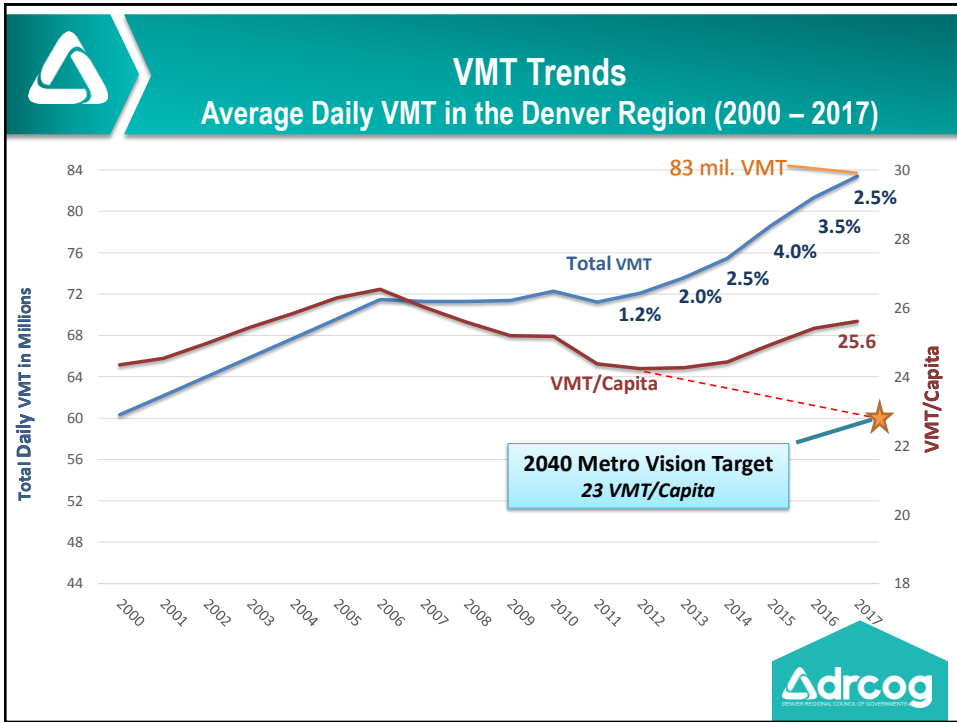
2016 Annual Report on Roadway Traffic Congestion in the Denver Region
December 2017



