



RESOLUTION NO. 2016-11
OF THE NORTH FRONT RANGE TRANSPORTATION
& AIR QUALITY PLANNING COUNCIL
APPROVING THE 2016 CONGESTION MANAGEMENT PROCESS (CMP) ANNUAL REPORT

WHEREAS, the North Front Range Transportation & Air Quality Planning Council (NFRMPO) is designated as the Metropolitan Planning Organization (MPO) in cooperation with local elected officials and is authorized and required to carry out the continuing, cooperative, and comprehensive transportation planning process that results in plans and programs that consider all transportation modes and supports community development, economic development, and social goals; and

WHEREAS, the North Front Range Transportation & Air Quality Planning Council was designated by the Governor of the State of Colorado as the MPO agency responsible for carrying out the transportation planning process, and for developing and amending the RTP; and

WHEREAS, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU) requires MPOs adopt a Congestion Management Process (CMP), and the Moving Ahead for Progress in the 21st Century Act (MAP-21) and the Fixing America's Surface Transportation (FAST) Act carry forward those requirements; and

WHEREAS, federal regulations developed pursuant to SAFETEA-LU require the CMP include a process for periodic assessment of the effectiveness of strategies implemented to manage congestion in terms of the area's established performance measures and Planning Council's adopted targets; and

WHEREAS, in accordance with SAFETEA-LU, the NFRMPO has completed the 2016 CMP Annual Report under the applicable provisions of Federal law and will provide it to the public; and

WHEREAS, the North Front Range Transportation & Air Quality Planning Council approves and submits the 2016 CMP Annual Report for informational purposes to the Colorado Department of Transportation and the Federal Highway Administration;

NOW, THEREFORE, BE IT RESOLVED THAT the North Front Range Transportation & Air Quality Planning Council approves the 2016 CMP Annual Report.

Passed and approved at the regular meeting of the North Front Range Transportation & Air Quality Planning Council held this 7th day of July, 2016.



Gerry Horak, Chair

ATTEST:



Terri Blackmore, Executive Director

2016 Congestion Management Process Annual Report



What is the CMP Annual Report?

The Congestion Management Process (CMP) Annual Report examines congestion in the NFRMPO region and assesses the effectiveness of strategies implemented to manage congestion. The annual report fulfills federal requirements for periodic assessment as part of the CMP.

The report focuses on the Regionally Significant Corridors (RSCs) as identified in the 2040 Regional Transportation Plan (RTP). The CMP Performance Measures section provides baselines and trends for the six performance measures related to congestion identified in the RTP. The analysis shows the region is meeting the targets for three of the five measures with available data. Additional information is included as outlined in the 2015 CMP.

What is congestion?

Congestion occurs when there are too many vehicles attempting to use the same facility at the same time. Congestion results in slower travel times, which decreases the quality of the transportation user's experience and increases the risk of vehicle crashes.

There are two types of congestion: recurring and non-recurring. Causes of recurring congestion include unrestrained demand, insufficient capacity, and ineffective management of capacity. Causes of non-recurring congestion include temporary events such as traffic incidents, weather events, special events, work zones, and emergencies.

CMP Performance Measures

Travel Time Index (TTI)

The travel time index (TTI) indicates how much longer it takes to travel a road during peak travel periods compared with free-flow conditions. For example, a TTI of 1.3 means travel time is 30% longer during peak periods than during free-flow.

The NFRMPO target for this measure is maintaining at least 80% of RSCs with a TTI of 2.5 or lower. The target is considered attainable, and was set at that level to ensure compliance and avoid potential funding impacts.

To supplement this analysis, data is presented for the more aspirational target set by the Colorado Department of Transportation (CDOT) for the Planning Time Index (PTI). The PTI assesses travel time reliability by comparing the 95th percentile travel time during the peak period to free-flow conditions.

The PTI represents the amount of time needed to arrive on-time 95% of the time. The CDOT target is 1.08 PTI or lower on 90% or greater of non-Interstate NHS centerline miles and 1.25 PTI or lower on 90% or greater of Interstate centerline miles.

