

AGENDA

TRANSPORTATION ADVISORY COMMITTEE

Monday, September 26, 2016

1:30 p.m.

1290 Broadway

Independence Pass Board Room - Ground floor, West side

1. Call to Order
2. Public Comment
3. August 22, 2016 TAC Meeting Summary
(Attachment A)

ACTION ITEMS

4. Discussion on reallocation of FYs 2016 and 2017 Station Area Master Plan/Urban Center (STAMP/UC) funds from a returned study.
(Attachment B) Derrick Webb, Regional Planner

INFORMATIONAL ITEMS

5. Briefing on Collaborative Infrastructure Data Project.
(Attachment C) Ashley Summers
6. Briefing on draft 2015 Annual Report on Roadway Traffic Congestion in the Denver Region.
(Attachment D) Robert Spotts

ADMINISTRATIVE ITEMS

7. Member Comment/Other Matters
8. Next Meeting – October 24, 2016
9. 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.



ATTACHMENT A

MEETING SUMMARY TRANSPORTATION ADVISORY COMMITTEE Monday, August 22, 2016

MEMBERS (OR VOTING ALTERNATES) PRESENT:

Jeanne Shreve	Adams County
Kimberly Dall	Adams County-City of Brighton
Bryan Weimer (Alternate)	Arapahoe County
Dave Chambers	Arapahoe County-City of Aurora
Tom Reed	Aviation
George Gerstle	Boulder County
Heather Balsler	Boulder County-City of Louisville
Steve Klausing	Business
Tom Schomer	Broomfield, City and County
Paul Jesaitis	Colorado Dept. of Transportation, Reg. 1
Jeff Sudmeier (Alternate)	Colorado Dept. of Transportation, DTD
Keith Sheaffer (Alternate)	Colorado Dept. of Transportation, Reg. 4
Janice Finch	Denver, City and County
Ryan Billings (Alternate)	Denver, City and County
Douglas Rex	Denver Regional Council of Governments
Art Griffith	Douglas County
John Cotten (Vice Chair)	Douglas County-City of Lone Tree
Rick Pilgrim	Environment
Greg Fischer	Freight
Bob Manwaring (Chair)	Jefferson County-City of Lakewood
Steve Durian	Jefferson County
Hank Braaksma	Non RTD Transit
Ken Lloyd	Regional Air Quality Council
Bill Sirois (Alternate)	Regional Transportation District
Sylvia Labrucherie	Senior
Aylene McCallum	TDM/Nonmotor
Richard Leffler	Weld County

OTHERS PRESENT:

Maria D'Andrea (Alternate)	Adams County-Commerce City
Mac Callison (Alternate)	Arapahoe County
Phil Greenwald (Alternate)	Boulder County-City of Longmont
Richard Zamora (Alternate)	Colorado Dept. of Transportation, Reg. 1
Flo Raitano (Alternate)	Denver Regional Council of Governments
Tom Reiff (Alternate)	Douglas County-Town of Castle Rock
Aaron Bustow (Ex Officio Alternate)	FHWA
Dave Baskett (Alternate)	Jefferson County-City of Lakewood
Kate Cooke (Alternate)	Regional Air Quality Council
Ted Heyd (Alternate)	TDM/Nonmotor

Public: Tom Schomer, Danny Herrmann, JoAnn Mattson, CDOT Reg. 1; Kelsey Relph, Infrastructure Engineers, Inc.

DRCOG staff: Steve Cook, Todd Cottrell, Jacob Riger, Melina Dempsey, Greg MacKinnon, Mark Northrop, Matthew Helfant, Will Soper, Derrick Webb, Casey Collins

Call to Order

Chair Bob Manwaring called the meeting to order at 1:30. He introduced Tom Schomer, Broomfield City Traffic Engineer, as Broomfield's member to replace former member Debra Baskett.

Public Comments

There were no public comments.

Summary of July 25, 2016 Meeting

The meeting summary was accepted, with the addition of Lenna Kottke in attendance at the July 25 meeting.

ACTION ITEMS

Discussion on amendments of the 2016-2021 Transportation Improvement Program (TIP).

Todd Cottrell presented the 11 proposed amendments, which have been found to conform with the State Implementation Plan for Air Quality.

The following requests were made in response to DRCOG receiving additional FAST Act funding that, when combined with previous project savings and returns, totaled \$21.399 million. Of that amount, \$12.223 million was for STP-Metro (roadway projects and studies) projects and \$9.176 million was for CMAQ (bicycle/pedestrian and transit) projects.

Three sponsors requested advancing existing project phases—Castle Rock, RTD, and Superior. Waiting list project sponsors of ranked projects by funding category (either STP-Metro and the other for CMAQ and/or TAP) were contacted by staff and the following amendments were requested.

Sponsor	TIP ID	Proposed Amendments	
CDOT Region 1	New Project	US-85 Corridor Improvements: I-76 to 124th Ave	This project will conduct preconstruction activities for corridor improvements to US-85, from I-76 to 124 th Ave.
Thornton	2012-081	North Metro Rail Bicycle/Pedestrian Access to Three FasTracks Stations	This project is moved to the current TIP and the scope is adjusted to reflect no improvements at 144 th Ave. and other project modifications.
Castle Rock	2016-041	Founders Pkwy and Allen Way Intersection Improvements	Funding is advanced per TIP waiting list protocol
RTD	2016-019	Colfax 15L Transit Improvements: I-225 to I-25	Funding is advanced per TIP waiting list protocol.
Superior	2016-034	Superior Trail: McCaslin BRT to Davidson Mesa Underpass	Funding is advanced per TIP waiting list protocol
Commerce City	New Project	88th Ave NEPA Study: I-76 to Hwy 2	Add new NEPA study per waiting list protocol.
Longmont	New Project	Southwest Longmont Subarea Operations Study	Add new operational study per waiting list protocol.
Douglas County	New Project	US-85: Blakeland Dr to County Line Rd Operational Improvements	Add new project per waiting list protocol for operational improvements along US-85.
University of Colorado-Boulder	New Project	19th Street Trail and Bridge: Boulder Creek Trail to CU Main Campus	Add new project per waiting list protocol for a new trail and bridge connecting the CU campus to Boulder.
Boulder	New Project	SH-157/Foothills Pkwy Bike/Ped Underpass: north and south of Colorado Ave	Add new bicycle/pedestrian underpass project per waiting list protocol.
Denver	New Project	South Platte Greenway Access Sidewalk Improvements: Iowa Ave RR Underpass and Santa Fe Dr	Add new sidewalk improvements project per waiting list protocol.

Upon the Board's approval of the requested amendments, partial and fully funded projects will be removed from Table 5 of the 2016-2021 TIP and the remaining wait list projects renumbered. Mr. Cottrell noted another revision to Table 5 will be the update to remove Denver's Highline Canal project, as Denver has funded the project.

George Gerstle MOVED to recommend to the Regional Transportation Committee amendments of the 2016-2021 Transportation Improvement Program (TIP), with the deletion to be indicated in Table 5 of City of Denver's Highline Canal project. The motion was seconded and passed unanimously.

Discussion on redetermination of air quality conformity for the 2015 Cycle 2 2040 Fiscally Constrained Regional Transportation Plan (2040 RTP), Amended 2016-2021 Transportation Improvement Program (TIP) and associated air quality conformity documents.