ATTACHMENT 1

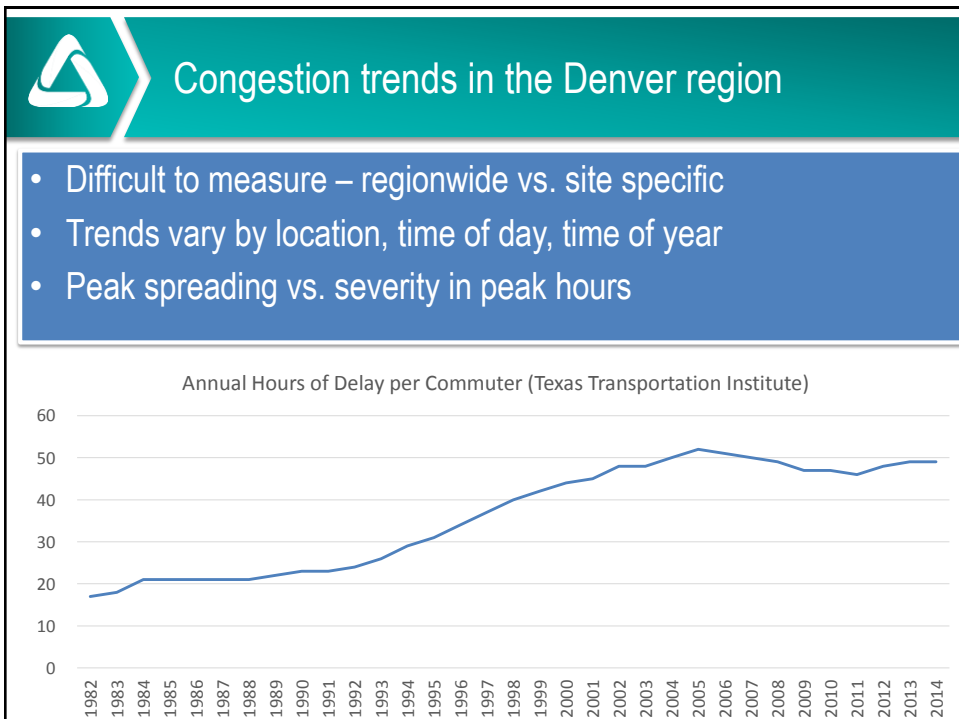


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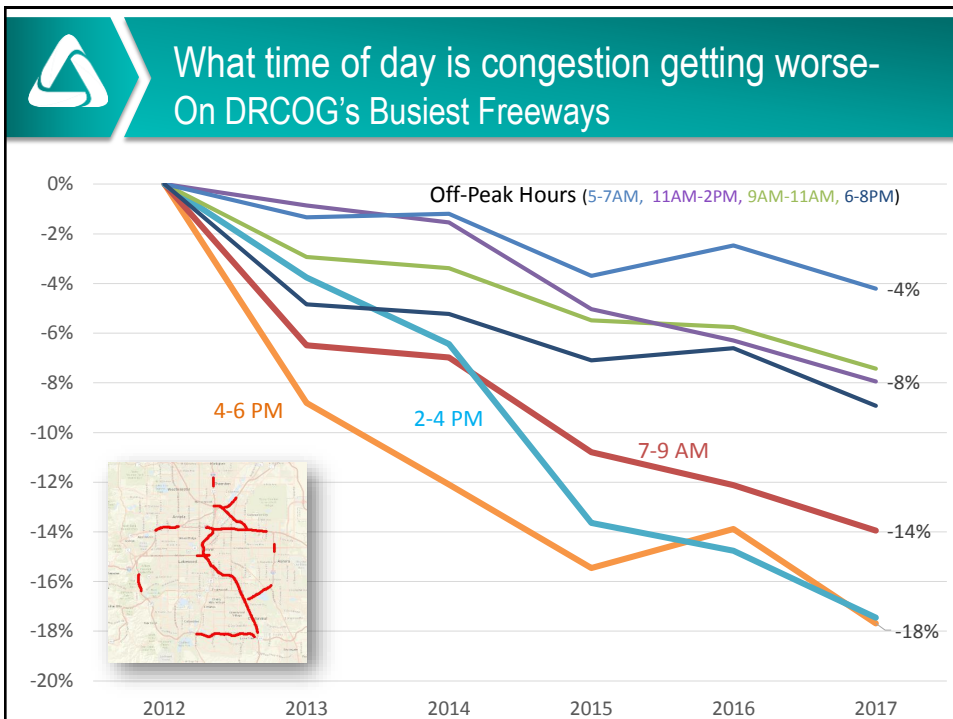
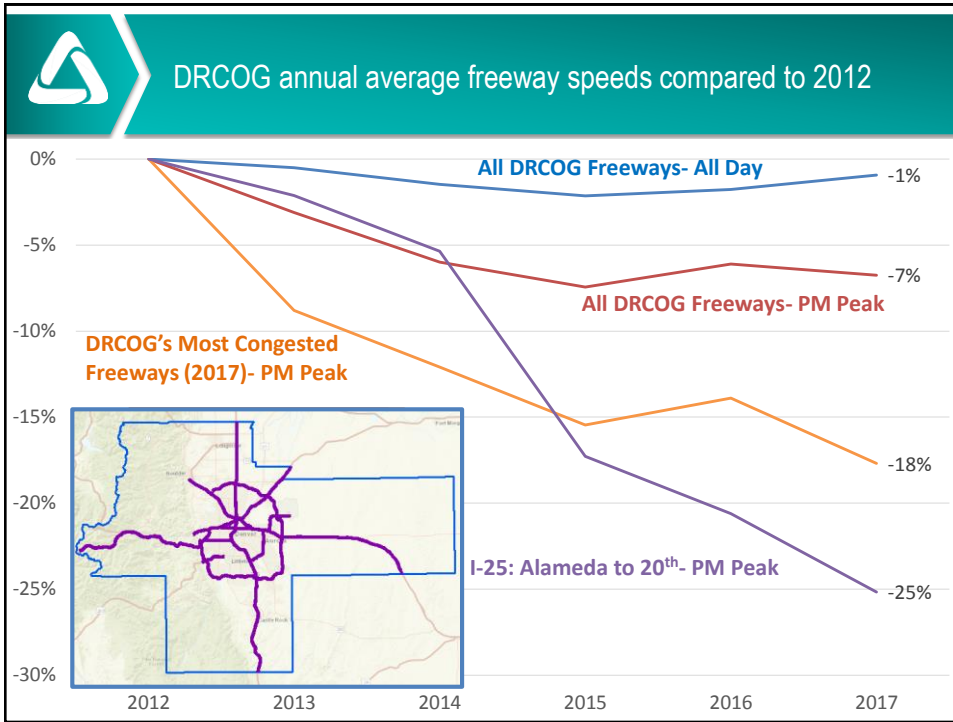