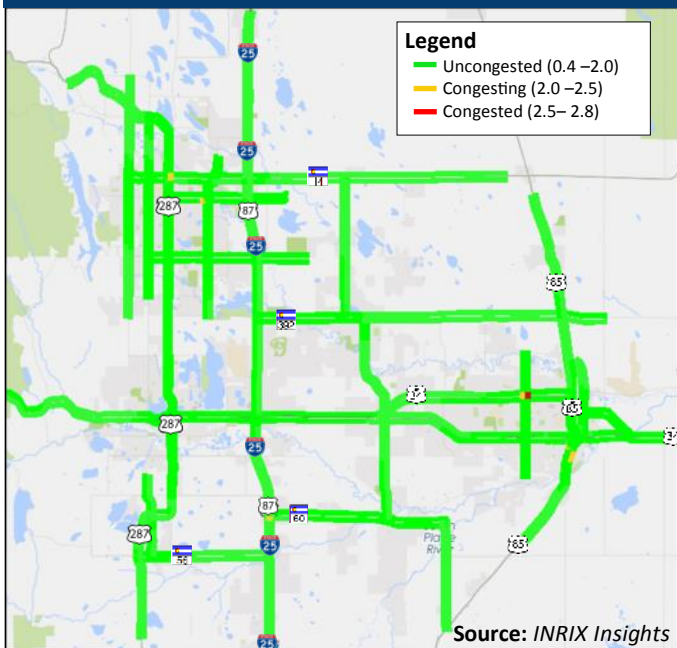
There are two sources of data for the TTI:

- INRIX provides real-time probe data that covers 67.7% of the RSC mileage in the region. According to this dataset, none of the RSCs had a TTI above 2.5 in 2014, and one section of an RSC had a TTI above 2.5 in 2015 (see map). This section is on 35th Ave at US-34 Business in Greeley. According to this analysis, 100% of RSCs met the target in 2014, and 99.9% of RSCs met the target in 2015.

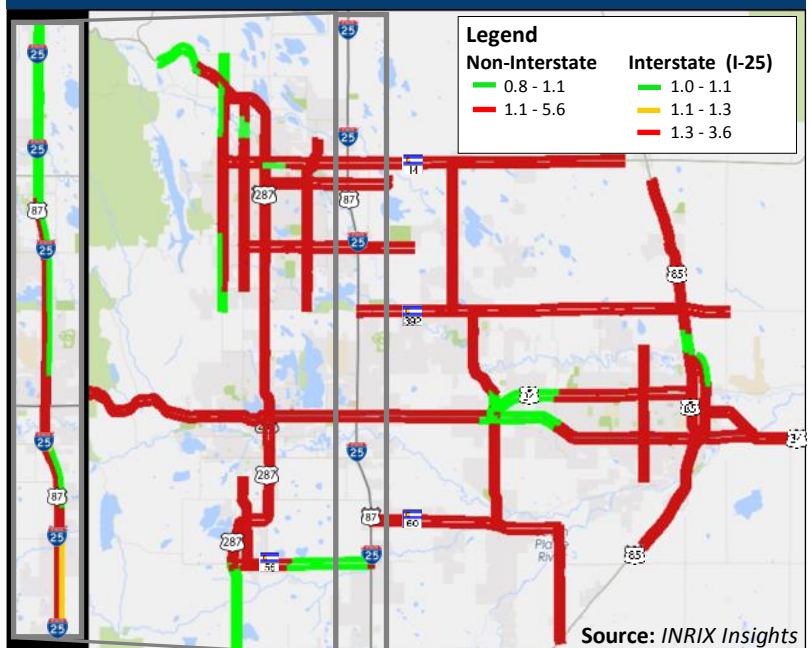
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Travel Time Index on RSCs, 2015




Planning Time Index on RSCs, 2015





Note: The Travel Time Index map presents performance according to the target adopted by the NFRMPO Planning Council; however, it does not adequately reflect congestion in the region. The NFRMPO is currently revising the TTI target for use in subsequent reports.

Travel Time Index (TTI) - Continued

- Vehicle travel time collector systems are maintained by the cities of Fort Collins, Greeley, and Loveland. The Fort Collins system began collecting data in 2014, while the other systems were installed in 2015. All systems are currently being expanded. According to the Fort Collins system, two sections of RSCs had a TTI above 2.5 in 2015, which represents 4.8% of RSCs with data. 

