



Purchasing  
419 Canyon Avenue, Suite 300  
Fort Collins, CO 80521  
Phone: (970) 221-6243  
Fax: (970) 416-2406  
Website: [nfrmpo.org](http://nfrmpo.org)

**INVITATION TO BID  
TRAVEL DEMAND MODEL UPDATE #P2017-001  
PROPOSAL DUE DATE: 5:00 PM Mountain Daylight Time (MDT), Friday, September 22, 2017**

The North Front Range Metropolitan Planning Organization (NFRMPO) requests proposals for the services of a qualified vendor to provide Travel Demand Modeling expertise in accordance with the scope of services provided within this Request for Proposals (RFP).

The NFRMPO posts current bid and proposal opportunities on the Rocky Mountain E-Purchasing System (RMEPS) website. We encourage vendors and contractors to take advantage of free registration with RMEPS to see all of our available bid opportunities. If you need help registering, please call the Rocky Mountain E-Purchasing Group Support Department toll free (800) 835-4603.

Link to North Front Range Metropolitan Planning Organization Open Solicitations:

[Rocky Mountain E-Purchasing Group](#)

[www.BidNetDirect.com/colorado/](http://www.BidNetDirect.com/colorado/)

A copy of the RFP may also be downloaded from the NFRMPO website: <http://nfrmpo.org/rfps-rfq>.

**All proposals must be received before 5:00 PM MDT Friday, September 22, 2017 as directed in the RFP instructions.**

The NFRMPO encourages all certified Disadvantage Business Enterprises (DBE) and certified Small Business Enterprises (SBE) to submit proposals and/or bids in response to all requests for proposals. In administering its DBE Program, the NFRMPO will not, directly or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the DBE Program with respect to individuals of a particular race, color, sex, or national origin. The NFRMPO is covered by CDOT's DBE goal of 2.28; however, there is no specific goal for this project.

The work in this RFP should be completed within one year (12 months) from the time of the contract execution.

Questions concerning the scope of the project should be issued in writing and directed to the Project Manager, Becky Karasko, Regional Transportation Planning Director at the NFRMPO, [bkarasko@nfrmpo.org](mailto:bkarasko@nfrmpo.org). No questions will be accepted after **September 15, 2017**, seven (7) days prior to the bid closing date. Answers to questions received will be posted on RMEPS and sent out via email to those who request and provide a valid email address no later than **September 18, 2017**.

Questions concerning bid submittal or process should be directed to Becky Karasko, Regional Transportation Planning Director at [bkarasko@nfrmpo.org](mailto:bkarasko@nfrmpo.org).

**North Front Range Metropolitan Planning Organization  
(NFRMPO)**

**Request for Proposals**

**For**

**Travel Demand Model Update and Improvements**

August 2017



North Front Range Metropolitan Planning Organization (NFRMPO)  
419 Canyon Avenue, Suite 300  
Fort Collins, CO 80521  
(970) 416-2257  
[bkarasko@nfrmpo.org](mailto:bkarasko@nfrmpo.org)

# **SECTION I: INTRODUCTION**

## **North Front Range Metropolitan Planning Organization**

The North Front Range Metropolitan Planning Organization (NFRMPO) is located in northern Colorado and covers the urbanized portions of Larimer and Weld counties. The NFRMPO region is north of the Denver Metropolitan area and within commuting distance for many of the communities along the North I-25 or US85 corridors. This area is an attractive place to live, work, and play and consequently, is one of the fastest growing areas in Colorado.

This Request for Proposals (RFP) is seeking a consulting firm, or team, to update the regional travel demand model, with a forecast year of 2045 as described in the Tasks. Forecasting travel demand is crucial in the development and updating of the NFRMPO's Regional Transportation Plan (RTP), Regional Transit Element (RTE), Congestion Management Process (CMP), Transportation Improvement Program (TIP), air quality conformity determinations, and the State Implementation Plan (SIP) for air quality. It also provides the NFRMPO with valuable support to various transportation planning processes conducted by local member agencies and CDOT.

### **The Region**

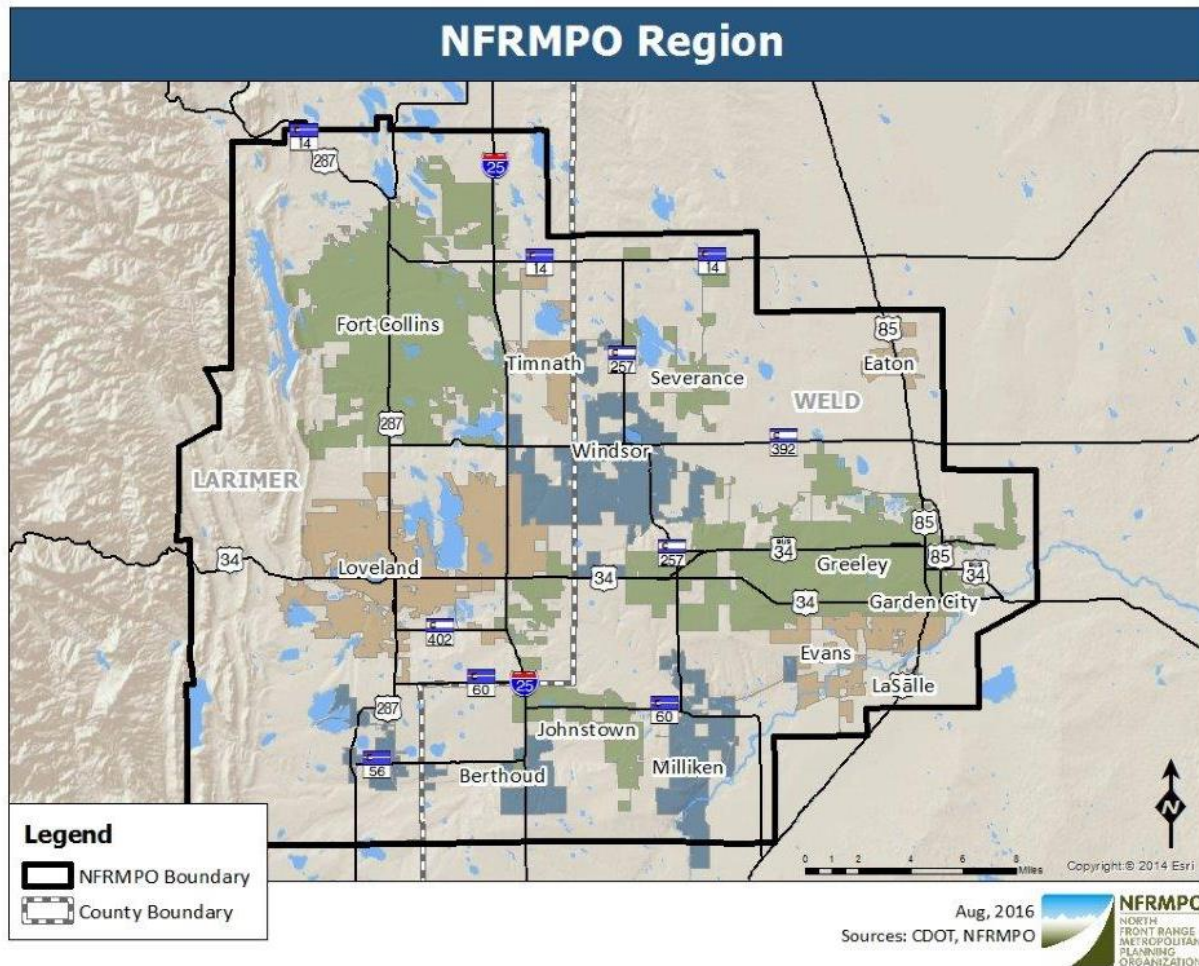
Since 1988, the NFRMPO has worked to promote a regional perspective on the most pressing issues facing the North Front Range, specifically transportation and air quality. The NFRMPO Planning Council administers the region's federally mandated transportation planning processes. Three members representing the region serve on the Regional Air Quality Council (RAQC), one from Larimer County, one from Weld County, and one from the NFRMPO. This gives the local governments a voice in the policies and programs that are implemented.