Robert Spotts presented on the redetermination of air quality conformity which was prompted by staff's detection of coding errors in the roadway network of the DRCOG travel mode after approval of the 2015 Cycle 2 conformity determination in March 2016.

The air quality Interagency Consultation Group decided a redetermination of regional conformity, including a new air quality conformity analysis, was necessary. Staff corrected the error, re-ran the travel model, and provided results to the Colorado Air Pollution Control Division to calculate mobile source emissions. Their analysis also used an updated version of the EPA MOVES emissions model.

The new emissions results have changed insignificantly compared with the previous conformity analysis, resulting in minor modifications to Table 4 in the *CO and PM10 Conformity Redetermination* and Table 3 and Appendix C in the *8-hour Ozone Conformity Redetermination*.

The emission results for this redetermination of regional conformity remain significantly under each of the individual pollutant budgets. Therefore, a redetermination of conformity for the *2015 Cycle 2 2040 RTP and Amended 2016-2021 TIP* has been demonstrated.

A public hearing was held on the redetermination at the August 17, 2016 Board meeting. No comments were received at the hearing or during the preceding 30-day comment period.

Heather Balsler MOVED to recommend to the Regional Transportation Committee redetermination of air quality conformity for the *2015 Cycle 2 2040 Fiscally Constrained Regional Transportation Plan (2040 RTP), Amended 2016-2021 Transportation Improvement Program (TIP)* and associated air quality conformity documents. The motion was seconded and passed unanimously.

INFORMATIONAL ITEMS

Briefing on CDOT's 10-year development program.

Danny Herrmann, CDOT Region 1, and Karen Schneiders, CDOT Region 4 presented on CDOT's draft development program that bridges the gap between its 4-year Statewide Transportation Improvement Program (STIP) and its 20+year Statewide Transportation Plan (SWP). While not fiscally constrained, the program emphasizes implementation of projects that have completed or are undergoing pre-construction activities should additional funding become available. This includes several regionally-significant projects identified in Appendix 4 of the 2040 RTP.

The list is still under development, with transit, operations, and multimodal projects to be included. More information is available at the [CDOT website](#). The list will be presented to STAC and other groups in October. CDOT requested that comment be submitted by the end of August.

Briefing on FAST Act critical freight corridor designations.

Jeff Sudmeier, CDOT, presented an update on identifying the critical urban and rural freight corridors for the National Highway Freight Network (NHFN). The NHFN will provide \$15 million annually to Colorado starting in FY 2016. Projects must be on the network or be an intermodal or freight rail project to be eligible. A project selection process will be held this fall for the first two years (FYs 2016 and 2017) funding, and development of a longer-range freight strategy for project funding in the following years is anticipated.

The FAST Act requires states and MPOs to designate critical corridors; CDOT and DRCOG are collaborating on defining within the DRCOG region. FHWA has apportioned Colorado 240 statewide miles for freight designation (160 for rural and 80 in urban areas statewide) which can be updated over time. CDOT is looking to identify segments rather than entire corridors, and to identify the areas with the greatest need for investment.

Initial critical corridor designations will be submitted by CDOT to FHWA this fall. At the same time, CDOT is kicking off an 18-month process to develop a Multimodal Freight Plan and an update to the State and Passenger Rail Plan.

Ken Lloyd expressed interest in participating in a CDOT staff workgroup regarding air quality aspects.

Tom Reed expressed concern Pena Boulevard is not listed as a primary corridor.

Mr. Sudmeier said an enlargement of the Denver metro area on the NHFN could be provided and asked the committee to let him know of any inaccuracies noted on the primary network.

The committee was asked to advise their CDOT regions and DRCOG staff (Matthew Helfant) by September 2 if they have freight-related projects for corridor designation consideration. Once input is received, the proposed list will be brought back to TAC for further consideration.

The Transportation Commission approval is anticipated in November. Mr. Sudmeier clarified that this request is for "initial" corridor designations, in order to proceed with the project selection process quickly for FY 2016 funding, and to correspond with rollout of the National Multimodal Freight Network scheduled for December.

Briefing on CDOT's risk assessment process.

Steve Markovetz, CDOT, presented on CDOT's new subrecipient (local agency) monitoring and risk assessment process to measure the risk of compliance with federal requirements; to select candidate local agency projects for monitoring; and to develop project-specific monitoring based on ongoing observations.

He noted there will be two new reports and forms required. CDOT is responsible for one and will collaborate with the local agency on the other.

All high-risk projects will be monitored. CDOT will determine risk using an assessment questionnaire (a sample Excel file was subsequently sent to TAC) and will randomly select 30% of the medium-risk and 3% of the low-risk projects for monitoring. It was noted that FTA is working on their own risk assessment tool.

CDOT will start local agency training this fall.

ADMINISTRATIVE ITEMS

Member Comment/Other Matters

Jeanne Shreve asked when RTD is going to bring to DRCOG the results of its latest Annual Program Evaluation. She noted her understanding that RTD is proposing to eliminate the FasTracks Internal Savings Account (FISA) that was established to fund FasTracks capital projects and redirect the FISA dollars to operations and maintenance. She expressed concern about this potential action and that local government staff had not heard about this before. George Gerstle, Heather Balser, and Bob Manwaring concurred. Doug Rex said DRCOG staff would express the issues and concerns raised to RTD staff.

The meeting was adjourned at 3:01 p.m. The next meeting is scheduled for September 26, 2016.

ATTACHMENT B

To: Chair and Members of the Transportation Advisory Committee

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

Meeting Date	Agenda Category	Agenda Item #
September 26, 2016	Action	4

SUBJECT

Station Area Master Plan/Urban Center (STAMP/UC) Project Pool for fiscal years 2016 and 2017.

PROPOSED ACTION/RECOMMENDATIONS

Approval of reallocation of FYs 2016 and 2017 STAMP/UC funds from a returned study.

ACTION BY OTHERS

[April 15, 2015](#) – DRCOG Board approved the STAMP/UC set-aside process for fiscal years 2016 and 2017.

[October 21, 2015](#) – DRCOG Board approved seven STAMP/UC studies (FYs 2016 and 2017) and directed staff to allocate the remaining \$50,000 from this cycle.

[December 16, 2015](#) – DRCOG Board approved funding of the North Capitol Hill/Colfax Urban Center study submitted by the City and County of Denver.

SUMMARY

In October 2015, the DRCOG Board approved funding seven studies totaling \$1,150,000 in federal funds, leaving \$50,000 unallocated in the FYs 2016 and 2017 STAMP/UC set-aside. At that time, the Board further directed staff to offer the remaining \$50,000 to applicants that applied for but did not receive funds during the original allocation.

In November 2015, DRCOG staff reconvened the Project Selection Panel to allocate the remaining \$50,000. In the process of doing so, the Panel ranked the remaining unfunded projects (Attachment 1) as direction to staff for making any future project funding selections, if needed.

In July 2016, the City of Thornton notified DRCOG staff of its intent to not utilize the Station Area Master Plan grant the City was awarded for the North Thornton and Highway 7 TOD Master Plan (Attachment 2). Based on the Panel's ranked unfunded project list, the next study eligible for funding is the SH-7 Arterial Bus Rapid Transit Station Design, Multimodal Station Connectivity Recommendations and Right-of-Way Needs submitted by Broomfield. DRCOG staff contacted Broomfield and received written acceptance of the funds for the study (Attachment 3).