There are two sources of data for the PTI:

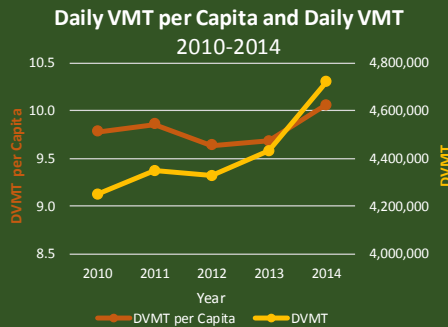
- According to INRIX data for 2015, 13.0% of RSC road sections met the thresholds of 1.08 PTI or lower on non-Interstates and 1.25 PTI or lower on Interstates. This analysis indicates the region is not meeting the CDOT target of 90% of roadway miles meeting the specified thresholds (See PTI Map on Page 1). 
- According to the vehicle travel time collector system in the City of Fort Collins, none of the road sections met the thresholds of 1.08 PTI or lower on non-Interstates in 2015 (there is no data for Interstates using this system). 

Sources: INRIX Insights, City of Fort Collins


Vehicle Miles Traveled (VMT) Growth per Capita

VMT is the number of miles traveled by vehicles within a specified region and during a specified time period.

The target for this measure is a lower increase in regional VMT than the increase in regional population. This target was set as a stretch goal.



CDOT measures VMT for state maintained facilities (US and State Highways), which cover 686 lane miles in the NFRMPO region. From 2010 to 2014, daily VMT

(DVMT) increased by 11.1% while population in the region increased by 8.0%. DVMT per capita increased from 9.8 miles per day per person in 2010 to 10.1 in 2014, an increase of 2.9%. The target for this measure is not currently being met. 


Sources: CDOT, DOLA

Non-Motorized Facilities per Capita

The total miles of non-motorized facilities per capita indicates the availability of non-motorized transportation options in the region. Increasing the availability of non-motorized transportation may help to mitigate congestion.

The target for this measure is an increase of at least 2% per capita. This target was set as a stretch goal.

Data for the pedestrian network is available for 2012, and updated data will be available later this year. Full analysis of this measure will be included in the Non-Motorized Plan and in the 2017 CMP Annual Report.


Data for the bicycle network is available for 2012 and 2014. The number of miles of bicycle facilities in the region increased from 629 miles in 2012 to 664 miles in 2014. As of 2014, there are 1.4 miles of bicycle facilities for every 1,000 people in the region. There was a 1% increase in bicycle facilities per capita from 2012 to 2014. The status for this target is unknown. 

Sources: Municipalities, Counties, and CDOT

Fixed-Route Revenue Hours per Capita within Service Areas

This performance measure provides an indication of availability of transit service.

The target for this measure is a 30% increase. This target was set as a stretch goal.


In 2012, across the three local and/or regional fixed-route transit systems, revenue hours per capita was 0.41. In 2015, revenue hours per capita increased to 0.49. Most of that increase can be attributed to Transfort, which experienced a 37.4% increase in revenue hours per capita from 2012 to 2015. Revenue hours per capita increased by 1.6% for COLT over the same time period. GET also experienced an increase in the total number of revenue hours, but on a per capita basis revenue hours declined by 16.6%. Data is not available for the North Route of CDOT's Bustang service. Region wide, revenue hours per capita increased 19.4% from 2012 to 2015. The target for this measure is not currently being met. 

Source: National Transit Database, Transit Agencies, CDOT

Transit Service Vehicles within Useful Life Parameters Established by FTA

The percentage of transit service vehicles within useful life parameters indicates the maintenance of the public transportation system.

The target for this measure is to maintain 75% of vehicles within useful life parameters. This target was set as a stretch goal.

In 2015, 75.0% of vehicles in operation by Transfort, GET, and COLT were within useful life parameters. The percentage of vehicles within useful life is 40.0% for COLT, 75.9% for GET, and 81.1% for Transfort. The target for this measure is currently being met. 