The Planning Council is composed of one representative from each of the following member governments (Garden City chooses not to participate):

- Berthoud
- Eaton
- Evans
- Fort Collins
- Greeley
- Johnstown
- Larimer County
- LaSalle
- Loveland
- Milliken
- Severance
- Timnath
- Weld County
- Windsor

The Planning Council also has a representative from both the Transportation Commission of Colorado and the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD). The Planning Council receives technical expertise, advice, and recommendations from the Technical Advisory Committee (TAC), composed of staff from the member entities. Finally, the NFRMPO has a broad-based public involvement process to gather input on transportation plans and programs which consider the views of all residents and workers within the North Front Range region.

Figure 1: NFRMPO Region



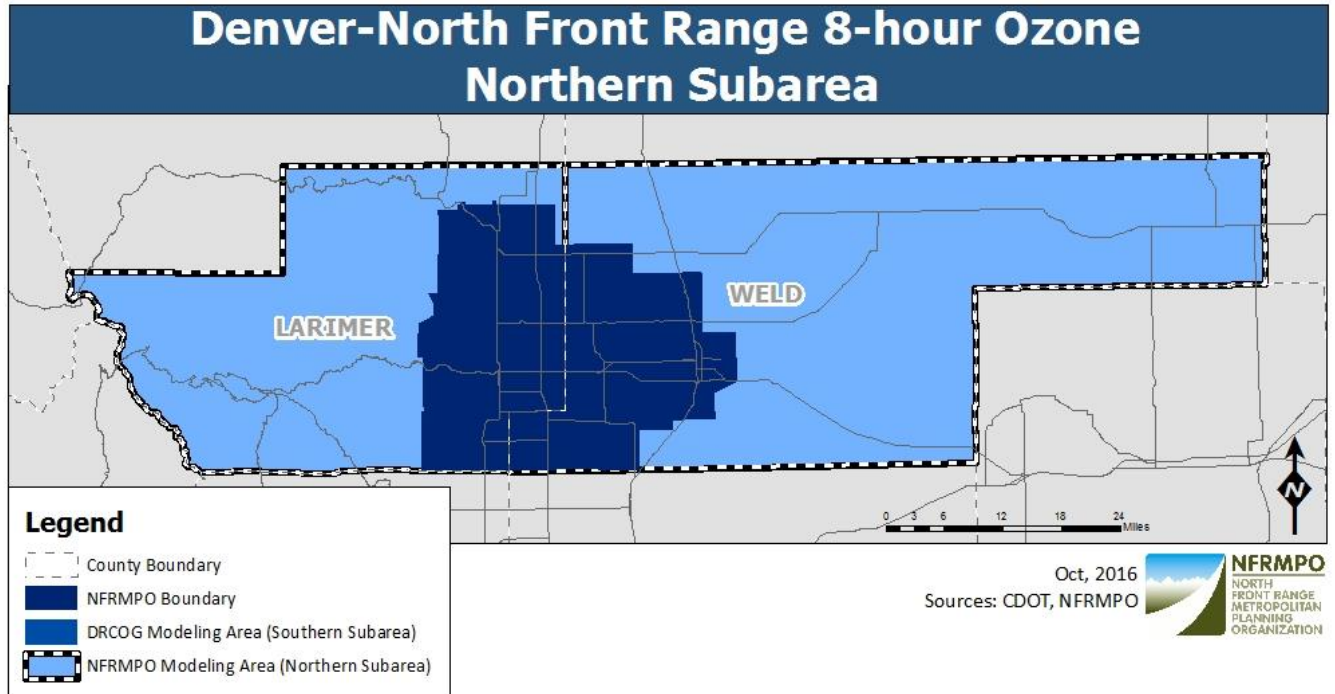
The total 2015 population in the region is estimated at 482,144. There are three major cities in the NFRMPO area, which are geographically dispersed: Fort Collins (160,935), Greeley (101,302), and Loveland (74,461). The region is also home to two major universities: Colorado State University (CSU) in Fort Collins and the University of Northern Colorado (UNC) in Greeley. CSU has a student population of about 33,198 in 2016, with over 23 percent living on campus, while UNC has a student population of 11,222 in 2016, with 34 percent living in student housing. The Universities are currently handled as special generators in the Regional Travel Demand Model. There are also two colleges, Front Range Community College and AIMS in the region.

Regional transit service within and out of the region is served by two routes by two transit providers: the FLEX route – Fort Collins to Longmont/Boulder operated by Transfort and the Bustang transit service, which runs between Fort Collins and Denver, which is operated by a contractor of the Colorado Department of Transportation (CDOT).

The NFRMPO is located within Northern Subarea of the Denver-North Front Range 8-Hour Ozone Nonattainment Area. The pollutant of concern in this region is ozone and its pre-cursors, volatile organic compounds (VOC) and nitrogen oxide (NOx), which are predominately a summertime issue. Additionally, the region also has the Fort Collins and Greeley Carbon Monoxide (CO) Maintenance Areas. Larimer County specifically sees a dramatic change in VMT between the

average week days when school is in session, to the summer with over four and a half million visitors to the Estes Park area and Rocky Mountain National Park (RMNP) area. This significantly impacts traffic and emissions in the region.

**Figure 2: Denver-North Front Rang 8-hour Ozone Northern Subarea**



***For ease of language, the firm or team will be called “the Consultant” throughout the remainder of this document and the modeling area within the NFRMPO boundary will be called “the region,” the area outside of the NFRMPO boundary, but within the Northern Subarea Nonattainment Area will be called “the air quality area.”***

## **SECTION II: PROVISIONS**

### **PURPOSE**

The purpose of this RFP is to select a Consultant to make improvements to, calibrate, and validate the NFRMPO Regional Travel Demand Model (RTDM).

### **SCHEDULE**

- August 1, 2017: Release of RFP
- August 25, 2017: Letter of Intent Due
- September 22, 2017: Proposals due by 5:00 PM MDT
- Week of September 25, 2017: Consultant Selection Committee reviews proposals
- Week of October 2, 2017: Consultant Selection Committee meets
- *Week of October 9, 2017: Notice to firms selected for interviews, if interviews are required*
- *Week of October 23, 2017: Interviews, if necessary*
- Week of October 30, 2017: Firm Selected, *anticipated*
- Week of December 18, 2017: Notice to Proceed issued, *anticipated*

### **COST LIABILITY**

All costs incurred in the submission of proposals or in making necessary studies, designs, or benchmarks of estimates for the preparation of the proposals are the sole responsibility of the Consultant.

## **SECTION III: BACKGROUND**

### **CURRENT MODEL STRUCTURE:**

The primary uses of the current 2040 RTDM have been:

- Traffic growth and vehicle miles traveled (VMT) forecasts
- Network updates and changes
- Air quality conformity
- Transit network modeling
- Data requests
- Major project items (i.e. North I-25 items, CDOT's Tolling and Revenue studies)

The RTDM has performed well, aside from the issue of the data in the *2010 NFRMPO Household Survey* being from 2009 during the Great Recession. This led to lower VMT numbers in the out years of the model than in previous iterations. It is important to note that although the VMT in 2035 is less than the VMT in the previous travel demand model, the growth rate remains comparable.

