

Fort Collins and Greeley Carbon Monoxide Maintenance Areas Conformity Determination

for the

North Front Range Metropolitan Planning Area

2040 Fiscally Constrained Regional Transportation Plan

and the

FY 2016-2019 Transportation Improvement Program

The North Front Range Metropolitan Planning Organization
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Preparation of this report has been financed in part through grants from the Federal Highway Administration, Federal Transit Administration, U.S. Environmental Protection Agency and local government contributions.



EXECUTIVE SUMMARY

This report demonstrates the Fort Collins and Greeley Carbon Monoxide (CO) Maintenance Areas meeting of federally prescribed air pollution emissions tests for the CO National Ambient Air Quality Standard (NAAQS). This demonstration is based on new travel demand projections and network assignments extending the horizon year from 2035 to 2040. All other assumptions remain the same from the previously approved conformity determination.

This document will be released to the public on May 30, 2015. It will be available on the North Front Range Metropolitan Planning Organization (NFRMPO) website at <http://www.nfrmpo.org/airquality> and at the NFRMPO Office as a print copy. The public comment period ends at 5:00 P.M. on July 8, 2015. All comments will be presented to the North Front Range Air Quality and Transportation Planning Council (NFRAQ&TPC) on July 9, 2015 at the formal public hearing and at the Air Quality Control Commission (AQCC) public meeting on July 19, 2015.

A conformity determination report for the Denver-North Front Range 8-Hour Ozone Northern Subarea Nonattainment Area was prepared concurrently in coordination with this document to have the same effective date.

LIST OF ACRYNOMS

APCD	Air Pollution Control Division
AQCC	Air Quality Control Commission
CDOT	Colorado Department Of Transportation
CDPHE	Colorado Department of Public Health and
CMAQ	Congestion Mitigation Air Quality
CO	Carbon Monoxide
EPA	United States Environmental Protection Agency
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
MOA	Memorandum of Agreement
ICG	Air Quality Interagency Coordination Group
LUAM	Land Use Allocation Model
MOVES2014	EPA's Motor Vehicle Emission Simulator model
MPO	Metropolitan Planning Organization
MVEB	Motor Vehicle Emissions Budget
NAICS	North American Industry Classification System
NAAQS	National Ambient Air Quality Standards
NFRT & AQPC	North Front Range Transportation and Air Quality
NFRMPO	North Front Range Metropolitan Planning Organization
RTMD	North Front Range Regional Travel Model
PPM	Parts per Million
QCEW	Quarterly Census of Employment and Wages
RPP	Regional Priorities Program
RTP	Regional Transportation Plan
SIP	State Implementation Plan
TAC	Technical Advisory Committee
TCM	Transportation Control Measures
TIP	Transportation Improvement Program
UFR	Upper Front Range Transportation Planning Region
VMT	Vehicle Miles Traveled

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CHAPTER 1: INTRODUCTION

Background –Carbon Monoxide Maintenance Areas

The North Front Range Metropolitan Planning Organization (NFRMPO) serves as the Lead Planning Agency for Carbon Monoxide (CO) air quality issues in the North Front Range region. The NFRMPO has 15 local government members, including portions of Larimer and Weld counties and towns and cities within those counties.

The NFRMPO is required to conduct an air quality conformity determination on the Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) to determine conformance with the Colorado Statewide Implementation Plan (SIP) and must comply with the Clean Air Act, the Transportation Conformity Regulation, the Statewide and Metropolitan Planning Regulation, and other applicable federal and state requirements.

Portions of the cities of Fort Collins and Greeley and their immediate vicinities are designated as maintenance areas for CO, shown in **Figure 1**.

Fort Collins Maintenance Area

The Colorado Air Quality Control Commission (AQCC) adopted the original residential request and Maintenance Plan for Fort Collins in 2002, and adopted the revision for a second 10-year maintenance plan in 2010 to show continued attainment of the federal CO standard for a second 10-year term from 2013 through 2023.

The Environmental Protection Agency (EPA) adopted the original residential request and maintenance plan for Fort Collins in 2003, and adopted the revision for a second 10-year maintenance plan in 2011 to show continued attainment of the Federal CO National Ambient Air Quality Standard (NAAQS) for a second 10-year term from 2013 through 2023.

Greeley Maintenance Area

AQCC adopted the first revision to the maintenance plan for Greeley in 2002, and approved the second 10-year revision in 2009, setting forth a requirement for continued demonstration of attainment of the federal CO standard for the second 10-year term through 2019.

EPA adopted the first revision to the maintenance plan for Greeley in 2005, and approved the second 10-year revision in 2013, setting forth a requirement for continued demonstration of attainment of the federal CO standard for the second 10-year term through 2019.

Motor Vehicle Emission Budgets

For **Fort Collins**, the Motor Vehicle Emissions Budget (MVEB) is:

- 94 tons per day for 2015 and beyond.

For **Greeley**, the MVEB is:

- 60 tons per day for 2015 and beyond.

Conformity determinations are performed against these emissions budgets. The air quality modeling and analyses address the forecasts of emissions from mobile sources within the maintenance area boundaries for CO.