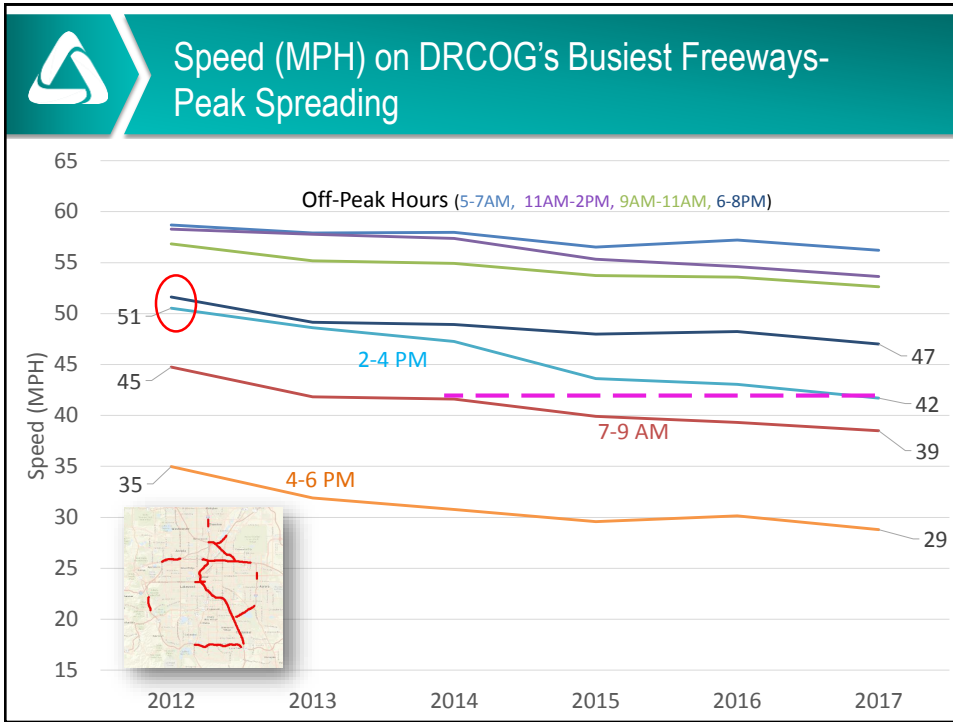
2. TRAFFIC CONGESTION ON MAJOR ROADWAYS



ATTACHMENT 1



ATTACHMENT 1



Congestion Mobility Score

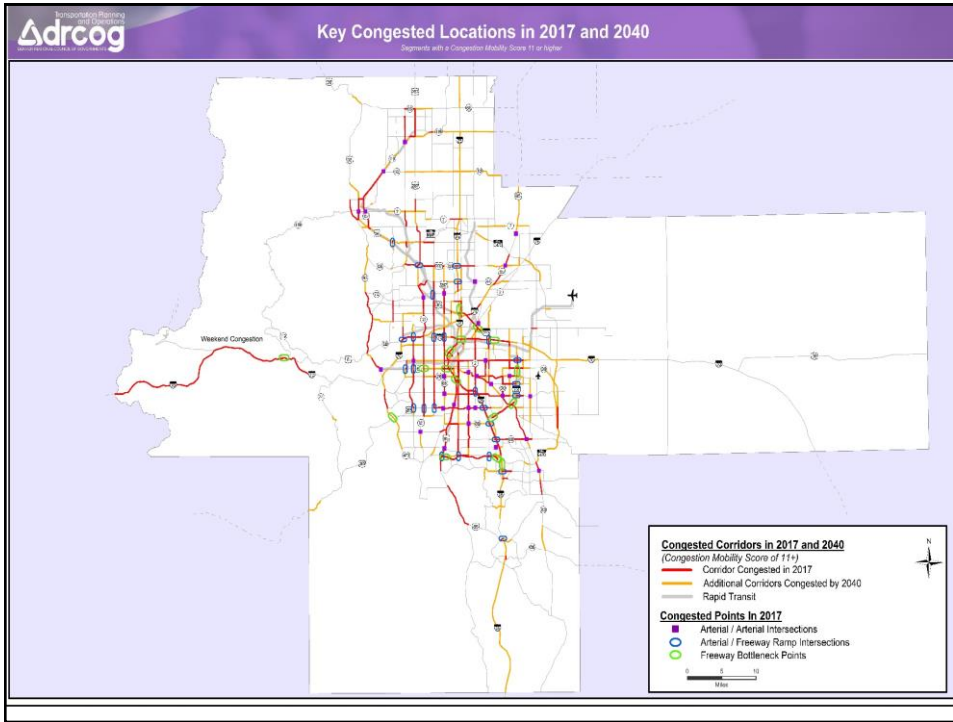
Scores for road segments; four performance measures:

- **severity:**
How bad does congestion get on the roadway during rush hour?
- **duration:**
How many hours per day is the roadway congested?
- **magnitude:**