## Land Use Allocation Model (LUAM) Parameters

- Software: ArcGIS and CommunityViz/Scenario 360
- Model Years:
  - Base year: 2012
  - Out-year: 2040
  - Interim years: 2015, 2020, 2025, and 2035
- Traffic Analysis Zones (TAZ): 1,032 for the region
- TAZ Data:
  - Employment data stratified by basic, retail, and service
  - Households stratified by annual household income and household size
- Control totals, developed through the *2040 Economic and Demographic Forecast*, for households and employment within seven (7) subregions
- Land uses developed from regional perspective with input from local plans and staff
- There are 14 Land Use Factor Weights for Household Growth rated on a scale of -10 to +10, including floodplains, heavy industry, oil and gas (single well *and* consolidated site), railroads, and transit accessibility
- Land uses were categorized and non-buildable land was excluded from distribution
- Control totals were identified for each subarea by land use type. For example, industrial employment was allocated to parcels with an industrial land use in local master plans
- Final Report: [North Front Range Land Use Allocation Model: Technical Documentation](#), June 17, 2015

## Regional Travel Demand Model (RTDM) Parameters

- Software: TransCAD 6 r2, Build 9075
- Model Type: Four-step gravity model
- Model Years:
  - Base year: 2012
  - Out-year: 2040
  - Interim years: 2015, 2020, 2025, and 2035
- TAZ: 1,032 for the region
- TAZ Data:
  - Employment by four categories (basic, service, retail, and medical) provided by the LUAM
  - Trip attraction rates for four employment categories for non-truck trips (truck trips are combined for service and medical)



- Households by income level, size, number of workers, and density provided by the LUAM
- Networks:
  - The roadway network consists of all roads federally classified as major collector and above or used by local transit routes. The database associated with the road network includes roadway data representing multiple years.
  - The roadway line layer includes information such as road capacity, functional classification/facility type, area type, free flow speeds, and travel time.
  - The transit network includes the fixed routes operated by the Cities of Fort Collins, Greeley and Loveland as well as CDOT's Bustang North Route. The transit network also includes information such as route frequency, drive access, walk access links, and stops.
  - The roadway line layer and route system are combined to create a complete transit network.
- Trip Purposes:
  - **Home-Based Work (HBW):** Commute trips between home and work.
  - **Home-Based University (HBU):** Trips between home and university locations (CSU and UNC) for school-related purposes by people not employed by the universities.
  - **Home-Based Shop (HBS):** Trips between home and shopping locations for the purpose of shopping.
  - **Home-Based Other (HBO):** All other trips that have one end at home.
  - **Work-Based Other (WBO):** Work-related trips without an end at home.
  - **Other-Based Other (OBO):** Trips with neither an end at home nor a work-related purpose.
  - **Lodging-Based Other (LBO):** Trips made by visitors, based at a lodging establishment (Estes Park area only, not included in the household travel survey).
  - **Small Truck (STRK):** Small truck trips (not included in the household travel survey).
  - **Large Truck (LTRK):** Large truck trips (not included in the household travel survey).
- Trip Distribution:
  - The travel demand model uses a standard gravity model and applies friction factors to represent the effects of impedance between zones.



- Equations and friction factors have been calibrated for each trip purpose based on observed trip length (time) frequency distributions and average travel times.
  - Friction factors were calibrated using data from the *2010 NFRMPO Household Survey* for the NFRMPO region.
- Mode Choice:
  - Nested logit-based mode choice model applied to all internal non-truck trip purposes.
  - The model uses a distance based algorithm to determine non-motorized mode share.
- Time of Day:
  - The model includes a 2-hour AM peak period, a 1-hour mid-day peak, a 4-hour PM peak period, and an off-peak period, with four time segments.
  - Trip assignment is run as AM, Mid-Day, PM, and off-peak.
- External Stations:
  - External travel is modeled explicitly at the external stations where roadways cross the model boundary.
  - There are 18 external stations or nodes.
  - The split between the EE and IE/EI trips at each external station were estimated using the *2006 North Front Range External Travel Study*.
- There are matrices for interregional transit routes based on the existing FLEX and Bustang routes.
- Final Technical Report: [North Front Range 2012 Base Year Regional Travel Model: Technical Documentation](#), May 2015
- Final User's Guide: [North Front Range Regional Travel Model User's Guide](#), Jan 2015

Traffic counts at the state, county, and municipal level were used in the validation process. A subcontractor to the Consultant obtained counts at critical locations where counts were unavailable. It is anticipated additional counts at key locations may be required for this model development as well.

The NFRMPO, through the 2008 Memorandum of Agreement (MOA), administers the update of the land use and travel demand models for the Upper Front Range (UFR) Transportation Planning Region (TPR) for air quality conformity determination purposes.

## **SECTION IV: SCOPE OF WORK**

The Consultant, at a minimum, must satisfactorily achieve the deliverables in this section, consistent with NFRMPO standards or performance standards otherwise agreed to by the NFRMPO through a contract resulting from the RFP. The Consultant may also propose to achieve additional deliverables beyond those minimally required.

The Consultant is expected to provide technical expertise, oversight, and perform the primary work on the RTDM update, with the NFRMPO staff providing support and guidance. The Consultant is expected to provide training to NFRMPO Transportation staff so they will be thoroughly competent in running model applications at the conclusion of the model's update.

The Consultant's work tasks are anticipated to include the following items, detailed on the following pages:

- **TASK 1: Roadway Model Network Update**
- **TASK 2: Transit Network Update**
- **TASK 3: TAZ Update Refinement Review**
- **TASK 4: External Trips and External Station Review and - Update**
- **TASK 5: Trip Generation**
- **TASK 6: Special Generators Review and Update**
- **TASK 7: Freight Integration**
- **TASK 8: Trip Distribution**
- **TASK 9: Mode Choice**
- **TASK 10: Vehicle and Transit Assignment**
- **TASK 11: Model Calibration and Validation**
- **TASK 12: Model Interface Improvements**
- **TASK 13: Air Quality Conformity**
- **TASK 14: Performance Measures**
- **TASK 15: Project Documentation and Project Management**
- **TASK 16: Training**

# **TASK 1: Development of Model Network**

## ***Background***

The 2012 model network was updated during the 2013-2014 RTDM update. The model network needs to be updated with 2015 traffic counts, which will be completed in-house by NFRMPO staff and reviewed by the Consultant. CDOT will be adding express lanes to the North I-25 corridor; the model currently includes the ability to model toll lanes, HOV lanes, and HOT lanes. NFRMPO staff will added posted speed limits on modeled roadways to the 2040 RTDM prior to the Notice to Proceed being issued.

The NFRMPO is located within Northern Subarea of the Denver-North Front Range 8-Hour Ozone Nonattainment Area and is responsible for modeling and demonstrating air quality conformity for the entire Northern Subarea. The portion of the Northern Subarea of the Denver-North Front Range 8-Hour Ozone Nonattainment Area not within the NFRMPO Boundary is included in the RTDM for air quality conformity determination purposes and must be included in the model update network. This area outside of the NFRMPO boundary located within the Upper Front Range Transportation Planning Region (UFR TPR) includes Estes Park, which has over four and a half million visitors to the area and Rocky Mountain National Park (RMNP) annually. Additional and specific air quality conformity tasks are detailed in **Task 13**.

## ***Tasks***

- 1.1 Review existing network structure and recommend best practices for improvement, including a review of modeling best practices for express lanes.
- 1.2 Review updated 2015 base year model network, which will include all federal aid eligible roads. A review for accuracy of the model network's state highways; routes with transit services; and appropriate drive, bike, and walk access links within the NFRMPO region and expanded air quality planning region must be conducted.
- 1.3 Construct future year networks in five year increments for both the NFRMPO and expanded air quality regions to 2045.
- 1.4 Evaluate seasonal and daily adjustment factors to determine the most appropriate method for calculating 2015 Average Annual Weekday Traffic (AAWDT) and adjust the available traffic counts to estimate 2015 AAWDT.
- 1.5 Evaluate available datasets for network speed and travel time (INRIX, Fort Collins, Loveland and Greeley data) and calibrate travel speeds using actual posted speed limits, free flow, and congested travel speed data from these datasets, as applicable. Make recommendations on using additional data sets for calibrating roadway speeds in the model network.

## ***Deliverables***

- 1.1 Calibrated and validated 2015 base year using national standards.
- 1.2 Future year model networks in 5-year increments as well as in air quality attainment years (2020, 2023, 2025, 2030, 2035, 2040, and 2045), with appropriate interim year estimated traffic counts, speed, and capacity data.
- 1.3 Report documenting the methodology for checking the road network, determining adjustment factors, placing centroids, developing centroid connectors, recommendations, and other decisions made in this Task.

## **TASK 2: Development of Transit Network**

### ***Background***

The NFRMPO's transit network was updated during the 2013-2014 model update using shapefiles from the three fixed-route agencies in the NFRMPO region: City of Loveland Transit (COLT), Greeley-Evans Transit (GET), and the City of Fort Collins' Transfort. There have been major transit planning efforts, changes and expansions of transit services since the 2040 RTDM was completed. Additions to the transit network have been made for some planning efforts, but not all the changes have been made to the network and route system; these route changes must be included in the 2045 RTDM. Additionally, the model does not reflect physical stops, rather approximations of stops for the purposes of the model.