Technical Evaluation and Model Assumptions

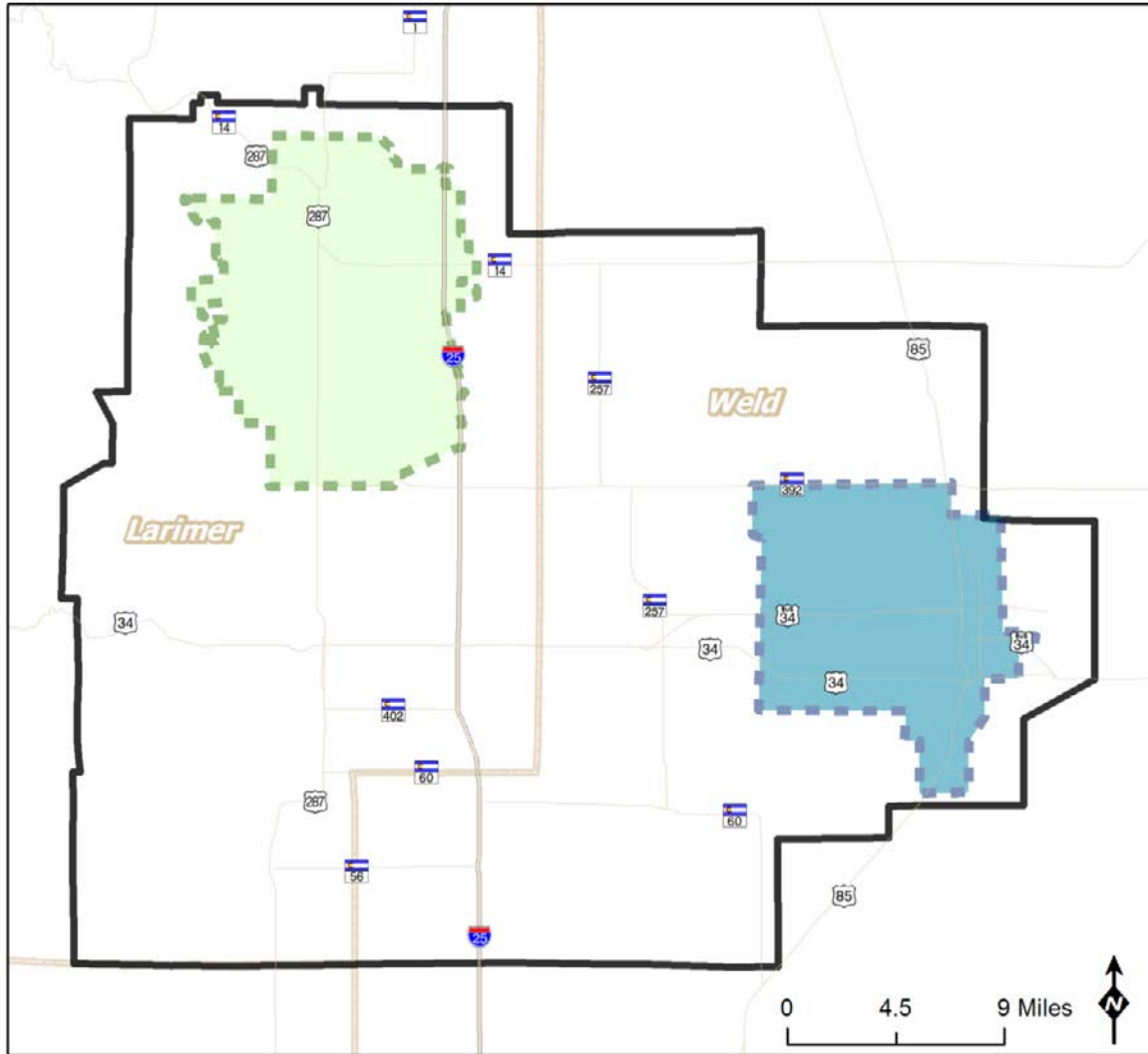
Staff in the Air Pollution Control Division (APCD) of the Colorado Department of Public Health and Environment (CDPHE) run the EPA-approved Motor Vehicle Emission Simulator (MOVES2014) mobile emissions model. Conformity determinations are made using the output from the MOVES2014 model.

The North Front Range 2040 Regional Travel Demand Model (RTDM) provides the necessary socio-economic and transportation inputs. The 2015 base year model was built using data obtained from the *NFRMPO Household Survey* completed in April 2010, the 2010 U.S. Census for households, and the *Quarterly Census of Employment and Wages* (QCEW) for employment. The parameters for the base year model were applied to the staging years, in addition to the forecasted socioeconomic data and fiscally constrained network, to determine Vehicle Miles Traveled (VMT), average speed, and lane miles.





The NFRMPO worked cooperatively with an Air Quality Interagency Coordination Group (ICG), consisting of members from the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), EPA, Colorado Department of Transportation (CDOT), and APCD, to review the assumptions, analysis, and reports. Furthermore, members of the NFRMPO's Technical Advisory Committee (TAC) reviewed the socio-economic data and transportation network prepared for the RTP and TIP, pursuant to the State of Colorado's AQCC Regulation Number 10.¹

¹ 5 CCR 1001-12, <https://www.sos.state.co.us/CCR/GenerateRulePdf.do?ruleVersionId=4498&fileName=5%20CCR%201001-12,2012>

Figure 1: Fort Collins and Greeley CO Maintenance Area Boundaries



May 2015
Sources: CDOT, EPA, NFRMPO

- LEGEND**
-  Fort Collins Carbon Monoxide Maintenance Area
 -  Greeley Carbon Monoxide Maintenance Areas
 -  NFRMPO Boundary
 -  County Boundary

CHAPTER 2: MEMORANDUM OF AGREEMENT RESPONSE

The information in this chapter addresses the required items in the *1998 Memorandum of Agreement (MOA) for Transportation Conformity Evaluations* by and between the Air Pollution Control Division (APCD) of the Colorado Department of Public Health and Environment (CDPHE) and the North Front Range Transportation and Air Quality Planning Council (NFRT&AQPC).