How many people (traffic volume) are impacted by congestion on the roadway?
- **reliability:**
How often do crashes or incidents occur on the roadway?

METRO TRAFFIC MAKING IT HARD FOR PARAMEDICS

HEAVY TRAFFIC ACROSS THE METRO AREA

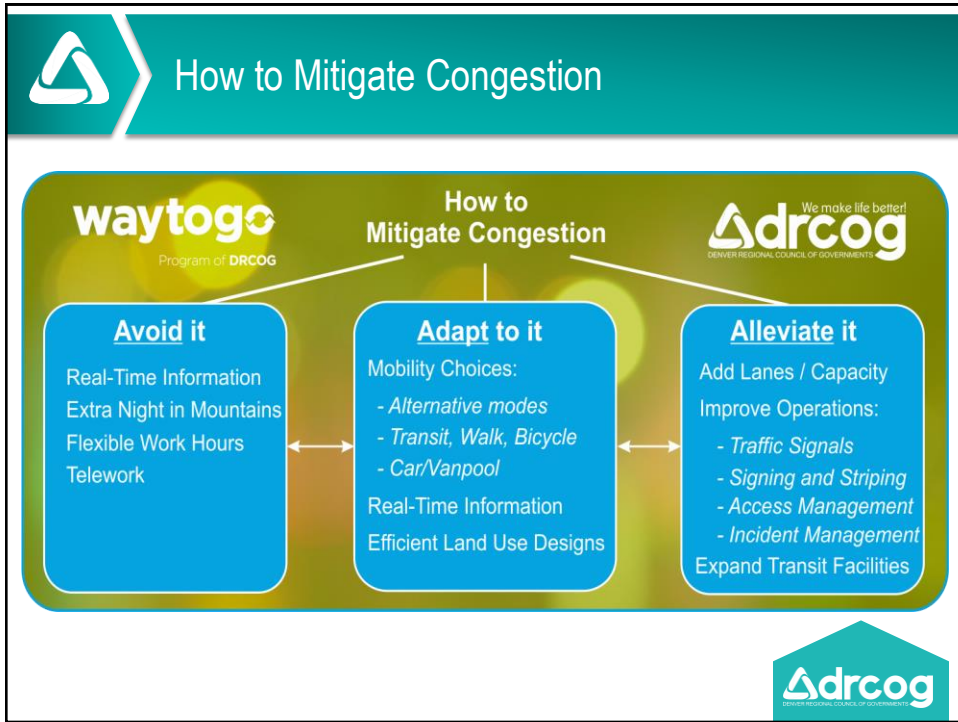
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Current and future congestion on the Regional Roadway System (freeways and arterials)