Broomfield and Boulder County also agreed to have Boulder County be the official sponsor for the project in the TIP due to their involvement with the SH-7 Bus Rapid Transit Feasibility Study. Accordingly, DRCOG received written acceptance of the project sponsor change from Boulder County (see Attachment 4).

PREVIOUS DISCUSSIONS/ACTIONS

[November 23, 2015](#) - TAC recommended approval of STAMP/UC Project Selection Panel funding allocations.

PROPOSED MOTION

Motion to recommend to the Regional Transportation Committee to utilize the returned \$160,000 in federal funds from the City of Thornton to fund the SH-7 Study for fiscal years 2016 and 2017.

ATTACHMENTS

1. Station Area Master Plan/Urban Center Waitlist Project Recommendations
2. City of Thornton letter
3. City and County of Broomfield letter
4. Boulder County letter

ADDITIONAL INFORMATION

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

ATTACHMENT 1

**Station Area Master Plan/Urban Center
Waitlist Project Recommendations**

	Total	Rank	Notes
Broomfield	14	1	
Denver - Neighborhood Plan	18	2	<i>funded 12/2015 (50k)</i>
Longmont	21	3	
Denver - Urban Mobility Hubs	25	4	
Parker	30	5	
Englewood III	31	6	
RTD	32	7	
Englewood II	36	8	

ATTACHMENT 2



City Hall
9500 Civic Center Drive
Thornton, CO 80229

Office of the City Manager
303-538-7200
FAX 303-538-7562
www.cityofthornton.net

July 27, 2016

Todd Cottrell, Senior Transportation Planner
Denver Regional Council of Governments
1290 Broadway
Suite 100
Denver, Colorado 80203-5606

Dear Mr. Cottrell:

This letter is to inform you that the City of Thornton will not be using the Station Area Master Plan grant it was awarded for the North Thornton and Highway 7 TOD Master Plan. We had submitted the application for the grant anticipating that funding for the remainder of the North Metro Line to 162nd Avenue North End Station would be forthcoming. However, it is our understanding that RTD's 2016 Annual Program Evaluation will not include extension of the North Metro Rail Line to the North End Station within the 2020 planning timeframe. Given this circumstance, we think it appropriate to turn back the funding and make it available for another, timelier, project.

It is our understanding that the next project in line for funding behind our Station Area Master Plan grant was the corridor study for State Highway 7 Arterial Bus Rapid Transit Station Design, Multimodal Station Connectivity Recommendations and Right-of-Way Needs submitted by the City and County of Broomfield on behalf of counties and cities between Boulder and Brighton. The City supports this project and we would be willing to contribute \$17,000 towards the local match, as indicated in the application for this project, if DRCOG is able to move the funding we received to this project.

If there is any additional paperwork that DRCOG needs from us, please contact Kent Moorman, 303-538-7593, for assistance.

Sincerely,



Jack Ethredge
City Manager



ATTACHMENT 3

September 8, 2016

Mr. Derrick Webb
Regional Planner, Denver Regional Council of Governments
1290 Broadway, Suite 700
Denver, Colorado 80203-5606

Re: FY' 17UC/STAMP Project

Dear Mr. Webb:

Thank you again for your consideration of the SH 7 – Arterial Transit Station Design, Multimodal Station Connectivity Standards and ROW Needs Project. We regret that a project was not able to move forward with the FY '17 grant, but are enthusiastic at the opportunity to step in and put the grant funding to use on this project. We believe this presents an ideal opportunity

As we have discussed, we are prepared to move forward to complete the work in the project scope given the available funds and timeline included in the grant application.

We would though, given some personnel changes, like to request that the project sponsor be changed from Broomfield to Boulder County. Boulder County has graciously offered to administer this project with the same scope and amended project budget. Boulder County is currently project sponsor of the SH 7 Bus Rapid Transit Feasibility Study and we believe their familiarity with the subject matter and project participants will assist this project in successfully moving forward.

Please let me know if you need any additional information at this time

Thank you.

A handwritten signature in blue ink, appearing to read "K. Standbridge".

Kevin Standbridge
Deputy City and County Manager

Cc: John Hersey, RTD
Marc Ambrosi, Boulder County
Scott McCarey, Boulder County
Tom Schomer, Broomfield



ATTACHMENT 4

Transportation Department

2525 13th Street, Suite 203 • Boulder, Colorado 80304 • Tel: 303.441.3900 • Fax: 303.441.4594
Mailing Address: P.O. Box 471 • Boulder, Colorado 80306 • www.bouldercounty.org

September 8, 2016

Mr. Derrick Webb
Regional Planner, Denver Regional Council of Governments
1290 Broadway, Suite 700
Denver, Colorado 80203-5606

Re: FY '17 UC/STAMP Project

Dear Mr. Webb:

Thank you again for your consideration of the State Highway 7 Arterial Transit Station Design, Multimodal Station Connectivity Standards and ROW Needs Project. While it is unfortunate that the project originally slated to use this funding was unable to move forward, we believe the funding will be put to great use through continuation of the planning process for high quality transit on State Highway 7.

Boulder County has worked closely with the City and County of Broomfield, along with the City of Boulder, City of Lafayette, Town of Erie, City of Thornton, City of Brighton, and Adams County to develop this project. We are confident that we will be able to complete the project scope of work within the available budget and on the timeline included in the application.

As agreed to in recent discussions with the City and County of Broomfield, we would like to request a transfer in project sponsorship and administration to Boulder County. Boulder County is currently project sponsor of the SH 7 Bus Rapid Transit Feasibility Study and we believe our familiarity with both the corridor and project partners will help provide continuity for this study. In addition, Boulder County's project administration will help eliminate personnel availability challenges that arose due to recent staffing changes in Broomfield.

As a final note, we believe this is an important project that is key for ensuring development takes into account the station, ROW, and connectivity needs that will be necessary to support high quality transit on the corridor. It will also keep momentum generated by the SH 7 Policy Advisory Committee progressing forward, moving us closer to our goal of a vibrant corridor with diverse mobility options.

Thank you,

George Gerstle,
Boulder County Director of Transportation

Cc: John Hersey, RTD
Marc Ambrosi, Boulder County
Scott McCarey, Boulder County
Tom Schomer, Broomfield

ATTACHMENT C

To: Chair and Members of the Transportation Advisory Committee

From: Ashley Summers, Information Systems Manager
303 480-6747 or asummers@drcog.org

Meeting Date	Agenda Category	Agenda Item #
September 26, 2016	Information	5

SUBJECT

This item provides information on a collaborative data project that DRCOG and its partners (including RTD and CDOT) recently completed.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

DRCOG, working with 21 partners in the region, recently finished a large data acquisition project to procure detailed infrastructure information. This specialty data (known collectively as “planimetric data”) consists of building outlines, sidewalks, parking lots and pavement information drawn through the interpretation of aerial imagery. This data is normally cost prohibitive for any one jurisdiction to purchase, so DRCOG used the Denver Regional Aerial Photography Project (DRAPP) model to pool funding sources. The result is foundational data for over 1100 square miles of the region that can be used by local planners and researchers. Immediate uses include development of emergency response plans, pedestrian routing and sidewalk quality studies, developing building inventories, and impervious surface analysis. The data is currently being made available for free, public download.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

ATTACHMENT

Staff presentation

ADDITIONAL INFORMATION

If you need additional information, please contact Ashley Summers, Information Systems Manager, at 303-480-6746.