Transportation Control Measures

There are no commitments to Transportation Control Measures (TCMs) in the current State Implementation Plan (SIP), July 18, 2002 and December 12, 2002 respectively, for the Fort Collins or the Greeley Maintenance Areas.

Roadway Networks

Figures 2 through 5 show the existing roadway network, functional classification, and area type. The networks have been reviewed by the staffs of both the cities of Fort Collins and Greeley for accuracy and approved, as outlined in Regulation Number 10.

Socio-economic Data and Assumptions

In 2007, the North Front Range Metropolitan Planning Organization (NFRMPO) Technical Advisory Committee (TAC), serving as the review team, per Regulation Number 10, reviewed the planning assumptions, which were approved by the NFRT&AQPC.

Appendices C and D show the requested socio-economic data. The tables include the following travel model information: speed by roadway type, VMT summaries, and lane miles by roadway type. The emissions summaries are also included.

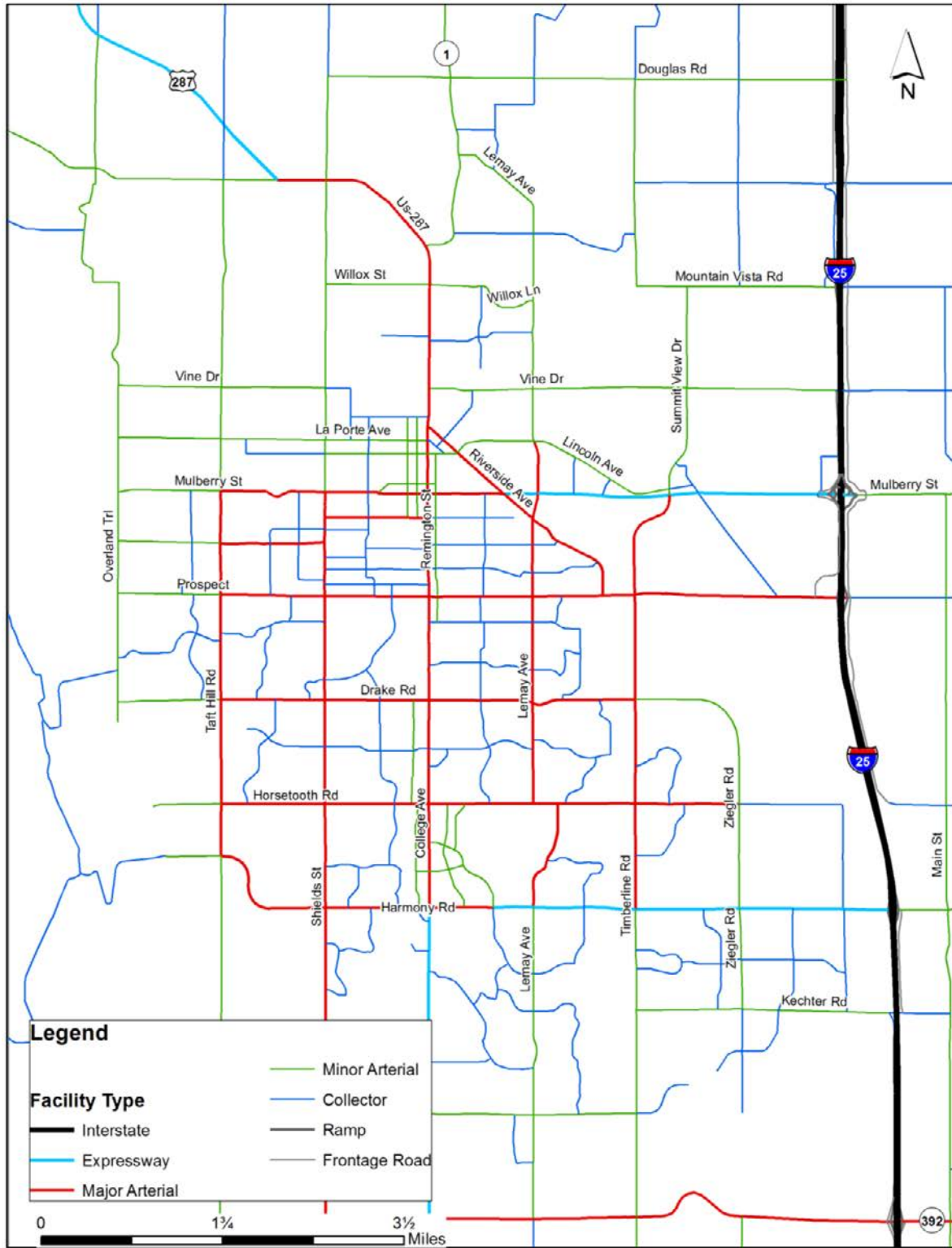
The NFRMPO hired Steven B. Fisher, Ph.D., Phyllis Resnick, Ph.D., and Logan Simpson Design, in conjunction with the State Demographer, to forecast household and employment numbers in five-year increments for the years 2010 to 2040 for the region.

The NFRMPO Land Use Allocation Model (LUAM) used CommunityVIZ software to allocate the control totals developed. The results were reviewed by staff members across the region operating as a review team, per Regulation Number 10.

The process for developing socio-economic data in the modeling effort was based on a 2012 model base year using 2012 Assessor data, 2010 US Census for household data, and the Quarterly Census of Employment and Wages (QCEW) for the employment data. The employment data was geocoded to locate the employment by transportation analysis zone (TAZ). The employment was based on North American Industry Classification System (NAICS) codes to determine the employment type. The four employment types are Medical, Production, Retail, and Services.