Source: Transit Agencies

Note on Transit-Related CMP Performance Measures

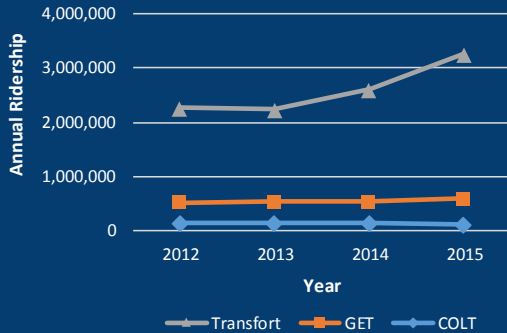
Transit-related CMP performance measures assess performance of the publicly-owned fixed-route transit systems in the region. Three public agencies provide local and/or regional fixed-route transit service: Transfort, operated by the City of Fort Collins; Greeley-Evans Transit (GET), operated by the City of Greeley; and City of Loveland Transit (COLT), operated by the City of Loveland. A state-owned fixed-route transit system, Bustang, provides interregional service between Fort Collins and Denver via the North Route.

CMP Performance Measures

Fixed-Route Ridership per Capita within Service Areas




Fixed-Route Transit Ridership 2012-2015



This performance measure indicates use of the fixed-route transit system.

The target for this performance measure is a 10% increase. This target was set as a stretch goal.

In 2012, region wide transit ridership per capita was 9.8. In 2015, ridership per capita increased to 11.9. Most of that increase can be attributed to Transfort, which increased from 15.8 trips per capita in 2012 to 20.6 trips per capita in 2015. GET experienced an increase in ridership, along with a higher increase in population, resulting in a decline in ridership per capita from 5.5 trips per capita in 2012 to 5.1 in 2015. Ridership per capita on COLT decreased from 2.2 trips per capita in 2012 to 2.0 in 2015. The Bustang system began in July 2015, and ridership on the North Route is included in the region wide value for 2015. Region wide, ridership per capita increased 21.6% from 2012 to 2015. The target for this measure is currently being met. 

Source: National Transit Database, Transit Agencies, CDOT

Implemented and Programmed Projects

Congestion Management Strategies

Implemented and Programmed projects presented in this report provide one or more congestion management strategies. Congestion management strategies can be organized into four main categories, as identified in FHWA's "Congestion Management Process: A Guidebook." Strategies associated with each category are shown below. They do not constitute an exhaustive list of congestion management strategies. All reasonable strategies must be evaluated and deemed ineffective or infeasible prior to the consideration of additional system capacity.

- **Transportation Demand Management (TDM)**
 - Congestion pricing
 - Parking management and parking pricing
 - Pedestrian and bicycle improvements
 - Telework and flexible work hours
 - Ridesharing programs
 - Land use controls and growth management programs
- **Traffic Operations Improvements / Intelligent Transportation Systems (ITS)**
 - Traffic metering
 - Access management
 - Converting High Occupancy Vehicle (HOV) lanes to High Occupancy Toll (HOT) lanes
 - Bus-only shoulder lanes
 - Traffic signal optimization
 - Geometric improvements
 - Road diets
 - Traffic Incident Management (TIM)
- **Public Transportation Improvements**
 - Operations improvements
 - Capacity improvements
 - Bicycle and pedestrian accessibility improvements
- **Additional System Capacity**
 - New HOV or HOT lanes
 - Intersection improvements
 - Center turn lanes
 - Overpasses or underpasses
 - New travel lanes (including truck climbing lanes)

Source: Congestion Management Process: A Guidebook. U.S. Department of Transportation, Federal Highway Administration. April 2011. http://www.fhwa.dot.gov/planning/congestion_management_process/cmp_guidebook/cmpguidebk.pdf

Strategy Effectiveness

Each congestion management strategy category contributes improvements to one or more CMP Performance Measures.

TDM Strategies contribute improvements toward the TTI, VMT Growth per Capita, and Non-Motorized Facilities per Capita measures.

Traffic Operations Improvements / ITS Strategies contribute improvements toward the TTI measure.