	2017		2040 (RTP)		% Change between 2017 and 2040
	Average Weekday	Annual Total Estimate (1)	Average Weekday	Annual Total Estimate (1)	
Vehicle Measures:					
Vehicle Miles of Travel	64,394,000	21,765,052,000	86,546,000	29,252,653,000	34%
Vehicle Hours of Travel	1,448,000	489,414,000	2,084,000	704,494,000	44%
Vehicle Hours of Delay	236,000	79,736,000	483,000	163,261,000	105%
Travel Delay Per Driven Registered Vehicle (2)	7 minutes	42 hours	11 minutes	62 hours	48%
Travel Delay Per Household	11 minutes	61 hours	16 minutes	89 hours	45%
Person Measures:					
Person Miles of Travel	88,490,000	29,909,740,000	119,598,000	40,423,963,000	35%
Person Hours of Travel	1,994,000	673,928,000	2,831,000	956,815,000	42%
Person Hours of Delay	326,000	110,053,000	663,000	224,003,000	104%
Travel Delay Per Resident	6 minutes	34 hours	9.2 minutes	52 hours	54%
Other:					
Percent of Travel Time in Delayed Conditions	16%	n.a.	23%	n.a.	43%
Travel Time Variation (peak vs. off peak)	1.22	n.a.	1.37	n.a.	12%
Lane Miles of Roads Congested for 3+ Hours	1,547	n.a.	2,820	n.a.	82%
(Percent of total Lane Miles)	22%	n.a.	38%	n.a.	n.a.
Economic Travel Delay Costs:					
Commercial Vehicles (3)	\$1,600,000	\$541,100,000	\$2,700,000	\$909,900,000	68%
Passenger Vehicle Persons (3)	\$3,300,000	\$1,099,400,000	\$5,600,000	\$1,900,800,000	73%
Total Cost of Delay	\$4,800,000	\$1,640,500,000	\$8,300,000	\$2,810,700,000	71%
Transit and Other Regionwide Measures:					
Total RTD Transit Boardings	337,000	n.a.	603,000	n.a.	79%
Rail Transit Boardings	101,500	n.a.	218,000	n.a.	115%

77% of regional VMT



3. PERFORMANCE OF RECENTLY COMPLETED PROJECTS

Congestion Mitigation Toolkit Summary

1. Active roadway management

- A. Traffic signal timing/coordination/equipment
- B. Ramp meters
- C. Access management
- D. Incident management and response
- E. Traveler information mechanisms
- F. Electronic toll collection (ETC)
- G. Roadway signage
- H. Communication connections and surveillance

2. TDM/non-SOV travel options

- A. Transit service and facility expansion
- B. Transit queue-jump lanes and signal priority
- C. Parking and curbside management
- D. Telework and flexible work schedules
- E. Ridesharing services
- F. Off-street multi-use trails (pedestrian and bicycle)
- G. On-street bicycle treatments
- H. Efficient land use and development practices

3. Physical roadway capacity

- A. Intersection turn lanes
- B. Acceleration/deceleration lanes
- C. Hill-climbing lanes
- D. Grade-separated railroad crossings
- E. Interchange redesigns
- F. Roundabout intersections
- G. Managed lanes (toll express, HOV, etc.)
- H. New travel lanes (widening), new roadways

Congestion Mitigation Toolkit

DRCOG
DENVER REGIONAL COUNCIL OF GOVERNMENTS
June 2008

DRCOG region Transportation Improvement Program projects completed: 2008-2017

- Active roadway management projects (\$50m+)
 - Signal timing
 - Intelligent transportation systems
 - Transportation operations
- Transportation demand management/non-SOV travel choice projects
 - Transit (\$3b+)
 - FasTracks support
 - Bus service expansion
 - Transportation demand management (~\$40m)
 - Way to go
 - Transportation management associations
 - Bicycle and pedestrian (~\$75m)
 - 40+ new facilities
 - 7 over/underpasses