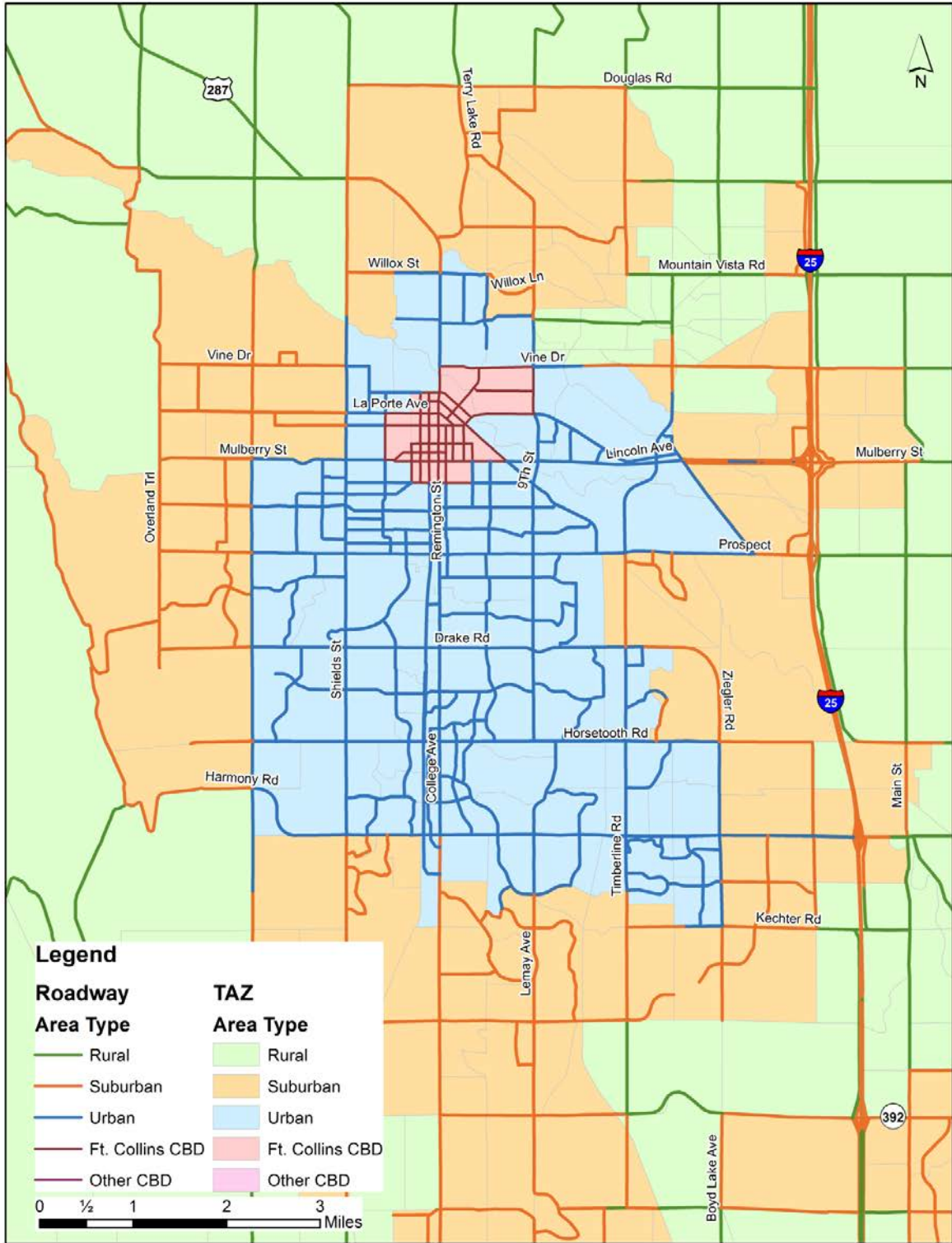
Census blocks were used to collect household size data, while census block groups were used to collect income data. This data was grouped by TAZ for the Regional Travel Model. The household size by income data was used to determine the trip production rates, while the employment by type was used to determine the trip attraction rates.