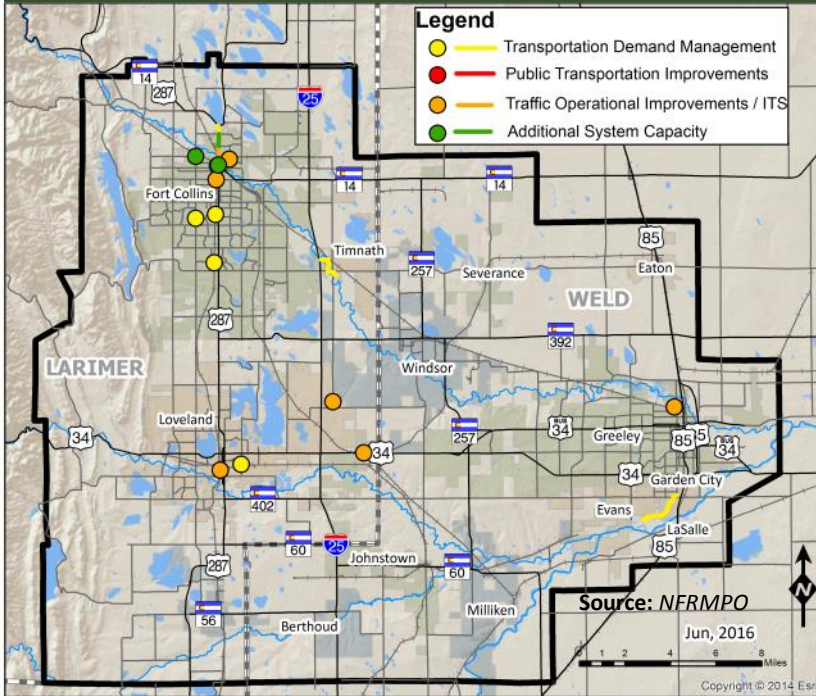
Public Transportation Improvement Strategies contribute improvements toward the TTI, VMT Growth per Capita, Fixed-Route Revenue Hours per Capita within Service Areas, Transit Service Vehicles within Useful Life Parameters, and Fixed-Route Transit Ridership measures.

Additional System Capacity Strategies contribute improvements toward the TTI measure.

Implemented and Programmed Projects

Implemented Projects

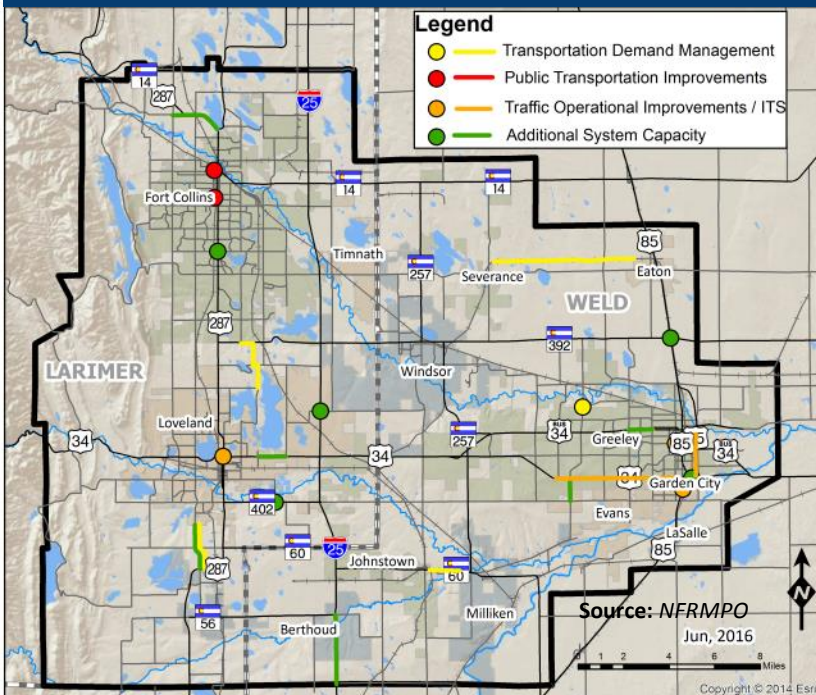
Projects selected by the NFRMPO Planning Council for FY12-17 funding that were completed in FY15 or earlier are considered implemented projects. Projects that contribute toward congestion management are provided in the table and map.