### ***Tasks***

- 2.1** Evaluate the use of real stops, provided by the region's transit agencies, in the model rather than approximations of those stops.
- 2.2** Evaluate the potential of using TransCAD's General Transit Feed Specification (GTFS) conversion tools to develop the transit network route system in the model. Consultant will provide a recommendation on the use of this tool.
- 2.3** Using the agreed method from **Task 2.2**, review the transit network route system updated in-house and add physical stops for all fixed-route services and associate the transit network with the 2015 base year network in a manner that allows for multimodal trip assignment (including walk, drive, and bike mode access to transit links).
- 2.4** Update the service hours of the various transit agencies and their route frequencies
- 2.5** Review planned transit expansions in the region and include those routes in future year networks.

### ***Deliverables***

- 2.1** Calibrated and validated base year (2015) and functioning future year transit networks in 5-year increments (2020, 2025, 2030, 2035, 2040, and 2045) with appropriate interim year vehicle count, ridership, and capacity estimates.
- 2.2** Validated 2015 transit ridership.
- 2.3** Report documenting the transit network development, recommendations, and all other processes and decisions involved in the completion of this Task.

## **TASK 3: TAZ Update Refinement Review**

### ***Background***

NFRMPO staff is completing a refinement to the Traffic Analysis Zones (TAZs) in the RTDM and moving from a sub-region set up (currently seven subregions within the model) to a model solely based on TAZs built on Census Blocks and community boundaries. The RTDM will use the Census Block level TAZs from the UrbanSim Cloud Platform. The refined TAZs are being completed for both the NFRMPO and Air Quality modeling areas, discussed in more detail in **Task 13**. The population and employment totals for the region are being provided by the Colorado Department of Local Affairs (DOLA).

### ***Tasks***

- 3.1** Review new TAZ shapefile and make recommendations for improvements if necessary.
- 3.2** Work with NFRMPO staff to create a 2015 TAZ layer compatible with both the UrbanSim model as well as TransCAD.
- 3.3** Review NFRMPO staff assumptions in the UrbanSim model, including new area types for the TAZs to ensure accuracy and compatibility with the TransCAD-based RTDM.
- 3.4** Update centroid connectors as needed in all of the RTDM TAZs ensuring they load onto the network correctly following approval.

### ***Deliverables***

- 3.1** TAZ layer file in TransCAD with all socioeconomic data necessary for a fully functional base year model run and future year model runs.
- 3.2** Centroid connectors placed within all of the model's TAZs.
- 3.3** Report documenting the process and reasoning for decisions and recommendations involved in the completion of this Task.

## **TASK 4: External Trips and External Station Review and Development**

### ***Background***

For the current NFRMPO RTDM, external trips were estimated using traffic count data, which was adjusted as needed to represent an “average weekday when school is in session”. The split between Internal-External (IE)/External-Internal (EI) trips were calculated using the *2006 North Front Range External Travel Study*. The RTDM includes 18 external stations, eight of which are shared with Denver Regional Council of Governments (DRCOG) to the south. The Colorado Department of Transportation (CDOT) will have a functioning travel demand model by the end of 2017. It is anticipated that the Consultant will use the CDOT Statewide Model to estimate the total volumes through the region at the RTDM’s external stations.

In addition to the external tables for auto trips, an external trip table is used for transit trips into and out of the region. There are currently two regional transit routes with actual boarding information on the US287 and North I-25 corridors. A review of the ridership from the current RTDM must be conducted to determine if the information is still relevant for use in the updated RTDM. A recommendation on ridership estimation for interregional transit trips and data requirements must be developed.

### ***Tasks***

- 4.1 Review existing external stations, trip structure, and available data sources. Make recommendations on improvements to external trips in the model.
- 4.2 Update and validate the RTDM’s external-external (EE) matrix for new 2015 base EE trips using accepted national industry standards.
- 4.3 Develop, document, and implement a process to develop future EE/EI/IE matrices. Use process to create future year external trip matrices and compare against corresponding external stations in the DRCOG model and the Statewide model. Perform a reasonableness check on the 2045 EE/EI/IE matrices.
- 4.4 The Consultant will project EI and IE trips based on the number of households for the IE trips and employment for the EI trips and validate using the 2010 NFRMPO Household Survey. The Consultant will also need to produce EI and IE trips for the 2045 network and calibration using projections from the Department of Local Affairs (DOLA) future years.
- 4.5 Compare 2015 base year EE trips at the external stations using available traffic count data from 2015.

### ***Deliverables***

- 4.1 Validated 2015 external trip matrices.
- 4.2 New 2045 external trip matrices compared against the DRCOG and CDOT models checking for reasonableness.
- 4.3 Validated EI/IE trips for each trip purpose.
- 4.4 Future external trip table development process and use of that process to create 2020, 2025, 2030, 2035, 2040, and 2045 matrices.
- 4.5 Report documenting the process and reasoning for the decisions and recommendations involved with this Task.

## **TASK 5: Trip Generation**

### ***Background***

The NFRMPO 2040 RTDM uses the data from the North Front Range portion of the *2010 Front Range Travel Counts Household Survey* to estimate trip production and attraction rates. A review of the trip purposes in the RTDM as well as the capacity of North I-25 specifically to more accurately reflect the current and future system should be undertaken. Additionally, a review of the trip production and attraction rates and recommendations for improvements should be conducted.

### ***Task***

- 5.1 Review assumptions in the 2040 RTDM for trip production and attraction rates based on the Front Range Travel Counts Household Survey and provide recommendations.
- 5.2 Review trip purposes in the RTDM and provide recommendations for improvements.
- 5.3 Review of system capacity in the RTDM, with special attention paid to North I-25, and recommendations for improvements.
- 5.4 Review of trip production rates and recommendations for improvements.
- 5.5 Review of trip attraction rates and recommendations for improvements.
- 5.6 Review of current RTDM's Bureau of Public Roads (BPR) curves and recommendations for improvements.

### ***Deliverables***

- 5.1 Recommend assumptions for trip production and attraction rates in the RTDM.
- 5.2 Recommend trip purposes for use in the RTDM.
- 5.3 Recommend capacity improvements for the RTDM, specifically for North I-25.
- 5.4 Recommend BPR curve improvements for the RTDM.
- 5.5 Report documenting the recommendations, process and reasoning for the decisions involved with this Task.



## **TASK 6: Special Generators Review and Update**

### ***Background***

The model currently uses Special Generators for CSU, UNC, and Rocky Mountain National Park (RMNP). An evaluation of the Special Generators must be undertaken to determine if they are still necessary and if any additional should be considered. If it is determined the Special Generators should be retained, then supporting data will need to be updated accordingly. It is also expected the Consultant will make recommendations for other types of Special Generators to obtain accurate VMT within the region, if necessary.

### ***Tasks***

- 6.1** Review and evaluate current Special Generators in the RTDM.
- 6.2** Recommend continuation, removal, or additions of Special Generators.
- 6.3** Recommendations on other types of Special Generators for the RTDM, as applicable.

### ***Deliverables***

- 6.1** Recommend Special Generators for the RTDM.
- 6.2** Report documenting the recommendations, process and reasoning for the decisions involved with this Task.

## **TASK 7: Freight Integration**

### ***Background***

The current RTDM includes a truck component where truck volumes are estimated within the model. In 2016, the *Front Range Commercial Vehicle Survey* was conducted for the Front Range MPOs from Pueblo to Fort Collins. The truck information, including origin, destination, IE/EI/EE, and duration of trips must be incorporated into the existing truck component of the RTDM. Additionally, an evaluation and review of a more robust freight component, along with recommendations is necessary.

### ***Tasks***

- 7.1 Use the 2016 *Front Range Commercial Vehicle Survey* data to create new and more robust truck component for the RTDM.
- 7.2 Create truck trip table and components and preload truck trips onto network
- 7.3 Calibrate with count data and external stations data

### ***Deliverables***

- 7.1 A new freight truck (2-axle freight trucks and up) component of the travel model.
- 7.2 Truck Trip Tables and trucks preloaded onto the networks.
- 7.3 Report documenting the truck recommendation and how it was implemented in this Task.