Figure 2: Fort Collins 2015 Facility Type



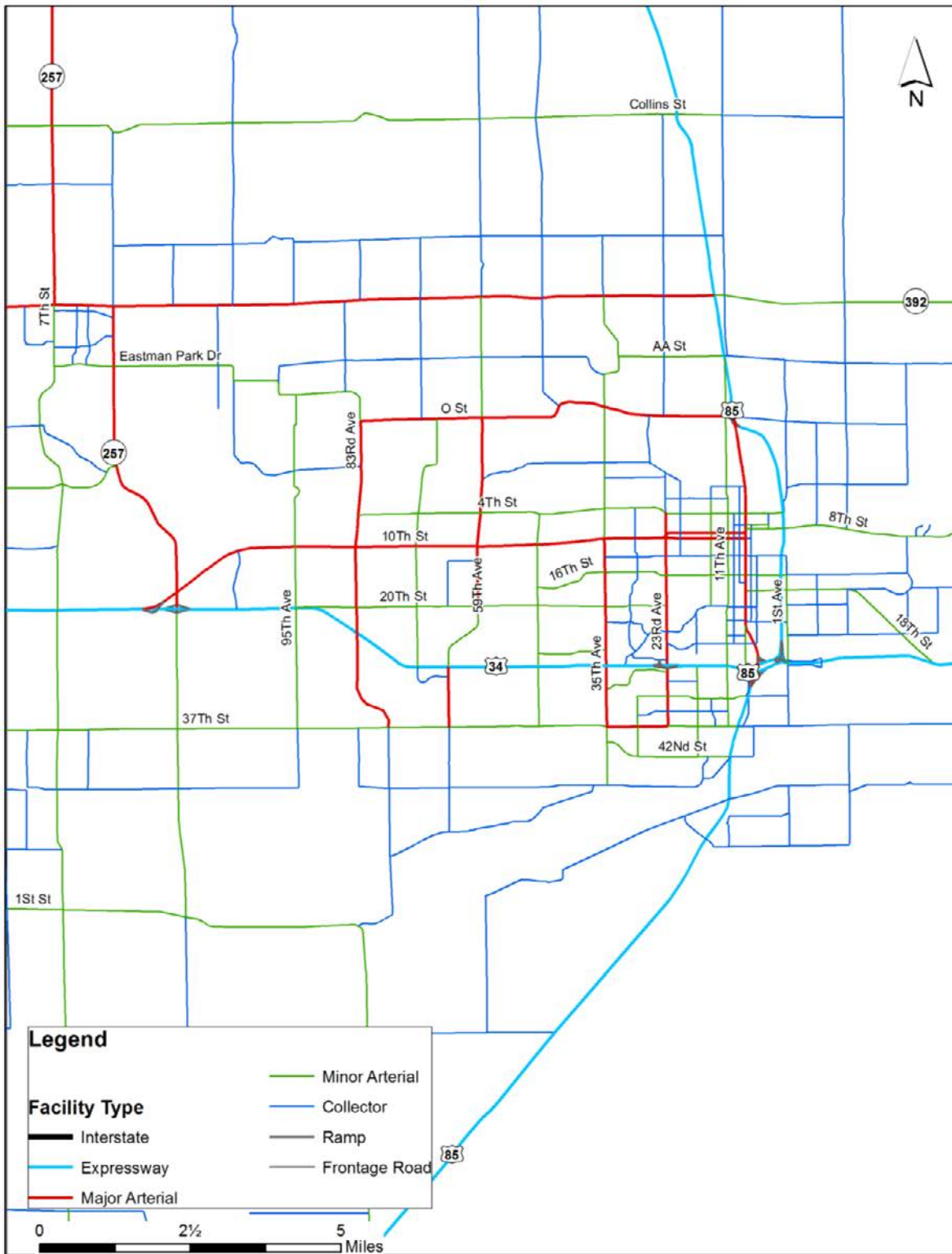
Source: 2040 NFRMPO Travel Demand Model Documentation, <http://nfrmpo.org/ResourcesDocuments/2040RTP.aspx>, 2015

Figure 3: Fort Collins 2015 Area Type



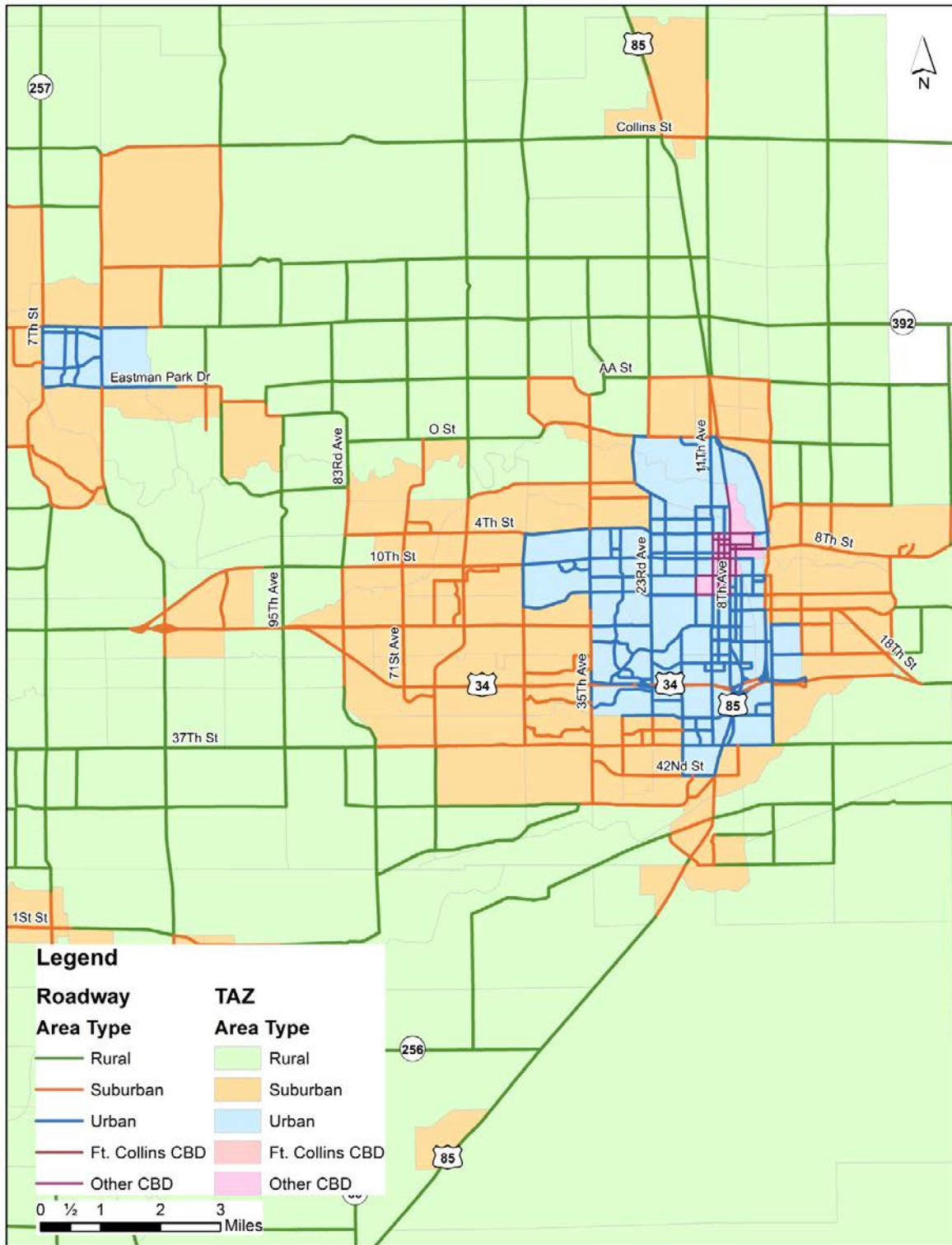
Source: 2040 NFRMPO Travel Demand Model Documentation, <http://nfrmpo.org/ResourcesDocuments/2040RTP.aspx>, 2015