Successful Data Collaboration: Planimetric Features

Presented by:
Ashley Summers

September 26, 2016



What are “planimetric features”?

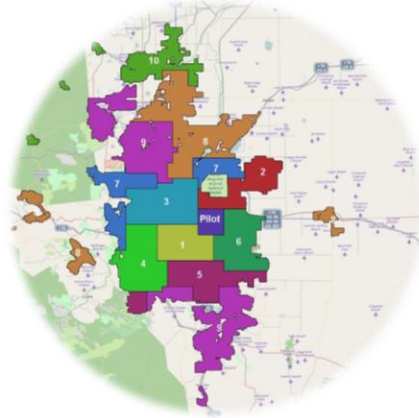
Building Roofprints | Edge of Pavement | Parking Lots |
Sidewalks | Trails | Ramps | Driveways





Project Background

In June 2016, DRCOG and 21 partners completed a project to develop planimetric features from the 2014 DRAPP imagery.

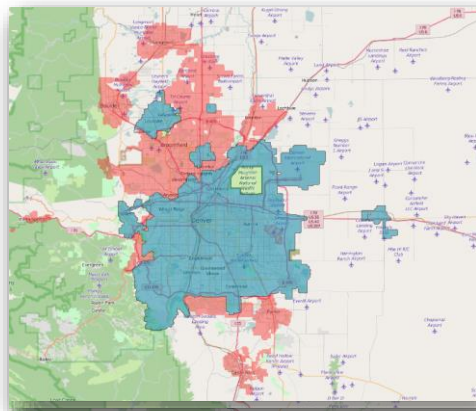


<http://gis.drcog.org/datacatalog/subjects/planimetrics>



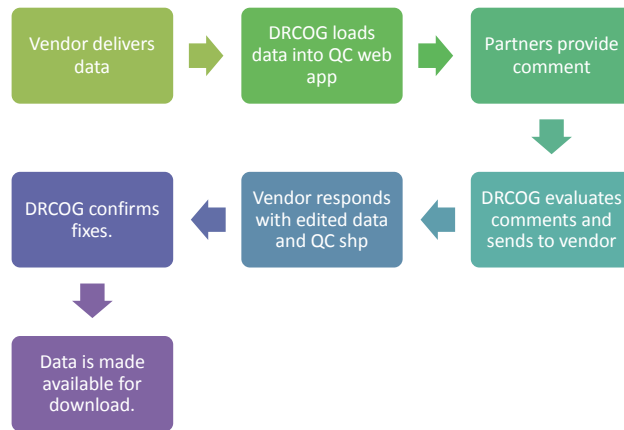
Extents

1. Building roofprints
2. Edge of pavement (poly)
3. Sidewalks (poly)
4. Parking lots
5. Sidewalk centerlines
6. Edge of pavement (line)
7. Driveways (poly)
8. Trail centerlines
9. Ramps

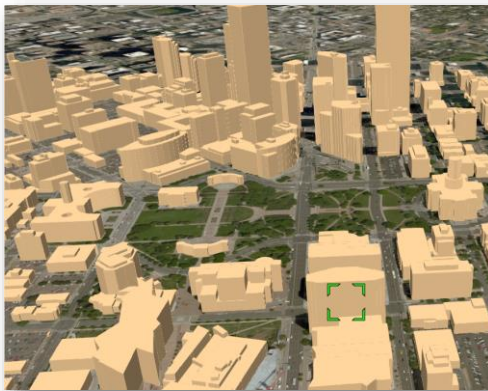




Data Quality



Data Uses



- [Special District Mapping](#)
- [Phone Apps for the Visually Impaired](#)
- [GoCode Colorado Winners Use Planimetrics](#)
- [Press release](#)

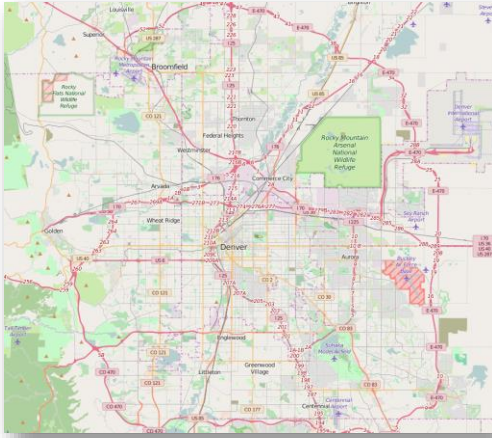
- Pedestrian routing (RTD)
- Fire rescue (South Metro Fire)
- Large scale energy simulation (NREL)
- Impervious surface analysis (Denver Water)
- Asset inventories
- Sidewalk availability and quality studies
- 3D building models
- Municipal mapping
- Bike/ped master plans

<http://gis.drcog.org/datacatalog/subjects/planimetrics>





Contributing to OpenStreetMap (OSM)



Purposes:

1. To make the data even more accessible to all potential users
2. To leverage a platform that DRCOG and RTD are already using for public, interactive maps

Priorities:

1. Building roofprints (~650,000)
2. Sidewalk centerlines

<http://gis.drcog.org/datacatalog/subjects/planimetrics>



What's next?

- What: updating the 2014 planimetric datasets using the 2016 imagery
- When: Q1 & Q2 of 2017, release RFP by October 5th
- Who: 25 potential partners, looking for more!
- Why: To leverage the data we've already captured, keep data current and useful (*updates are MUCH cheaper than new collections from scratch*)

<http://gis.drcog.org/datacatalog/subjects/planimetrics>



ATTACHMENT D

To: Chair and Members of the Transportation Advisory Committee

From: Robert Spotts, Senior Transportation/Air Quality Planner
303 480-5626 or rspotts@drcog.org

Meeting Date	Agenda Category	Agenda Item #
September 26, 2016	Information	6

SUBJECT

Discussion on DRCOG's draft *2015 Annual Report on Roadway Traffic Congestion in the Denver Region*.

PROPOSED ACTION/RECOMMENDATIONS

N/A

ACTION BY OTHERS

N/A

SUMMARY

As a component of DRCOG's federally required congestion management process, annual reports on traffic congestion have been prepared since 2006. Like previous reports, the *2015 Annual Report on Roadway Traffic Congestion in the Denver Region* presents information on vehicle miles traveled, performance measures, multimodal strategies in the congestion toolkit, and recent projects. In addition, this year's report highlights new "big data" sources of information for congestion measures, which will be incorporated over the next year.

Staff will summarize the draft report and solicit feedback at the TAC meeting.

PREVIOUS DISCUSSIONS/ACTIONS

N/A

PROPOSED MOTION

N/A

ATTACHMENT

Draft *2015 Annual Report on Roadway Traffic Congestion in the Denver Region*

ADDITIONAL INFORMATION

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

TAC Review Draft
September 26, 2016

2015 Annual Report on Roadway Traffic Congestion in the Denver Region

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2015 Annual Report on Roadway Traffic Congestion in the Denver Region

1. Introduction

The Denver Regional Council of Governments has prepared annual reports on traffic congestion since 2006. When comparing 2015 to 2006, three themes emerge:

- Traffic congestion is slightly worse overall for the region, due primarily to population growth.
- More transit options are available to help people avoid driving in severe congestion and there is greater popularity and opportunities to walk or bicycle to destinations.
- There is greater access to real-time information on traffic conditions, major incidents, and travel options to avoid driving alone.