## **TASK 8: Trip Distribution**

### ***Background***

The NFRMPO RTDM uses a standard four-step gravity model equation and applies friction factors to represent the effects of impedance between TAZs.

### ***Tasks***

- 8.1** Review and document industry standard practices in Trip Distribution modeling for similar-sized study areas and recommend a structure for the NFRMPO RTDM.
- 8.2** Recommend and jointly establish calibration targets for model trip distribution.
- 8.3** Upon approval, implement the trip distribution model recommendations and calibrate according to recommendation for all trip purposes.

### ***Deliverables***

- 8.1** Trip distribution review and improvement recommendations.
- 8.2** Jointly established and approved calibration recommendations.
- 8.3** A calibrated and validated trip distribution model.
- 8.4** Report documenting the recommendations, assumptions, methodology, findings, and products of this Task.

## **TASK 9: Mode Choice**

### ***Background***

The NFRMPO RTDM currently uses four travel modes: drive alone, shared ride (i.e. carpool or vanpool), transit (walk access and drive access), and non-motorized (walk and bicycle trips). The mode choice model has been calibrated to reproduce observed mode shares in the region.

### ***Tasks***

- 9.1** Explore and recommend use of available datasets to better represent non-motorized modes in the mode choice model. Datasets may include, but are not limited to: American Community Survey (ACS); Census Transportation Planning Products (CTPP); Strava Metro; National Household Travel Survey (NHTS); parameters from national research reports; built environment and land use; and bicycle and pedestrian infrastructure.
- 9.2** Review and document industry standard practices in mode choice and multi-type transit modeling for similar-sized study areas and recommend a structure for the NFRMPO's mode choice model. The Consultant will implement the mode choice model recommendation following approval by the NFRMPO.
- 9.3** Review non-motorized trips percentage taken off of the top of all trips in current RTDM to see if they are an accurate representation of non-motorized trips in the region or if the percentage needs to be adjusted.
- 9.4** Review walk and bike access to transit to ensure non-motorized transportation links are accurately modeled.
- 9.5** Recommend and jointly establish calibration targets for the mode choice model and calibrate the mode choice model.
- 9.6** Upon approval, develop and produce the recommended improvements for existing and future modes in the model, including any additional modes identified in the recommendations.
- 9.7** Use industry best practices to test and evaluate the mode choice model.

### ***Deliverables***

- 9.1** Document industry standards for mode choice model for similar sized areas and recommend a methodology.
- 9.2** Jointly established and approved calibration targets for the mode choice model.
- 9.3** Calibrated mode choice model for existing and recommended modes.
- 9.4** Non-motorized trips as a macro in the model's output reports.
- 9.5** Bike access links in the model to enable the bike mode access to transit links to be more accurately modeled.
- 9.6** Document the state of the practice of multi-type transit mode and assignment and identifying additional data or information needed to perform multi-mode transit assignment.
- 9.7** Document the methodology for determining impedance functions; reasonableness of auto occupancy factors; and the assumptions, methodology, findings and products of the mode choice task.
- 9.8** Report documenting recommendations and all steps in this work Task.

## **TASK 10: Vehicle and Transit Assignment**

### ***Background***

In trip assignment, the NFRMPO RTDM includes three peak periods: AM (7:00-9:00 AM), Mid-Day (12:30-1:30 PM), and PM (2:30-6:30 PM) and one off-peak period with a look up table to apportion the off-peak period into four time segments: Early Morning (12:00-7:00 AM), Mid-Morning (9:00 AM – 12:30 PM), Mid-Afternoon (1:30-2:30 PM), and Night (6:30 PM – 12:00 AM). In the model output files, peak hour vehicle assignment is available as a full period or in one (1) hour blocks. Vehicle trips are available by type for the peak and off-peak periods. Large truck volumes are preloaded on the road network prior to constrained traffic assignment.

### ***Tasks***

- 10.1** The Consultant will review assignment in the existing model, including volume delay functions and generalized cost function, and make recommendations for improvements that represent best practices for similar sized urban areas.
- 10.2** The Consultant will review the existing peak and off peak periods in the RTDM and make a recommendation on assignment time periods and loading factors, including the potential for peak spreading variations by external station and sensitivity to network over-saturation.
- 10.3** The Consultant will recommend calibration targets for the assignment model.
- 10.4** Upon approval, the Consultant will develop an assignment procedure to assign all vehicle and transit trips to the base year and five year increment model networks to 2045.
- 10.5** The Consultant will assign all trips to the base year, interim years, and 2045 model networks and perform a vehicle and transit peak period assignment.
- 10.6** The Consultant shall review and, if necessary update the existing road and transit impedances.

### ***Deliverables***

- 10.1** Best practice recommendations for assignment methodology for similar sized urban areas.
- 10.2** Peak and off-peak period time period and loading factor recommendations.
- 10.3** Jointly established and approved calibration targets for the assignment model.
- 10.4** Base year, interim year, and 2045 24-hour and peak traffic assignments for vehicles and transit.
- 10.5** Memo documenting the recommendations, assumptions, methodologies, findings and products of this Task.

## **TASK 11: Model Calibration and Validation**

### ***Background***

The NFRMPO RTDM must be calibrated and validated by the Consultant with industry best practices and standards. This will be accomplished through an iterative process with NFRMPO staff and the Model Steering Team (MST), to be made up of local government planners and engineers within the modeling area, CDOT staff, and transit providers.

### ***Tasks***

- 11.1** Assemble the updated RTDM, with implemented improvements as documented in the previous 10 Tasks, execute model runs, and summarize results.
- 11.2** Provide recommendation on backcasting to 2012, the current base year in the RTDM, to improve the model's sensitivity.
- 11.3** The Consultant will ensure that the model meets best practice calibration targets for all models steps at peak hours, off peak hours, and 24-hour assignments.
- 11.4** Calibrate base year (2015) VMT, trip length, travel time, mode shares, and volume distribution; adjust trip generation and distribution models as necessary.
- 11.5** Perform and document transit reasonableness check to ensure proper distribution of boardings by route or route groups and provider for base, interim, and out-year projections.
- 11.6** The Consultant will present information to and obtain feedback for and consensus on the RTDM deliverables from **Tasks 1 through 10**.
- 11.7** The Consultant will calibrate/validate travel speeds in the model using industry best practices.
- 11.8** The Consultant will assemble the full 2045 RTDM and demonstrate reasonableness of the outputs. Make changes based on the outcomes of those checks.

### ***Deliverables***

- 11.1** Provide recommendation on incorporating backcasting to 2012 for temporal validation.
- 11.2** Calibrated base year (2015) network, including model files.
- 11.3** Working calibrated components for daily and peak periods in the Base Year (2015) network.
- 11.4** Perform reasonableness checks for interim years (2020, 2025, 2030, 2035, and 2040) and out year (2045) forecasts.
- 11.5** Completed sensitivity test and supporting methodology demonstrating the changes in modeled trips based on the model data inputs for interim model years and 2045 network.
- 11.6** Documentation of the assumptions, methods, findings, and products of the model calibration Tasks.
- 11.7** Updated Report documenting recommendations and changes made to any previous deliverable(s) during calibration.

## **TASK 12: Model Interface Improvements**

### ***Background***

The NFRMPO RTDM uses a model interface developed during the 2013-2014 update. Staff is generally satisfied with the interface; however, there are a variety of components and capabilities staff would like to have added. Staff would like the Consultant to consider the merits of upgrading the existing interface or adopting a new interface for the Scenario Manager and make a recommendation. The RTDM also includes a summary report that summarizes model runs. This reporting tool is useful for comparing model runs and it should be reviewed for any potential improvements.

### ***Tasks***

- 12.1** Improve the Scenario Manager for the RTDM's interface.
- 12.2** The Consultant shall review the existing RTDM interface and make recommendations for improvements. The review should include an evaluation of the flow chart graphical interface recently introduced to TransCAD.
- 12.3** Upon approval of recommendations, the Consultant will update the existing or create a new model interface and statistic reports that successfully run on the NFRMPO computers using the most recent version of TransCAD.
- 12.4** The Consultant will provide instructions as well as documentation on the model statistics tool. This will include, but is not limited to how the tool was created or improved, how to read the report, and how to understand the report.