Figure 4: Greeley 2015 Facility Type and Number of Lanes



Source: 2040 NFRMPO Travel Demand Model Documentation, <http://nfrmpo.org/ResourcesDocuments/2040RTP.aspx>, 2015

Figure 5: Greeley 2015 Area Type



Source: 2040 NFRMPO Travel Demand Model Documentation, <http://nfrmpo.org/ResourcesDocuments/2040RTP.aspx>, 2015

Projects in Model

Appendix E contains a list of projects used in the RTDM for air quality conformity. All the projects included were are currently under construction, or will be built by the designated network year. All capacity improvements (widening) or regionally significant projects are included. Funding sources for these projects are local funds, Regional Priorities Program (RPP), flexible funds, and/or Strategic Projects. The projects not federally funded have either committed funds from a local jurisdiction or a private developer within the NFRMPO region.

Documentation of Changes to the Transportation Model

The NFRMPO used a 2012 base year Regional Travel Demand Model which incorporates results from the *NFRMPO Household Survey* completed in April 2010 and the *NFRMPO On-Board Transit Survey* completed in September 2009. The household survey was used to develop the trip generation rates, trip length frequency distributions, and auto occupancy rates. The transit survey was used in combination with the household survey to produce update mode share targets. In addition, the model was re-validated to traffic count data collected between 2008 and 2013. The overall model structure was not changed.

Documentation of Changes to the Air Quality Model

APCD used the MOVES2014 model to estimate motor vehicle emission factors.

CHAPTER 3: MODEL OUTPUTS AND EMISSION TESTS

The transportation, land use, transportation modeling outputs, and air quality inputs for the future horizon years are summarized in **Appendices A and B**, for the Fort Collins and Greeley Maintenance Areas. **Appendices C and D** show the budgets for the Fort Collins and Greeley Maintenance Areas from the latest approved State Implementation Plan (SIP) for the staging years and the results of the conformity tests,² which passed for all years.

² 40 CFR 93.118, <http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=6510ea8b0d1f191866069575d2f918a6&ty=HTML&h=L&mc=true&r=PART&n=pt40.20.93>, 2015

Appendix A: Carbon Monoxide Emissions Modeling Summary

Table 1: Fort Collins Emissions Modeling Summary		
	2015 (Base)	2040(Horizon)
Socioeconomic Data (Fort Collins Area)		
Population	185,589	259,078
Employment	109,844	135,355
Households	70,857	99,959
Speed by Roadway Type		
Freeway	70	70
Expressway	44	44
Major Arterial	40	40
Minor Arterial	38	38
Frontage Road	46	42
Collector	32	32
Ramp	30	30
Centroid Connector	25	25
<i>Average</i>		
Daily VMT Summaries		
Freeway	391,082	700,528
Expressway	406,847	596,546
Major Arterial	1,193,482	1,732,403
Minor Arterial	549,674	925,403
Frontage Road	14,147	58,030
Collector	268,110	583,301
Ramp	17,216	30,133
Centroid Connector	359,310	585,693
<i>Total</i>		
Lane Miles by Roadway Type		
Freeway	36	48
Expressway	49	49
Major Arterial	207	231
Minor Arterial	169	172
Frontage Road	13	13
Collector	161	175
Ramp	4	4
Centroid Connector	265	266
<i>Total</i>		
Source: <i>NFRMPO 2040 Regional Travel Demand Model, 2040 Regional Socioeconomic Forecast</i>		

Table 2: Greeley Emissions Modeling Summary		
	2015 (Base)	2040 (Horizon)
Socioeconomic Data		
Population	127,044	223,091
Employment	74,862	115,059
Households	48,503	86,680
Speed by Roadway Type		
Freeway	-	-
Expressway	53	52
Major Arterial	43	44
Minor Arterial	37	38
Frontage Road	-	-
Collector	32	33
Ramp	30	30
Centroid Connector	25	25
<i>Average Total</i>	<i>37</i>	<i>37</i>
Daily VMT Summaries		
Freeway	0	0
Expressway	428,235	654,669
Major Arterial	498,800	921,499
Minor Arterial	517,075	947,778
Frontage Road	0	0
Collector	129,477	337,518
Ramp	10,602	16,922
Centroid Connector	240,060	436,939
<i>Total</i>	<i>1,824,249</i>	<i>3,315,325</i>
Lane Miles by Roadway Type		
Freeway	0	0
Expressway	75	75
Major Arterial	126	137
Minor Arterial	191	204
Frontage Road	0	0
Collector	159	161
Ramp	5	5
Centroid Connector	129	129
<i>Total</i>	<i>685</i>	<i>711</i>
<i>Source: NFRMPO 2040 Regional Travel Demand Model, 2040 Regional Socioeconomic Forecast</i>		

Appendix B: CO Emissions Tests (Tons per Day)