Strategy Category	Project Name	Regionally Significant Corridor
Transportation Demand Management	Mason Trail Overpass @ BNSF	Multiple
	Mason/Corridor Troutman Crossing	None
	Poudre River Tr: North Timnath	Multiple
	Madison Ave Bridge – Loveland	Multiple
	Evans Bike/Ped Trail-Phase II	Multiple
	37 th St. Bike/Ped Evans Ph I	Multiple
	Fort Collins FC Bikes CMAQ FY12 and FY13	Multiple
	US 287: Willox to SH 1 & Ped Bridge	US 287
	LCR17 Poudre Bridge Replacement	LCR 17
	Fort Collins Shields & LaPorte Bridges	LCR 17
Traffic Operational Improvements / ITS	North College Avenue Improvement	US 287
	Loveland I-25/ US34/Crossroads VMS	Multiple
	North Ft Collins Adaptive Signals	Multiple
	Fort Collins Traffic Signal Sys Software	Multiple
	Greeley Fiber Optic Communications #2	Multiple
Additional System Capacity	Loveland Fiber Optic Project	Multiple
	US287: Conifer to Willox	US 287
	Jefferson Street/SH14 Improvements	SH 14
	Shields St & Vine Dr Intersection Imp	LCR 17

Programmed Projects

Projects selected by the NFRMPO Planning Council for FY12-17 or FY16-19 funding that have not yet been completed are considered programmed projects. Projects that contribute toward congestion management are provided in the table and map.



Strategy Category	Project Name	Regionally Significant Corridor
Transportation Demand Management	Sheep Draw Trail Poudre Connection	None
	Milliken to Johnstown Trail Connection	None
	Berthoud CR 17 Bike Lanes	LCR 17
	Great Western Trail	None
	Colorado Front Range Trail	None
Traffic Operational Improvements /ITS	Adaptive Signal US 85 Greeley	US 85
	10th Street Access Control Implementation	US 34 Business
	US 85 Access Control at 31st Street Intersection	US 85
	Loveland Traffic Optimization	Multiple
	Greeley Signal Timing 2016	Multiple
Public Transportation Improvements	Adaptive Signals 34 and 85 Bypass	Multiple
	Secure Bicycle Parking (2 locations)	Multiple
Additional System Capacity	US 287: SH1 to LaPorte Bypass	US 287 & SH1
	US 34 & US 85 Interchange Bridges	US 34 & US 85
	10 th Street in Greeley: Phase II	US 34 Business
	US 34 Business (10 th St): 23 rd to 35 th	US 34 Business
	US 34 Widening	US 34
	I-25 Truck Climbing Lane	I-25
	LCR 17 Expansion	LCR 17
	65th Avenue Widening	65th Ave
	I-25/Crossroads Bridge	I-25
	Horsetooth and College Intersection Improvement	US 287
US 85 & SH392	US 85 & SH 392	
SH 402 & CR 9e	SH 402	
65 th Ave: US34 Bypass to 37 th Ave	65 th Ave	

The CMP's Role in Project Selection



The Transportation Improvement Program (TIP) provides the transportation-related projects and activities to be funded in the region over the next four years. The TIP reflects the CMP performance measures and strategies as required by federal regulations.

The current version of the TIP addresses funding for FY16-19 and includes projects selected from an approved Call for Projects process held in 2014. Project applications were required to indicate which of the 2040 RTP Goals and Performance Measures the project would impact, and were scored in part based on the project's contribution toward the Goals and Performance Measures. Many of the 2040 RTP Goals and Performance Measures are included as part of the CMP. Specifically, three of the four Goals are related to congestion — Mobility, Multi-Modal, and Operations — and six of the 12 Performance Measures are related to congestion.

Additional Information

Transportation Funding and Gas Tax



The Fixing America's Surface Transportation (FAST) Act was signed into law December 4, 2015 by President Obama. The FAST Act authorizes \$305 B in funding for surface transportation over a five year period (FY 2016—FY 2020). It is anticipated Colorado could receive an average of \$566 M for each of the five years for a total of \$2.8 B in funding.

According to the CDOT FY 2015-16 Budget Allocation Plan, the largest source of revenue other than Federal Highway Revenue - Highway Trust Fund is the Highway User Tax Fund (HUTF). The HUTF is primarily funded through the state motor fuel tax, along with vehicle registration fees and other vehicle fees and surcharges. The state gasoline tax is \$0.22 per gallon, and has not increased since 1993.