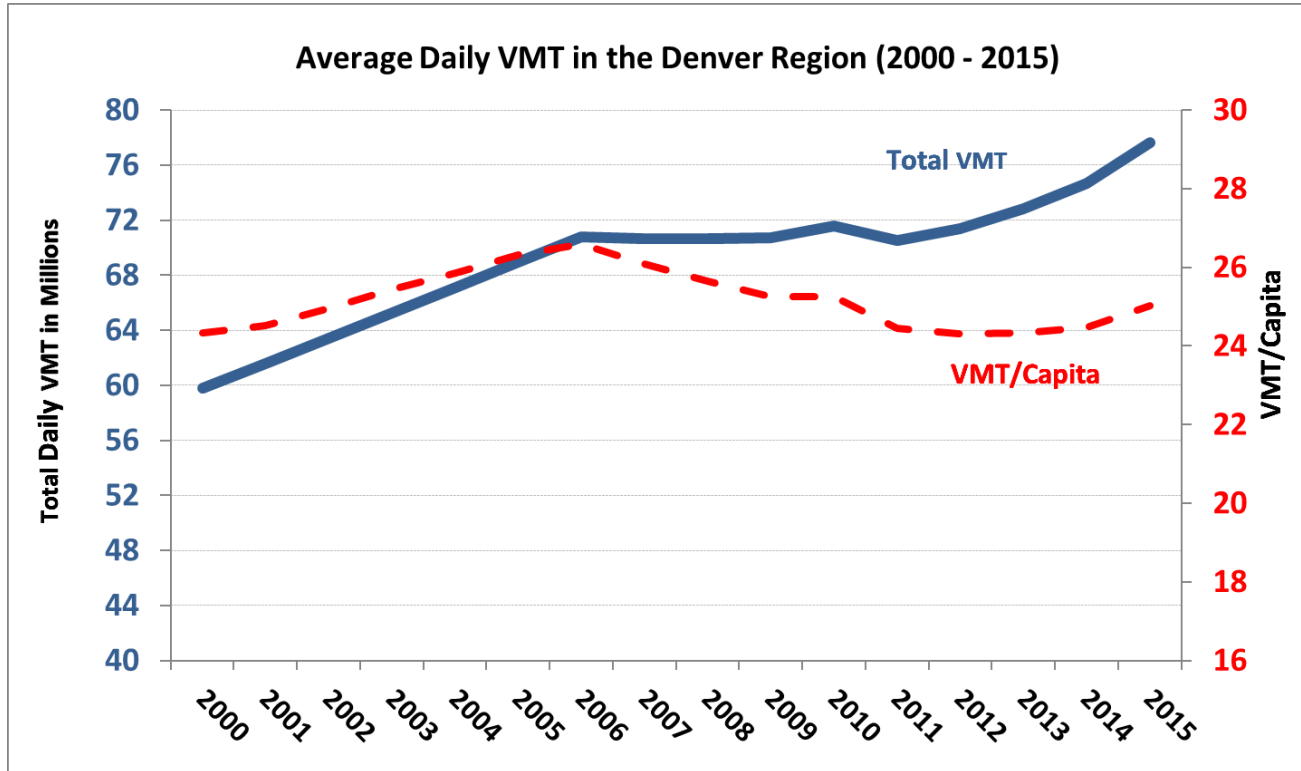
2. How much do we travel on a typical day? (Trends in VMT – Vehicle Miles of Travel)

DRCOG staff routinely estimates the annual change in the total vehicle miles traveled (VMT) per day on roadways in the Denver region. Staff consolidates data from several sources to produce the annual estimate. The sources include: Federal Highway Administration (FHWA) annual reports; CDOT automated traffic recorder “continuous counter” monitors; other traffic counts at locations with results for both the current and past analysis years; and other sources such as toll highway transactions.

Figure 1 depicts average weekday VMT by all types of motor vehicles for the Denver region over the past 15 years. The solid blue line shows that total daily VMT rose steadily through 2006, flattened out through 2011, but has increased in the past 4 years.

In 2015, the Denver Region saw the highest annual percentage growth (+4%) in VMT since the late 1990s. It also appears the region experienced the largest raw value growth in daily VMT ever (+3.0 million/day). In comparison, total VMT growth over the eight years from 2006 through 2014 was about 3.8 million.

Figure 1

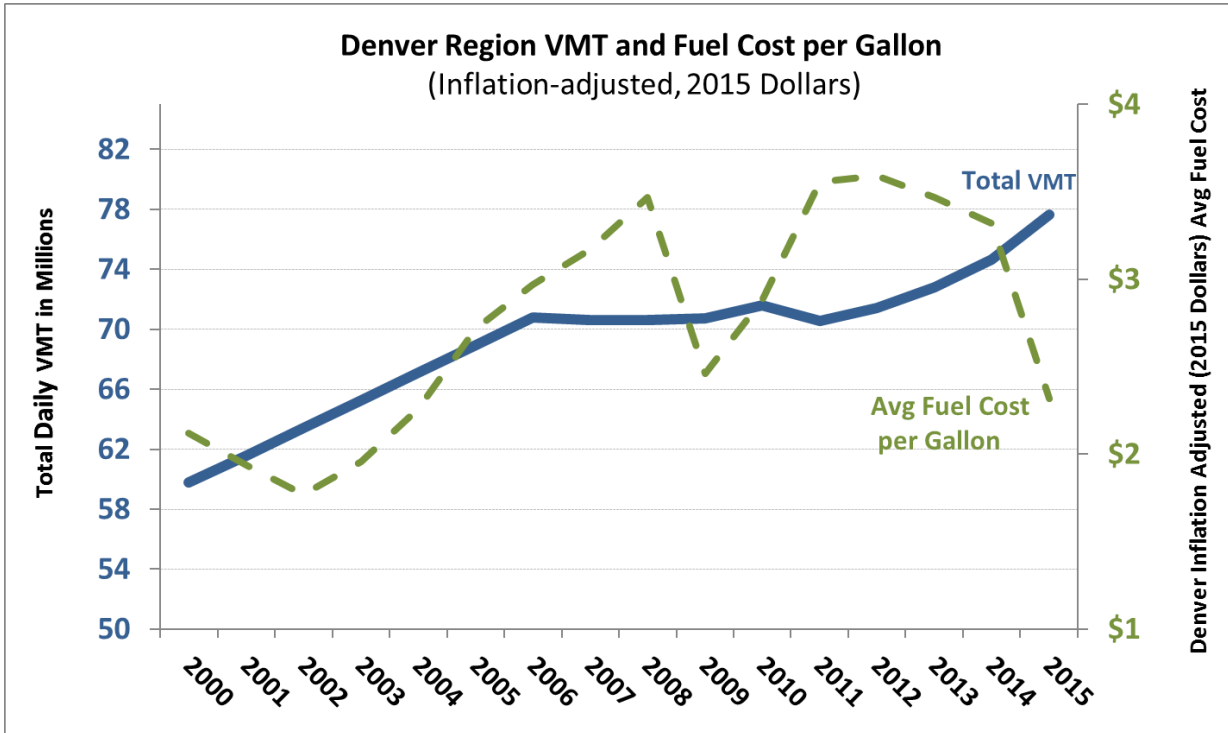


Compared to the 4% growth in VMT, the total population in the region increased by 2% in 2015. This resulted in the first distinguishable increase in VMT/capita since 2006 (dashed red line). While VMT/capita did increase, the region is still below the peak it hit in 2006.