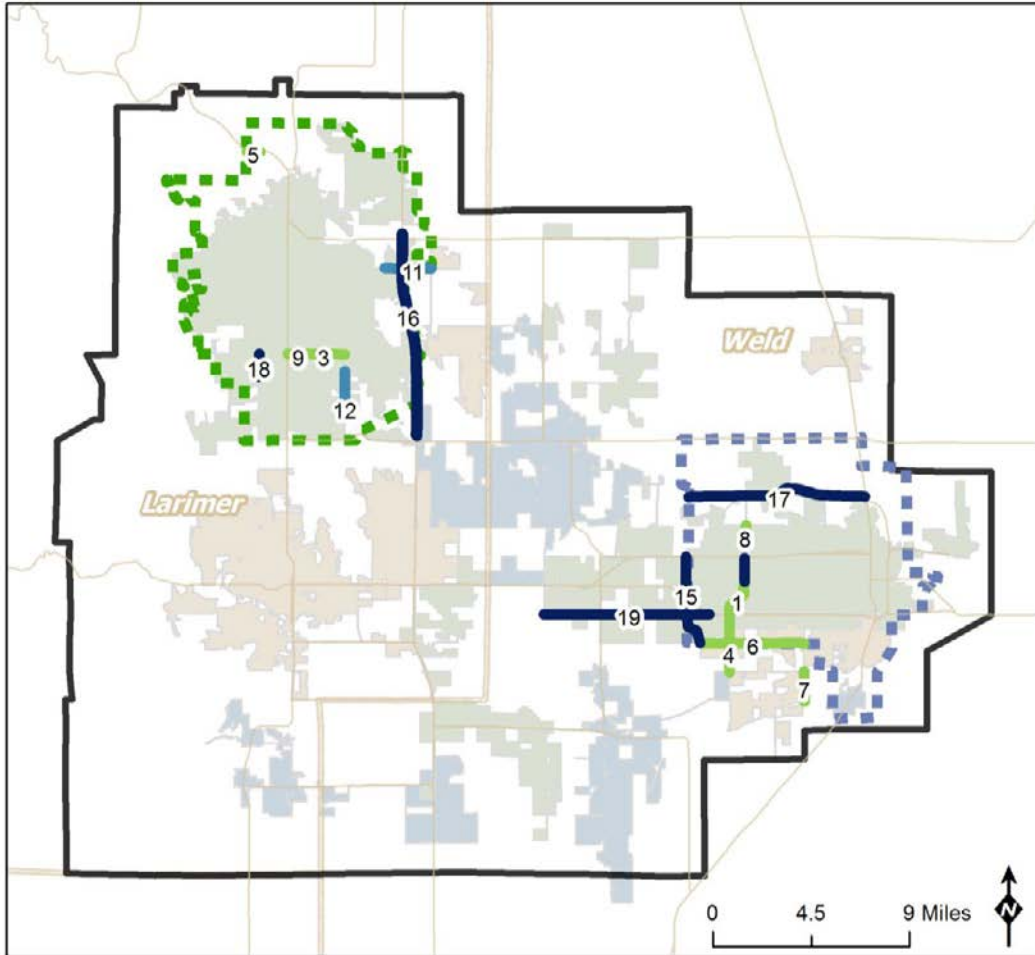
Table 3: Fort Collins CO Emissions Test (Tons per Day)						
	SIP Budget	2015	2023 ³	2025	2035	2040
Carbon Monoxide (CO)	94	36.91	32.33	31.65	13.28	12.77
Pass/Fail		PASS	PASS	PASS	PASS	PASS

Table 4: Greeley CO Emissions Test (Tons per Day)						
	SIP Budget	2015	2019 ⁴	2025	2035	2040
Carbon Monoxide (CO)	60	22.79	20.24	14.27	9.25	9.32
Pass/Fail		PASS	PASS	PASS	PASS	PASS

³ Socio-economic and vehicle travel data were interpolated for 2023 (for Fort Collins) and for 2019 (for Greeley) between the 2015 and 2025 model years in the regional travel model. The emissions test was run for these interpolated years, per 40 CFR 93.118(d)(2).

Appendix C: NFRMPO Regional Travel Demand Model Projects

Figure 6: Map of NFRMPO Regional Travel Demand Model Projects



May 2015
Sources: CDOT, EPA, NFRMPO

- LEGEND**
- Project Improvement Year**
- 2015-2024
 - 2025-2034
 - 2035-2040
 - Fort Collins CO Maintenance Area
 - Greeley CO Maintenance Area
 - NFRMPO Boundary
 - County Boundary
 - Major Roadway

Table 5: List of NFRMPO Regional Travel Demand Model Projects

Project Map #	Street Name	From	To	Description of Improvement		Year of Improvement	Cost (thousands)	Funding Source
				Before	After			
2015 Network								
1	59 th Ave.	20 th St.	US 34 Bypass	2	3	2015	\$1,500	Greeley – CIP
2	65 th Ave.	US 34 Bypass	WCR 54	2	4	2015	\$3,000	Greeley – Road Development Funds
3	Harmony Rd.	Boardwalk	Timberline Rd.	4	6	2015	\$5,500	Fort Collins – Street Oversizing Fund
4	65 th Ave.	37 th S.	49 th St.	2	4	2016	\$1,000	Evans – Capital Projects Street Fund Future Development
5	US 287	Shields St.	LaPorte Bypass	2	4	2016	\$22,000	CDOT – FASTER Safety/RAMP
6	37 th St.	35 th Ave,	Two Rivers Parkway	2	4	2018	\$1,500	Evans – Capital Projects Street Fund Future Dev.
7	35 th Ave.	49 th St.	Weld CR & Weld CR 394	0	4	2020	\$1,500	Evans – Capital Projects Street Fund Future Development
8	59 th Ave.	4 th St.	C St.	2	4	2020	\$2,400	Greeley – Road Development Funds
9	Harmony Rd.	College	Boardwalk	4	6	2020	\$9,349	Fort Collins – Street Oversizing Fund, Developer Contribution, Sales Tax
2025 Network								
10	Prospect	Summit-view	I-25	2	4	2025	\$7,500	Fort Collins - Street Oversizing Fund, Developer Contribution, Sales Tax
11	Prospect	I-25	GMA	2	4	2025	\$3,000	Fort Collins - Street Oversizing Fund, Developer Contribution, Sales Tax