### ***Deliverables***

- 12.1** New or updated model interface and statistics reports, including non-motorized report.
- 12.2** Model GISDK Code.
- 12.3** Documentation on how to use and interpret the statistics reporting tool.
- 12.4** Report documenting the recommendations, assumptions, methodologies, findings and products of this Task. The report must include a description of the process to run and manage model runs in TransCAD including the names of all input and output files as well as a description of the contents of the file.



## **TASK 13: Air Quality Conformity**

### ***Background***

The NFRMPO is located within Northern Subarea of the Denver-North Front Range 8-Hour Ozone Nonattainment Area, see **Figure 2**. The pollutant of concern in this region is ozone and its precursors, volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>), which are predominately a summertime issue. The model must account for changes from the average weekday school in-session scenario to a summertime scenario for the entire region to accurately reflect the ozone precursors.

The portion of the Northern Subarea of the Denver-North Front Range 8-Hour Ozone Nonattainment Area not within the NFRMPO Boundary is included in the RTDM for air quality conformity determination purposes. Larimer County sees a dramatic change in VMT between the average week days when school is in session, to the summer with over four and a half million visitors to the Estes Park and RMNP areas. This significantly impacts traffic and emissions in the region as a whole. A review of the current methodology for capturing this data along with recommended changes, including the necessary data, is needed.

### ***Tasks***

- 13.1** Review current methodology for air quality inputs and outputs, including how the nonattainment area is represented geographically in the model.
- 13.2** Review air quality related inputs to the model and their relationship to the outputs.
- 13.3** Work with NFRMPO staff to ensure compatibility with DRCOG model.
- 13.4** Work with NFRMPO staff with input from the Colorado Department of Public Health and the Environment (CDPHE) Air Pollution Control Division (APCD) to create model outputs to be used with EPA's MOVES2014a model or the most current version.

### ***Deliverables***

- 13.1** Updated post-processing routine to create the necessary inputs for the MOVES2014a or most current model.
- 13.2** Strategy for updating the post processing routines if MOVES is updated by EPA after model delivery or new inputs are required.
- 13.3** Documentation of the necessary inputs and expected outputs, how to interface with and export data, and how to interpret each output field.

## **TASK 14: Performance Measures**

### ***Background***

Moving Ahead for Progress in the 21<sup>st</sup> Century (MAP-21) mandated for the first time that all statewide, metropolitan, and non-metropolitan planning agencies which receive federal-aid funding use performance management in the planning process. This was carried through in the Fixing America's Surface Transportation (FAST) Act. Specifically, the Consultant will review the performance measures related to the *Congestion Management Process (CMP)* for reporting.

### ***Tasks***

- 14.1 The Consultant will review performance measures reported in the NFRMPO's 2015 *CMP*.
- 14.2 The Consultant will make recommendations on the best ways to report on Travel Time Index (TTI), Planning Time Index (PTI), Level of Travel Time Reliability (LOTTR), and transit riders per hour.

### ***Deliverables***

- 14.1 Recommendations on the best ways to have the RTDM report on TTI, PTI, LOTTR, and transit riders per hour.
- 14.2 Report documenting assumptions and instructions required to run the reports on these performance measures.

## **TASK 15: Project Documentation and Project Management**

### ***Background***

The existing NFRMPO RTDM documentation is a valuable resource for training staff and understanding the concepts of the model. Documentation for this update should mirror the general structure of the existing documentation, with improvements outlined below.

### ***Tasks***

All reports produced by the Consultant must be provided as both Microsoft Word for draft documents and Word and PDFs for final documents.

- 15.1** The Consultant will prepare monthly progress reports. Additional Task technical reports and documentation must be submitted and approved by the project manager at the completion of defined milestones prior to payment.
- 15.2** The Consultant will prepare a final model calibration report based on the scope of work and the necessary documentation. The model calibration report will detail changes and updates made to the RTDM. This report will also explain the new processes developed as part of this project.
- 15.3** The Consultant will produce a complete set of all data and text files to run the model that must be used for the training described in **Task 16**.
- 15.4** Document travel model file structure and provide a flow chart illustrating the model process.
- 15.5** After completing the model, conduct a thorough review of the RTDM and recommend additional short and long term improvements.

### ***Deliverables***

- 15.1** Monthly progress and Task reports.
- 15.2** A complete set of documentation as outlined in this scope of work and additional documents identified in **Tasks 1 through 16**.
- 15.3** Recommendations for short and long term improvements to the RTDM beyond the scope of this RFP.
- 15.4** Model Calibration report.
- 15.5** Complete set of all data, instructions, and text files required to run the RTDM.

## **TASK 16: Training**

### ***Background***

The existing NFRMPO RTDM documentation is a valuable resource for staff training and understanding of the concepts used in the model. Documentation for this update should match the general structure of the existing documentation with the improvements outlined in the Deliverables.

### ***Tasks***

- 16.1** The Consultant will review the *2040 RTDM Technical Documentation* report and provide recommendations for improvement for the 2045 RTDM report.
- 16.2** The Consultant will review the *2040 RTDM Model User's Guide* and provide recommendations for improvement for the 2045 User's Guide and update the guide as appropriate.
- 16.3** The Consultant will review training materials from the previous RTDM training and update as necessary.
- 16.4** The Consultant will provide to all NFRMPO Transportation staff and any interested communities' staff a minimum of 16 hours of training in four (4) hour blocks, spaced to allow staff time to test the concepts.

### ***Deliverables***

- 16.1** RTDM Technical Documentation Report in Word and PDF formats.
- 16.2** RTDM Model User's Guide in Word and PDF formats.
- 16.3** Updated staff training materials in Word and PDF formats.
- 16.4** Staff Training Sessions, a minimum of 16 hours in four (4) hour blocks, spaced to allow staff time to test concepts presented, in-person or via interactive, web-based meetings with graphics and voice communication abilities (i.e. Skype, GoToMeeting).

## **SECTION V: ADDITIONAL ITEMS**

### **EXPERTISE**

The selected Consultant is expected to have expertise in:

- Project Management
- Geographic, social, economic, and transportation system data sources, availability of and appropriate use of those sources when developing forecasts or projections. These include, but are not limited to: the growth and development of communities and travel demand and modal choice on the transportation system.
- Use of TransCAD, ArcGIS, databases, and matrix manipulation required. Experience with UrbanSim and UrbanSim Cloud desirable;
- Highway functional classification and capacity analyses, including determinations of Travel Time Index (TTI), Planning Time Index (PTI), and Level of Travel Time Reliability (LOTTR);
- Various modes of a transit system/route/structures and ridership analyses
- Outputs from land use forecasting methodologies or models that serve as inputs to the travel demand model
- Developing and reviewing travel model demand equations
- Travel demand model outputs that serve as inputs to the MOVES2014a air quality model as required by the Environmental Protection Agency (EPA) for air quality conformity determinations.

### **SCHEDULE AND BUDGET**

The model update project is anticipated to take approximately one year to complete. The training of staff may extend beyond the one year limit. The project has a budget of approximately \$200,000.

### **MEETINGS**

The Consultant and NFRMPO's staff will work as a team and must be available for meetings or phone calls. However, the budget for travel is expected to be limited, so other communication options such as Skype and GoToMeeting should be considered when in-person meetings would not be necessary or possible. These options might involve interactive, web-based meetings that display graphic or tabular materials in addition to voice communications.

### **TRAVEL**

The NFRMPO office is located in Fort Collins, Colorado and any anticipated travel expenses for the Consultant team members must be included in the submitted cost proposals. There is a limited budget for this project(s), so travel expenses should be minimized. Travel expenses for the Consultant team are not authorized to be reimbursed by the NFRMPO for trips that occur prior to the Notice to Proceed with the contract.

## **SECTION VI: PROPOSAL SUBMITTAL—INFORMATION REQUIRED FROM PROPOSING CONSULTANT FIRMS**

Consulting firm proposals must be submitted in the format outlined below and must include similar information for all subcontractors.