way to go
A program of DRCOG

ATTACHMENT 1

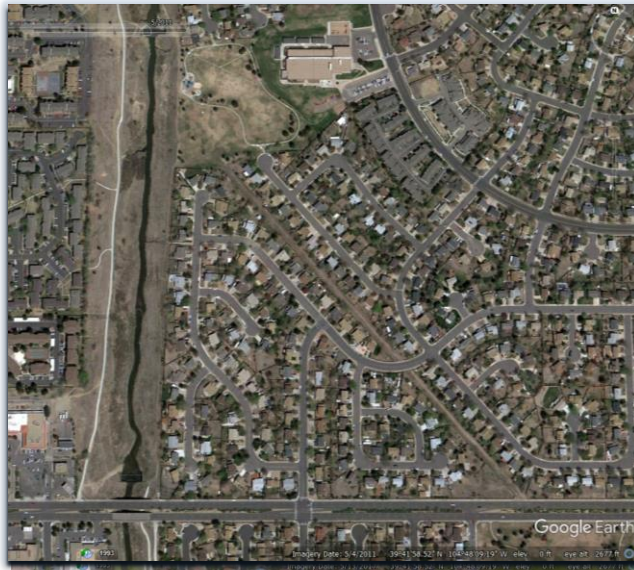


DRCOG region Transportation Improvement Program projects completed: 2008-2017

- Freeways/managed lanes (\$800m+) includes:
 - U.S. Route 36 toll express/bus rapid transit
 - North I-25 interim managed lanes, U.S. Route 36 to 120th Avenue
 - I-25, Ridgeway Parkway to County Line Road
 - I-225, Parker Road to Second Avenue
- Arterial streets (\$200m+) includes:
 - Colfax/17th avenues at I-225
 - Parker Road at Arapahoe Road interchange
 - Foothills Parkway (State Highway 157), Valmont Road to SH 119
- Railroad grade separations (\$120m+):
 - Pecos Street over railroad
 - Peoria Street over railroad/Smith Road
 - Wadsworth Boulevard under railroad/Grandview Ave



Tollgate Creek multi-use trail: before (2011); completed project (2017)



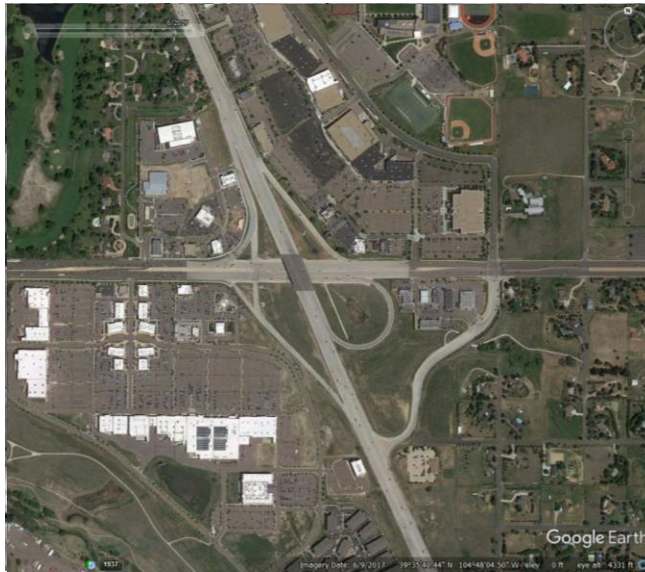
ATTACHMENT 1



**Broadway / Euclid underpass
before (2005); completed project (2014)**

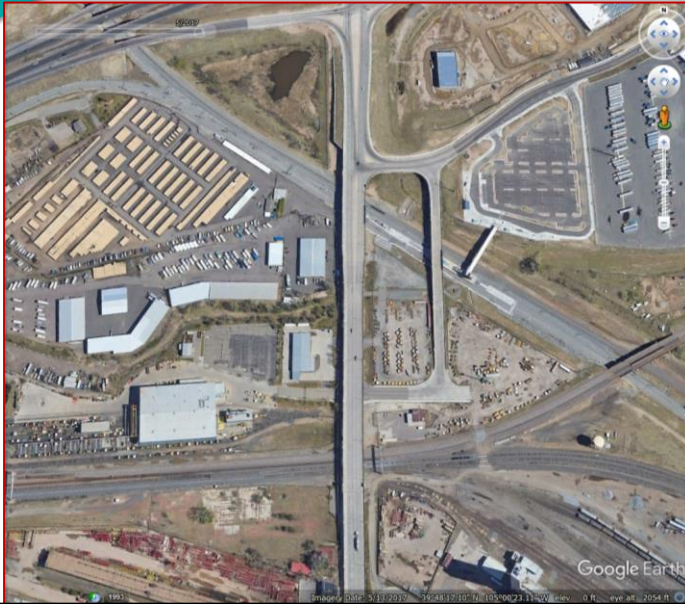


**Parker and Arapahoe- Long ago (1955); before
construction (2005); completed project (2012)**





Pecos St. before (2007); construction (2010);
completed project (2017)