Table 5: List of NFRMPO Regional Travel Demand Model Projects

Project Map #	Street Name	From	To	Description of Improvement		Year of Improvement	Cost (thousands)	Funding Source
				Before	After			
2025 Network (Cont.)								
12	Timberline	Trilby	Kechter	2	4	2025	\$15,000	Fort Collins - Street Oversizing Fund
13	Timberline	Kechter	Battle Creek	2	4	2025	\$2,003	Fort Collins – Street Oversizing Fund, Developer Contribution, Sales Tax
2035 Network								
14	59 th Ave	Us 34 Bypass	20 th St.	2	4	2035	\$3,500	Greeley – Road Dev. Funds
15	83 rd Ave.	Weld CR 54	Weld CR 64	2	3	2035	\$7,000	Greeley - Road Dev. Funds
16	I-25	SH 392	SH 14	2	4	2035	\$137,000	CDOT Strategic Projects, Strategic Transit A, Local Funds (City of Loveland), Flexible Funds – RTP, Other STP Metro, CMAQ, FASTER Safety
17	O St.	SH 85	83 rd Ave.	1	3	2035	\$4,700	Greeley – Road Dev. Funds
18	Shields St.	Fossil Creek	Harmony Rd.	2	4	2035	\$6,500	Fort Collins – Street Oversizing Fund
19	Weld CR 56	US 34 Bypass	Weld CR 17	0	2	2035	\$21,000	Greeley - Road Dev. Funds

Appendix D: Resolution NO. 2015-08 North Front Range Transportation & Air Quality Planning Council Adoption



**RESOLUTION NO. 2015-08
OF THE NORTH FRONT RANGE TRANSPORTATION & AIR QUALITY PLANNING COUNCIL
ADOPTING CONFORMITY DETERMINATIONS
FOR THE NORTH FRONT RANGE METROPOLITAN PLANNING AREA 2040 FISCALLY
CONSTRAINED REGIONAL TRANSPORTATION PLAN
AND THE FY2016-2019 TRANSPORTATION IMPROVEMENT PROGRAM
AND FOR THE NORTHERN SUBAREA OF THE UPPER FRONT RANGE TRANSPORTATION
PLANNING REGION 2040 REGIONAL TRANSPORTATION PLAN
AND FOR THE NORTHERN SUBAREA OF THE UPPER FRONT RANGE TRANSPORTATION
PLANNING REGION PORTION OF THE COLORADO FY2016-2019 STATEWIDE
TRANSPORTATION IMPROVEMENT PROGRAM**

WHEREAS, 49 CFR PART 613 §450.324 requires development through continuing, cooperative, and comprehensive (“3C”) multimodal transportation planning process of a fiscally constrained Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP) for Metropolitan Planning Organizations (MPOs); and

WHEREAS, the Planning Council as the MPO is the agency responsible for developing and amending the RTP and TIP; and

WHEREAS, portions of the cities of Fort Collins and Greeley are currently designated as maintenance areas for carbon monoxide (CO) for which the Planning Council performs conformity determinations; and

WHEREAS, the Planning Council through a Memorandum of Agreement (MOA) (2008) has agreed to perform ozone conformity determinations for the Northern Subarea of the Denver-North Front Range 8-hour ozone nonattainment area which includes portions of Larimer and Weld counties outside the MPO contained in the Upper Front Range Transportation Planning Region (UFRTPR); and

WHEREAS, Section 93.110(a) of the conformity rule requires conformity determinations based on the most recent planning assumptions in force at the time of conformity analysis; and

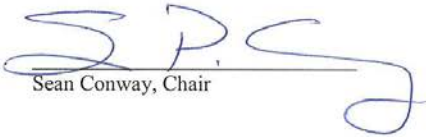
WHEREAS, the planning assumptions for the Northern Subarea were updated prior to conformity analysis, updating from forecast year 2035 to 2040; and

WHEREAS, the air quality conformity determinations conducted on the MPO’s fiscally constrained 2040 RTP and FY2016-2019 TIP, and the UFRTPR 2040 RTP and the Colorado FY2016-2019 Statewide TIP (STIP) using the 2040 planning assumptions were within the federally approved emissions budgets; and

WHEREAS, the Planning Council received no public comment opposing the finding of conformity during the public comment period or during the public hearing;

NOW, THEREFORE, BE IT RESOLVED BY North Front Range Transportation & Air Quality Planning Council, the fiscally constrained 2040 RTP, FY2016-2019 TIP, 2040 UFRTPR RTP, and the Colorado FY2016-2019 STIP conform to the State Implementation Plan (SIP) demonstrating positive air quality conformity determinations.

Passed and adopted at the regular meeting of the North Front Range Transportation & Air Quality Planning Council held the 9th day of July, 2015.


Sean Conway, Chair

ATTEST:

Terri Blackmore, Executive Director



**Appendix E: Colorado Air Quality Control Commission Conformity Concurrence
(to be provided)**

**Appendix F: U.S. Department of Transportation Conformity Finding
(to be provided)**