The proposal must be signed by a duly authorized representative of the firm submitting the proposal. The signature shall include the title of the individual signing the proposal. The proposal must be good for a period not less than 90 days to allow for all contracting approvals. All proposals must include a W-9 and the Debarment and Suspension Certification document.

The NFRMPO will not reimburse any firm for costs incurred in the preparation and presentation of their proposal or for taking part in an interview.

### **A. Business Organization**

State the full name and address of the organization and, if applicable, the parent company, branch office or another subordinate element(s) that will perform or assist in performing the work. Indicate whether operating as an individual, partnership or corporation; if as a corporation, include the state in which incorporated. If appropriate, state whether members of the team are licensed to operate in the State of Colorado and whether the consulting firm team includes a State of Colorado certified DBE. If the business has multiple offices, please identify the home office of the project manager and the majority of the team.

### **B. Statement of the Problem**

State, in precise terms, the Consultant's understanding of the problem presented in the RFP and how they propose to satisfy both the technical and administrative requirements.

### **C. Management Summary**

Include a narrative description of the proposed effort and how it will be managed and the products that will be delivered, showing a timetable with products and milestones. The Cost proposal should be in a separate sealed envelope with the firm's name on the outside. The cost proposal should also detail the dollar amounts by task. There should be a one-page summary of the Work Plan and deliverables as described below.

### **D. Consultant Qualifications and Prior Experience**

Include as part of the proposal a brief statement concerning the recent staff experience for those who will be actively engaged in the proposed effort. Do not include corporate experience unless persons who will work on this project participated in that experience. Identify the staff person and their role in the corporate experience. Provide the same information for each sub-consultant participating in this project.

In addition to specific technical capabilities required of the Consultant to perform this project, it is desired that the Consultant project manager have detailed knowledge and experience with state and federal financing procedures and the ability to coordinate with NFRMPO, CDOT and other appropriate agencies and individuals.

### **E. Work Plan**

Describe in narrative form the Consultant's technical approach for accomplishing the work in this RFP. Include a description of issues involved in the RFP to indicate understanding of the problem

and the proper emphasis to be placed on each area. Provide a breakdown of work tasks and subtasks with timeline and products/deliverables. The Consultant should also include any innovative recommendations they would like to propose in this section as **Task 17**.

Show the staff assignment of hours to those Tasks and itemize the person hours allocated for each Task by level using a Gantt chart or similar display. Include each staff person's name and title (project manager, senior engineer, etc.) and the estimate of hours for the prime Consultant's and all subcontractors' staff, if applicable. Indicate the proposed implementation schedule, designating decision points, and the total time necessary to accomplish them based on the RFP. Additionally, all efforts that will result in direct or indirect cost to the project (i.e., supplies and materials, transportation, travel, meals and lodging, specialized services, subcontractors, reproduction and distribution of documents or any other direct cost item) must be itemized.

#### **F. Key Personnel**

Specific background information on key individuals who will be assigned to the project team must be included and should emphasize their experience relative to this project's requirements. The proposed key staff must be the personnel who will be assigned to the project. Key people are defined as those people whose qualifications and experience are essential to providing quality services. The project team means the personnel assigned by the Consultant and the Sub-consultant(s) who are responsible for the services. Include the resumes of all key project personnel (two pages maximum per person), including subcontractors.

The contract for this project will contain a provision that the Consultant may not replace key people without prior written approval from NFRMPO. A violation of this provision will be considered a breach of contract, and NFRMPO may terminate the contract.

#### **G. Project Management**

The Consultant's Project Manager must be readily accessible to NFRMPO project manager. Response to this RFP should include a proposal to address and clarify all aspects of project administration, communication, documentation, quality assurance, variation and change control, contract deliverables, budget and cost control, schedule control, and internal/external coordination.

The NFRMPO Project Manager shall be the official NFRMPO contact person for the Consultant. The Consultant must either address or send a copy of all project correspondence to the NFRMPO Project Manager. This includes all verbal contact records. The NFRMPO Project Manager shall be made aware of all communications regarding this project.

The Consultant will update the NFRMPO Project Manager on a monthly basis in addition to updates/documentation of deliverables at the milestones identified by the Consultant in the proposal based on the RFP.

The Consultant will maintain a project record, which includes a history of significant events that influenced the development of the products, receipt of information and the reason for the delay of any products.

The Consultant shall notify the NFRMPO Project Manager whenever discoveries or new information have the potential to require changes in the scope or cost of the project.



**H. Authorized Negotiators**

Consultant proposals must include the names and telephone numbers of the firm's personnel authorized to negotiate the proposed contract with the NFRMPO. In the event that this proposal and the subsequent negotiations lead to a contract, the Consultant will be asked to provide a written verification that the person signing the contract is authorized to do so. If this will require a meeting of the Board of Directors or the Partners of the firm, the Consultant should begin arrangements so that the contract will not be delayed.

**I. Sub-consultants**

All Sub-consultants must be identified and are subject to approval by NFRMPO. Qualifications and background information is required as specified in the "Key Personnel" section of this RFP.

The contract for this project will contain a provision requiring prior written approval to subcontract any of the services. If the amount to be subcontracted is \$25,000 or more, the proposed subcontract must be submitted to NFRMPO's review and approval prior to execution.

**J. Quality Control and Quality Assurance**

The consultant shall identify in the proposal the individual responsible for Quality Control and Quality Assurance.

## **SECTION VII: CONSULTANT SELECTION CRITERIA AND AWARD**

A Consultant Selection Committee, consisting of NFRMPO staff, CDOT staff, two representatives from the region (one each from Weld and Larimer Counties), and a transit operator at a minimum, will review all proposals received and score them based on the criteria in the table below. The Committee will then select the firm it considers to be the most qualified and responsive to undertake the project. Proposals receiving a score of 60 (out of a possible 85) or lower during Phase I may not be considered by the Committee for an interview. If none of the proposals meet the 60 point threshold, the Committee reserves the right to interview the consulting firm with the highest point total or not award the contract and re-advertise the RFP.

Criteria A through E represent Phase I in Consultant selection. Each member of the Committee will evaluate these criteria individually. The scores will be submitted to the Project Manager prior to the decision of whether interviews are required. An average of the Committee's scores will be used to calculate the points for each criterion. The Committee may request interviews with as many as three of the highest scoring Consultants; award based on Phase I scores, or terminate the process and not continue to Phase II in Consultant selection. If interviews are held, ranking will take place following the interviews. Each committee member will award points for a Consultant's interview following all interviews.

<b>Phase</b>	<b>Criteria</b>	<b>Possible Points</b>
<b>Phase I</b>	<b>A.</b> Demonstrated understanding of the problem and the ability to meet the requirements of this RFP	<b>25</b>
	<b>B.</b> How effectively the proposal addresses the proposed Scope of Work	<b>20</b>
	<b>C.</b> How well the proposal addresses additional and creative techniques for the NFRMPO model(s) improvement	<b>10</b>
	<b>D.</b> The proposed schedule and the ability to complete the work by the scheduled due date as well as the timely delivery of deliverables at Consultant defined milestones (must include dates)	<b>15</b>
	<b>E.</b> Directly related experience of the consulting team, including project manager and staff as well as any subcontractors	<b>15</b>
<b>Phase II</b>	<b>F.</b> Interview <i>(if held)</i>	<b>15</b>
<b>Total Possible Points</b>		<b>100</b>

The NFRMPO reserves the right to hire a Consultant without holding interviews. If it is determined that interviews will be required before a final decision can be made, the **interviews will take place at the NFRMPO offices in Fort Collins, Colorado the week of October 23, 2017**. If needed due to unavailability of staff, Skype interviews can be held in place of in-person interviews. Proposers

should be willing and able to attend these interviews, if necessary. Firm(s) who are invited to an interview will be notified **the week of October 9, 2017** that an interview has been scheduled. At a minimum, the Consultant's project manager and key staff should attend.

If interviews are conducted, the proposers are expected to prepare detailed presentations on the scope of work, their expertise, and any innovative recommendations they propose. Additional services may be sought at a later time through subsequent work orders as the needs are understood and scope of work is developed.