Wadsworth / Grandview RR before (2005);
construction (2008); completed project (2017)



ATTACHMENT 1

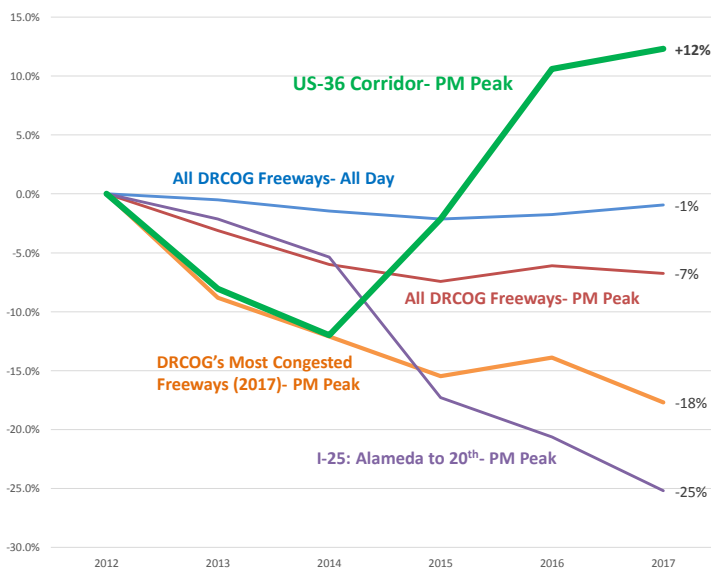


Regional benefits of the projects

- Used DRCOG's Focus Regional Travel Demand Model
- 18,500 person hours of delay per day reduced
- 6% less of travel mileage in severely congested conditions



Results of US-36 toll express/bus rapid transit project DRCOG annual average freeway speeds compared to 2012





Special Congestion Topic

4. WHAT WILL TRANSPORTATION BE LIKE IN 2040



New technologies and innovation

- New travel modes, mobility services and safety systems
- Travelers and shippers making better decisions using real-time information
- Metro Vision: DRCOG will support and facilitate deployment of technology-related infrastructure and services that benefit the region.





Connected Vehicles (CVs)

- Vehicle to vehicle (V2V) communication
 - Vehicle to infrastructure (V2I) communication
 - Safety benefits – crash & incident reduction/avoidance
 - Travel reliability benefits
- “V2X”



Autonomous Vehicles (AVs)

- Various levels of human driver operation: driver control with vehicle assistance (new cars today) --> full automation
- Various location settings: general purpose lanes to fixed guideways
- Various services: private vehicle, fleets, transit
- Collaboration of trucking industry, technology companies and government agencies (FHWA, NHTSA)





Mobility Choice Blueprint (RTD, DRCOG, CDOT, Metro Chamber)

- **Target options for connected mobility**
 - transit, personal vehicles, for-profit mobility services, car-sharing, ride-sharing, bicycling and walking
- **Identify public-private pilot projects**
- **Improve roadway reliability with new technology**
 - Reduce crashes and incidents, support active traffic management, variable speed limits and lane control.
- **Implement public-private pilot projects,.**
- **Hand-off implementation of identified strategies to transportation agencies.**



MOBILITY CHOICE
BLUEPRINT



Considerations With Vehicle Technologies

- How will the capacity for carrying vehicles on the region's roadways change?
 - Increase? (closer vehicle spacing)
 - Decrease? (longer gaps for safety)
- Will VMT increase? (if increased roadway capacity entices more travel)
- Will alertness level of drivers decrease? (if overly dependent on new technology)
- How can multi-passenger HOV travel be increased? (such as shared rides and transit)





Regional Transportation Committee 2019 Meeting Schedule

Meetings held in 1st Floor Aspen conference room
DRCOG, 1001 17th St., Denver, CO 80202

8:30 AM

Jan 15
Feb 19
Mar 19
Apr 16
May 14*
Jun 18
Jul 16
Aug 20
Sept 17
Oct 15
Nov 19
Dec 17

RTC meetings held monthly on the day (Tuesday) before
the Board Meeting (Board meets every 3rd Wednesday)

This means the RTC meetings are held typically on the
3rd Tuesday of the month, ***except as noted.**