The causes of the increase in VMT the past couple years can be attributed to many factors:

- Booming economy throughout the region,
- Increase in the number of personal trips to jobs, entertainment, shopping, etc.,
- Increase in commercial vehicle and service trips,
- Decrease in the price of fuel starting in late 2014 and remaining low through 2015 (see Figure 2),

Figure 2



The relationship between regional VMT, the economy, fuel costs, transportation options, and land use is extremely complicated, involving numerous economic considerations and personal decisions. However, it appears the combination of low fuel costs, a thriving economy, increased population, and market/personal habit adjustments have contributed to increase VMT in the Denver region. It does appear people are also making more trips by walking, bicycling, transit, or even shopping via the internet. However, service, delivery, and shared-ride vehicles must still travel on the region’s roadways to serve these people and businesses.



Though future VMT change is very difficult to predict, certain factors and responses must remain in the forefront in our effort to lower VMT per capita:

- VMT is a key element and is closely related to the region’s goals and federal mandates to reduce harmful pollutant emissions and greenhouse gases (GHGs),
- VMT is a direct contributor to increased traffic congestion,
- DRCOG and its partners must continue to support the interrelated elements of traffic congestion mitigation that can lead to reduced growth in VMT, by helping people AVOID and ADAPT to congestion:
 - Provide and encourage viable **mobility choices** (transit, walk, bicycle)
 - Create opportunities for **shorter trips** (e.g. via mixed use land use patterns)
 - Facilitate **carpool and vanpool** options (pre-organized and real time)
 - Encourage **teleworking** and flexible work hours
 - Support and use **TDM services** of DRCOG (waytogo.org) and its partner transportation management organizations
 - Improve **real-time traveler information** regarding major incidents on roadways or rail transit, and regarding optional travel modes at the moment.

3. New Methodologies for Measuring Traffic Congestion

DRCOG and other agencies have traditionally calculated traffic congestion measures based on models of an “average” day that incorporate traffic volumes, roadway capacity characteristics, vehicle occupancy, transit ridership, and other factors. The measures (as reported later in this document) reflect the three dimensions of congestion: width of roadways (bottlenecks), distance of traffic queuing back-ups, and length of time (hours per day) congestion occurs. Congestion is not an event that impacts a single location or point in time.

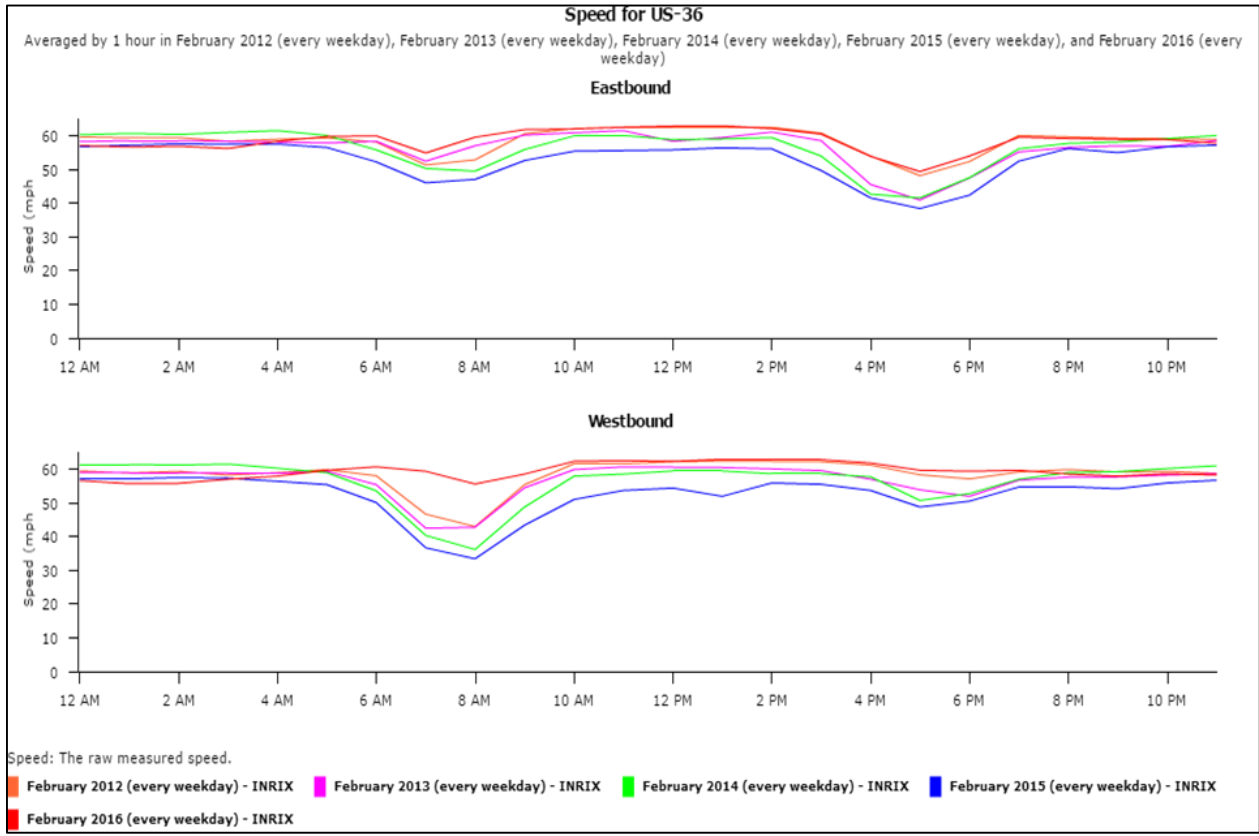
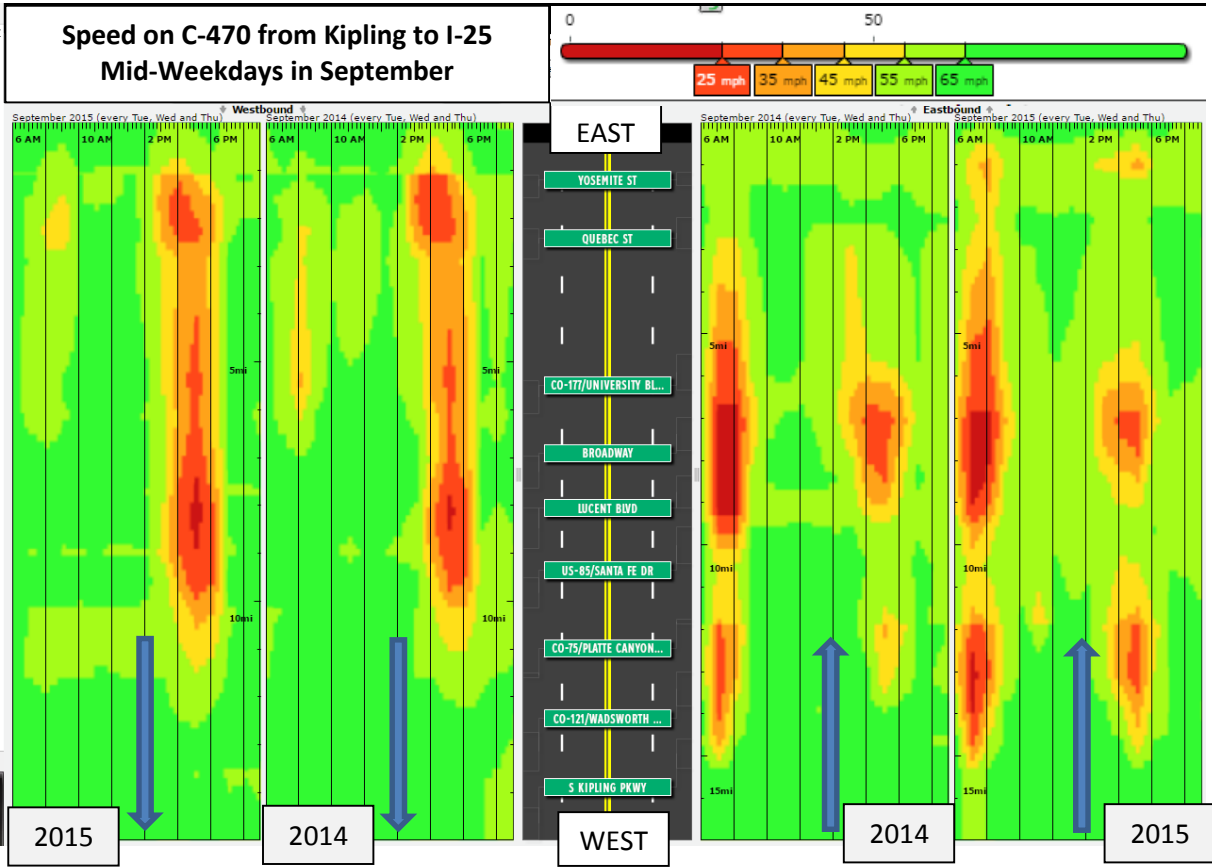
In recent years however, valuable new congestion information has become available based on new technologies and “big data”:

- Do you have a GPS navigation device in your car?
- Do you have packages delivered to you?
- Do you travel with your smart phone while walking, bicycling, driving, or any mode of travel?

If you answered yes to any of these questions, then you are a source of “big data” on traffic movements (speed, back-ups, origins, destinations, etc.) compiled by private companies such as INRIX and HERE. These companies, as well as other third party firms use GPS “vehicle probe” data to summarize traffic conditions in large metropolitan areas and on major highways throughout the world. Billions of pieces of information (data points) are obtained and converted into measurements and graphical depictions of congestion. The Colorado Department of Transportation (CDOT) has purchased data from INRIX, which has been made available to DRCOG. The results have been shown to be very accurate for freeways, rural highways, and roads that do not have a lot of traffic signals or roadside activity. Another benefit is the results reflect traffic conditions every hour throughout the year, and can be extracted for time periods from five hours ago to five years ago. Thus congestion due to incidents such as crashes, construction, weather events, or breakdowns is much better represented than in typical models.

Examples of data outputs are shown on the following page. DRCOG will incorporate some of the results into the congestion management process and future annual reports. Congestion impacts of crash reduction associated with advanced vehicle and roadway technology efforts will also be incorporated. In addition, several measures produced from big data vehicle probe sources must also be reported to the Federal Highway Administration (FHWA) per requirements of federal legislation.

Examples of Graphic Outputs from INRIX



4. CMP Transportation Projects Recently Completed or Underway

Several important congestion relief projects have been completed by local governments, CDOT, and RTD in the past year or are underway, as shown in **Table 1**. Transit and bicycle/pedestrian projects provide travel options for many people to avoid congestion.

Table 1
Example Transportation Projects Addressing Congestion and Mobility

Interchange/Roadway Projects:	Status
Central Park Blvd.: extension from 47 th Avenue to 56 th Avenue	Completed
I-70 eastbound Clear Cr. County: peak period managed lane	Completed
US-36 from Boulder to I-25: add managed lanes/Bus Rapid Transit	Completed
US-6 Freeway from Federal Boulevard to I-25: reconfigure interchange	Completed
I-25 from US-36 to 120 th Avenue: add managed lanes	Completed
I-25 from Ridgeway Parkway to C-470/County Line Road: widening	Completed
Arapahoe Road at I-25: interchange reconfiguration	Underway
E-470 from Parker Road to Quincy Avenue: widening	Underway
C-470 from Kipling Parkway to I-25: add managed lanes	Underway
Rapid Transit Projects:	
A-Line East Rail Line (DUS to DIA) commuter rail	Completed
B-Line Northwest Corridor (Westminster station to DUS) commuter rail	Completed
R-Line I-225 Corridor: (9 Mile to Peoria/Smith stations) light rail	open 2016
G-Line Gold Line (Ward Road station to DUS) commuter rail	open 2016
North Metro Rail Line (DUS to 124 th -Eastlake station) commuter rail	Underway
Southeast Rail (Lincoln to Ridgeway stations) light rail	Underway
Bicycle/Pedestrian Projects:	
US-36 Bikeway	Completed
Kipling Avenue Multi-use Path: 32 nd Ave. to 44 th Ave.	Completed
Pearl Parkway Multi-use Path (30 th Street to Foothills Parkway)	Completed
38 th /Blake Street Station area pedestrian access improvements	Completed
Colorado Center Pedestrian/Bicycle bridge over I-25	Completed
Superior Trail: McCaslin BRT Station to Davidson Mesa (US-36 Bikeway)	Underway
US-6 Multi-use Path: Colfax Avenue to Johnson Road	Underway



US-36 BRT



Colorado Center I-25 Crossing

5. Annual Congestion Performance Measures

DRCOG maintains a database to monitor traffic congestion and performance measures for the 2,400 mile Regional Roadway System (Figure 3). The congestion database identifies key attributes, associated with roadway capacity and traffic volume for each segment of the system.

The **Regional Roadway System** represents the DRCOG-designated freeways, tollways, major regional arterials, and principal arterials. These are the most heavily traveled and important connecting corridors of the region. This system handles almost 80% of the total traffic in the region.

Table 2 displays several measures for the Regional Roadway System. The 2040 estimates are based on forecasts from the DRCOG regional travel demand model. A key assumption is that over 1.2 million additional people will be living in the Denver region by 2040, a 39 percent increase. There will be significant growth in transit, bicycle, and walking trips; outpacing the 39 percent population increase. These are very important travel options to encourage people to avoid or adapt to traffic congestion. However, the increase in travel by such “non-SOV” modes will not likely be enough to offset the growth in motor vehicle travel and associated traffic congestion.

Table 2
Current and Future Congestion Measures on Denver Regional Freeways and Arterials