Major Regional Bottlenecks



As defined by INRIX, bottlenecks occur when speeds fall below 60% of free flow speed for at least 5 minutes over a stretch of road at least 0.3 miles long. Once speed returns to 60% of free flow speed for more than 10 minutes the bottleneck is considered cleared.

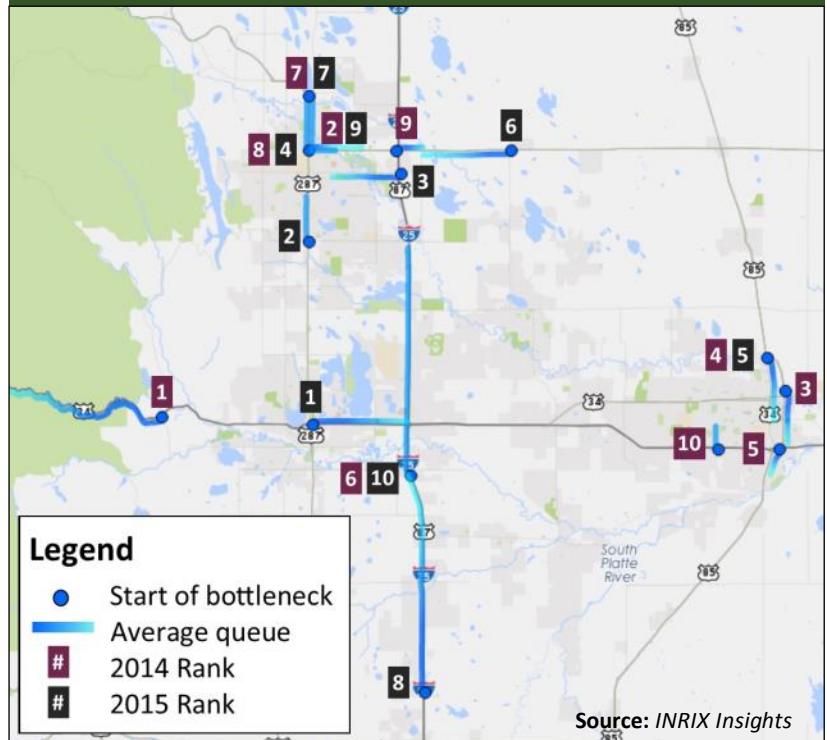
Roadway locations that experience bottlenecks are ranked according to average duration, average maximum length, and number of occurrences of bottlenecks.

The 10 locations most impacted by bottlenecks in 2014 and 2015 are displayed in the map. The dark blue circle represents the start of the bottleneck, and the light blue tail represents the average length of the queue behind the bottleneck location.

In 2014, the location most impacted by bottlenecks was eastbound US 34 at CR-29, west of Loveland. In 2015, the location most impacted by bottlenecks was westbound US 34 at US 287/N Lincoln Avenue in Loveland.

Source: INRIX Insights

Top 10 Bottleneck Locations in 2014 and 2015

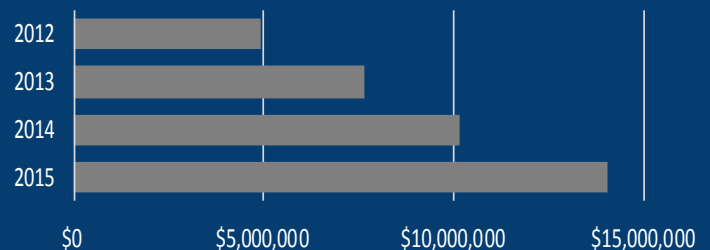


Cost of Congestion

Congestion in the NFRMPO region on RSCs cost users \$4.9 M in 2012, and the cost increased 186% to \$14.0 M in 2015. The cost of delay per hour is estimated by the Texas Transportation Institute at \$16.79 for passenger vehicles and \$86.81 for commercial vehicles in 2012 dollars. Delay costs are calculated when speeds fall 20 mph or more below average speeds.