	2015		2040 (RTP)		% Change between 2015 and 2040
	Average Weekday	Annual Total Estimate (1)	Average Weekday	Annual Total Estimate (1)	
Vehicle Measures:					
Vehicle Miles of Travel	59,973,000	20,270,768,000	72,740,000	24,585,996,000	21%
Vehicle Hours of Travel	1,388,000	469,053,000	1,918,000	648,251,000	38%
Average Travel Speed (mph)	43	n.a.	38	n.a.	0%
Vehicle Hours of Delay	240,000	81,259,000	533,000	180,063,000	122%
Travel Delay Per Driven Registered Vehicle (2)	8m 0s	47 hours	12m 30s	74 hours	57%
Travel Delay Per Household	11m 45s	69 hours	18m 30s	135 hours	104%
Person Measures:					
Person Miles of Travel	80,963,000	27,365,537,000	98,199,000	33,191,095,000	21%
Person Hours of Travel	1,873,000	633,222,000	2,589,000	875,139,000	38%
Person Hours of Delay	325,000	109,700,000	719,000	243,085,000	122%
Travel Delay Per Resident	6m 30s	37 hours	10 minutes	57 hours	55%
Other:					
Percent of Travel Time in Delayed Conditions	17%	n.a.	28%	n.a.	60%
Travel Time Variation (peak vs. off peak)	1.24	n.a.	1.36	n.a.	10%
Lane Miles of Roads Congested for 3 + Hours (Percent of Total Lane Miles)	1,702 24%	n.a. n.a.	2,291 31%	n.a. n.a.	39% n.a.
Economic Costs:					
Commercial Vehicles (3)	\$1,300,000	\$455,300,000	\$4,200,000	\$1,405,300,000	209%
Passenger Vehicles (3)	\$2,600,000	\$882,700,000	\$5,600,000	\$1,902,000,000	115%
Total Cost of Delay	\$3,900,000	\$1,337,900,000	\$9,800,000	\$3,307,300,000	147%
Transit and Other Regionwide Measures:					
Total RTD Transit Boardings	340,000	n.a.	826,000	n.a.	143%
Rail Transit Boardings	76,000	n.a.	258,000	n.a.	242%
RTD Park n Ride Parking Space Utilization (out of 32,011 spaces)	59%	n.a.	n.a.	n.a.	n.a.
Modeled Bicycle and Walking Trips	834,000	n.a.	1,244,000	n.a.	49%
Traffic Crashes (2013)	190	64,070	n.a.	n.a.	n.a.

Sources: DRCOG CMP Database, RTD Ridership Statistics, 2040 RTP

Technical Notes:

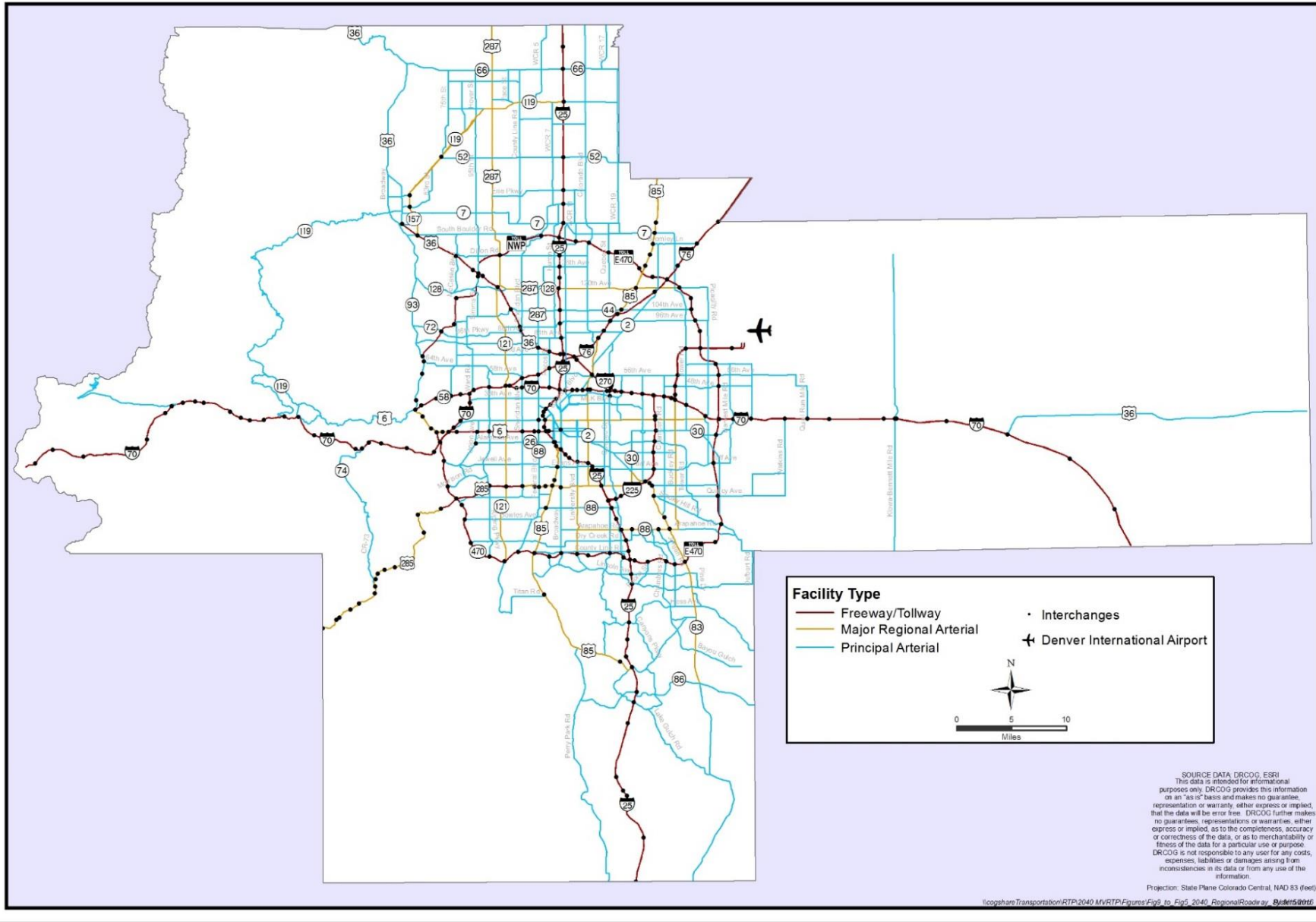
(1) Annual Total Estimate is "Average Weekday" total *338

(2) Assumption of 1,798,912 driven registered vehicles in 2015 and 2,415,682 in 2040

(3) Cost calculations incorporate \$12 per hour per adult in car, \$48.30 per hour per light commercial vehicle operator, and \$71 per hour for heavy commercial.



Figure 3
DRCOG Regional Roadway System



Facility Type

- Freeway/Tollway
- Major Regional Arterial
- Principal Arterial

• Interchanges
✈ Denver International Airport

0 5 10
Miles

SOURCE DATA: DRCOG, ESRI
This data is intended for informational purposes only. DRCOG provides this information on an "as is" basis and makes no guarantee, representation or warranty, either express or implied, that the data will be error free. DRCOG further makes no guarantee, representation or warranty, either express or implied, as to the completeness, accuracy or correctness of the data, or as to merchantability or fitness of the data for a particular use or purpose. DRCOG is not responsible to any user for any costs, expenses, liabilities or damages arising from inconsistencies in its data or from any use of the information.

Visit our partner agency websites for more information:

Colorado Department of Transportation
www.coloradodot.info

Regional Transportation District
www.rtd-denver.com

Traveler Information
www.cotrip.org

Interesting Videos on Traffic Congestion

The Phantom Traffic Jam – an explanation
<https://www.youtube.com/watch?v=qoViVVaLe10>

Traffic Waves
<https://www.youtube.com/watch?v=19S3OdK6710>

For ways to avoid or adapt to congestion via mobility options please visit:

Way to Go
<http://waytogo.org>

Preparation of this report has been financed in part through grants from the U.S. Department of Transportation, Federal Highway Administration and Federal Transit Administration. This report and others are available at the DRCOG Congestion Mitigation webpage at: <http://drcog.org/node/178>.

Contact Robert Spotts, Senior Transportation/Air Quality Planner, at rspotts@drcog.org for additional information regarding DRCOG's *Congestion Mitigation Program*.

The 3-A's of Congestion Mitigation