Source: INRIX Insights

Cost of Congestion, 2012-2015



Additional Information

Retail Gas Price and VMT in Colorado
2001-2016



Gas Prices and VMT

Retail prices for all grades of gasoline in Colorado rose to a high of \$4.08 in 2008, fell sharply in 2009, and hovered between \$2.80 and \$3.80 in 2011–2013. Gas prices again fell sharply in late 2014, and averaged \$2.41 in 2015.

VMT in Colorado increased almost every year from 2000 to 2007, fell in 2008 and 2009, fluctuated slightly between 2010 and 2013, and grew 4.3% in 2014.

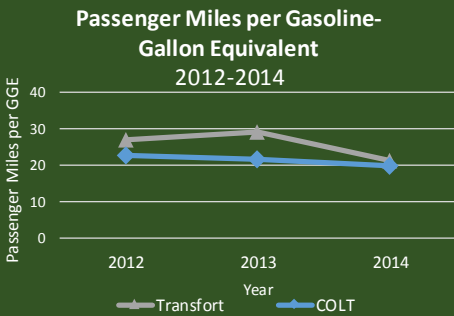
Sources: U.S. Energy Information Administration, FHWA

Transit Passenger Miles per Gallon

Passenger miles per gasoline-gallon equivalent (pmpGGE) measures the per-passenger fuel economy of the fixed-route transit system, and is related to transit system use and fuel efficiency. This measure indicates how many passengers were moved one mile per gallon of fuel. Fuel is measured in gasoline-gallon equivalents (GGE).

From 2012 to 2014, pmpGGE dropped from 27.0 to 21.5 for Transfort, and from 22.9 to 20.0 for COLT. Contributing to the drop was a decline in average trip length for passengers on both systems. On average, passengers traveled 2.6 miles per trip in 2014 on Transfort, a 10.9% decline from 2012. The average trip length for passengers on COLT in 2014 was 5.8 miles, a 7.6% decline from 2012. The decline in average trip length could indicate more efficient transit routes for passengers.

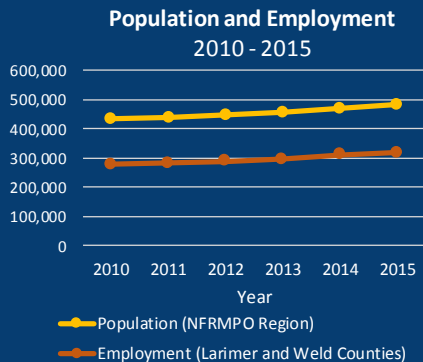
Data is not available for GET or CDOT's Bustang North Route.



Source: National Transit Database

Population and Employment

Population in the North Front Range region increased 11.0% from 2010 to 2015, with an average growth rate of 2.1% per year. Employment increased 14.4% in Larimer and Weld counties from 2010 to 2015, with an average growth rate of 2.7% per year.



Sources: DOLA, BLS

Transit On-Time Performance

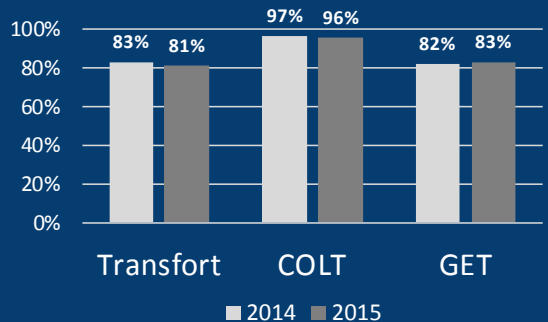
On-time performance is the percentage of time a bus remains on its published schedule. Transit agencies determine the range of time that qualifies as "on-time." The definitions used by the three transit agencies that provide fixed-route service in the region are listed in the table.

In 2014, on-time performance was 83% for Transfort, 97% for COLT, and 82% for GET. In 2015, on-time performance decreased slightly for both Transfort and COLT to 81% and 96%, respectively, and increased slightly for GET, to 83%. Data is not available for CDOT's Bustang.

Definition of On-Time

Transit Agency	On-Time Minimum	On-Time Maximum
Transfort	1 min. early	5 min. late
COLT	15 sec. early	5 min. late
GET	0 min. early	8 min. late

On-Time Performance



Source: Transit Agencies

The Technical Supplement to this report is available at:

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