### **DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION**

The NFRMPO encourages all certified Disadvantage Business Enterprises (DBE) and certified Small Business Enterprises (SBE) to submit proposals and/or bids in response to all requests for proposals. In administering its DBE Program, the NFRMPO will not, directly or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the DBE Program with respect to individuals of a particular race, color, sex, or national origin. The NFRMPO is covered by CDOT's DBE goal of 2.28; however, there is no specific goal for this project.

### **QUESTIONS AND ANSWERS**

Questions concerning bid submittal or process should be directed to the Project Manager, Becky Karasko, Regional Transportation Planning Director at the NFRMPO, [bkarasko@nfrmpo.org](mailto:bkarasko@nfrmpo.org).

Questions concerning the scope of the project should be issued in writing and directed to the Project Manager, Becky Karasko, Regional Transportation Planning Director at the NFRMPO, [bkarasko@nfrmpo.org](mailto:bkarasko@nfrmpo.org). No questions will be accepted after **September 15, 2017**, seven (7) days prior to the bid closing date. Answers to questions received will be posted on RMEPS and sent out via email to those who request and provide a valid email address no later than **September 18, 2017**.

# **CONSOLIDATED LIST OF DELIVERABLES**

## **TASK 1: Development of 2015 Roadway Model Network**

- 1.1 Calibrated and validated 2015 base year using national standards.
- 1.2 Future year model networks in 5-year increments as well as in air quality attainment years (2020, 2023, 2025, 2030, 2035, 2040, and 2045), with appropriate interim year estimated traffic counts, speed, and capacity data.
- 1.3 Report documenting the methodology for checking the road network, determining adjustment factors, placing centroids, developing centroid connectors, recommendations, and other decisions made in this Task.

## **TASK 2: Development of 2015 Transit Network**

- 2.1 Calibrated and validated base year (2015) and functioning future year transit networks in 5-year increments (2020, 2025, 2030, 2035, 2040, and 2045) with appropriate interim year vehicle count, ridership, and capacity estimates.
- 2.2 Validated 2015 transit ridership.
- 2.3 Report documenting the transit network development, recommendations, and all other processes and decisions involved in the completion of this Task.

## **TASK 3: TAZ Update Refinement**

- 3.1 TAZ layer file in TransCAD with all socioeconomic data necessary for a fully functional base year model run and future year model runs.
- 3.2 Centroid connectors placed within all of the model's TAZs.
- 3.3 Report documenting the process and reasoning for decisions and recommendations involved in the completion of this Task.

## **TASK 4: External Trips and External Station Review and Development**

- 4.1 Validated 2015 external trip matrices.
- 4.2 New 2045 external trip matrices compared against the DRCOG and CDOT models checking for reasonableness.
- 4.3 Validated EI/IE trips for each trip purpose.
- 4.4 Future external trip table development process and use of that process to create 2020, 2025, 2030, 2035, 2040, and 2045 matrices.
- 4.5 Report documenting the process and reasoning for the decisions and recommendations involved with this Task.

## **TASK 5: Trip Generation**

- 5.1 Recommend assumptions for trip production and attraction rates in the RTDM.
- 5.2 Recommend trip purposes for use in the RTDM.
- 5.3 Recommend capacity improvements for the RTDM, specifically for North I-25.
- 5.4 Recommend BPR curve improvements for the RTDM.
- 5.5 Report documenting the recommendations, process and reasoning for the decisions involved with this Task.

## **TASK 6: Special Generators Review and Update**

- 6.1 Recommend Special Generators for the RTDM.
- 6.2 Report documenting the recommendations, process and reasoning for the decisions involved with this Task.

### **TASK 7: Freight**

- 7.1 A new freight truck (2-axle freight trucks and up) component of the travel model.
- 7.2 Truck Trip Tables and trucks preloaded onto the networks.
- 7.3 Report documenting the truck recommendation and how it was implemented in this Task.

### **TASK 8: Trip Distribution**

- 8.1 Trip distribution review and improvement recommendations.
- 8.2 Jointly established and approved calibration recommendations.
- 8.3 A calibrated and validated trip distribution model.
- 8.4 Report documenting the recommendations, assumptions, methodology, findings, and products of this Task.

### **TASK 9: Mode Choice**

- 9.1 Document industry standards for mode choice model for similar sized areas and recommend a methodology.
- 9.2 Jointly established and approved calibration targets for the mode choice model.
- 9.3 Calibrated mode choice model for existing and recommended modes.
- 9.4 Non-motorized trips as a macro in the model's output reports.
- 9.5 Bike access links in the model to enable the bike mode access to transit links to be more accurately modeled.
- 9.6 Document the state of the practice of multi-type transit mode and assignment and identifying additional data or information needed to perform multi-mode transit assignment.
- 9.7 Document the methodology for determining impedance functions; reasonableness of auto occupancy factors; and the assumptions, methodology, findings and products of the mode choice task.
- 9.8 Report documenting recommendations and all steps in this work Task.

### **TASK 10: Vehicle and Transit Assignment**

- 10.1 Best practice recommendations for assignment methodology for similar sized urban areas.
- 10.2 Peak and off-peak period time period and loading factor recommendations.
- 10.3 Jointly established and approved calibration targets for the assignment model.
- 10.4 Base year, interim year, and 2045 24-hour and peak traffic assignments for vehicles and transit.
- 10.5 Memo documenting the recommendations, assumptions, methodologies, findings and products of this Task.

### **TASK 11: Model Calibration and Validation**

- 11.1 Provide recommendation on incorporating backcasting to 2012 for temporal validation.
- 11.2 Calibrated base year (2015) network, including model files.
- 11.3 Working calibrated components for daily and peak periods in the Base Year (2015) network.
- 11.4 Perform reasonableness checks for interim years (2020, 2025, 2030, 2035, and 2040) and out year (2045) forecasts.
- 11.5 Completed sensitivity test and supporting methodology demonstrating the changes in modeled trips based on the model data inputs for interim model years and 2045 network.
- 11.6 Documentation of the assumptions, methods, findings, and products of the model calibration Tasks.

- 11.7 Updated Report documenting recommendations and changes made to any previous deliverable(s) during calibration.

### **TASK 12: Model Interface Improvements**

- 12.1 New or updated model interface and statistics reports, including non-motorized report.
- 12.2 Model GISDK Code.
- 12.3 Documentation on how to use and interpret the statistics reporting tool.
- 12.4 Report documenting the recommendations, assumptions, methodologies, findings and products of this Task. The report must include a description of the process to run and manage model runs in TransCAD including the names of all input and output files as well as a description of the contents of the file.

### **TASK 13: Conformity**

- 13.1 Updated post-processing routine to create the necessary inputs for the MOVES2014a or most current model.
- 13.2 Strategy for updating the post processing routines if MOVES is updated by EPA after model delivery or new inputs are required.
- 13.3 Documentation of the necessary inputs and expected outputs, how to interface with and export data, and how to interpret each output field.

### **TASK 14: Performance Measures**

- 14.1 Recommendations on the best ways to have the RTDM report on TTI, PTI, LOTTR, and transit riders per hour.
- 14.2 Report documenting assumptions and instructions required to run the reports on these performance measures.

### **TASK 15: Project Documentation and Project Management**

- 15.1 Monthly progress and Task reports.
- 15.2 A complete set of documentation as outlined in this scope of work and additional documents identified in **Tasks 1 through 16**.
- 15.3 Recommendations for short and long term improvements to the RTDM beyond the scope of this RFP.
- 15.4 Model Calibration report.
- 15.5 Complete set of all data, instructions, and text files required to run the RTDM.

### **TASK 16: Training**

- 16.1 RTDM Technical Documentation Report in Word and PDF formats.
- 16.2 RTDM Model User's Guide in Word and PDF formats.
- 16.3 Updated staff training materials in Word and PDF formats.
- 16.4 Staff Training Sessions, a minimum of 16 hours in four (4) hour blocks, spaced to allow staff time to test concepts presented, in-person or via interactive, web-based meetings with graphics and voice communication abilities (i.e. Skype, GoToMeeting).

## Special Instructions

All bids must be properly signed by an authorized representative of the company with the legal capacity to bind the company to the agreement. Bids may be withdrawn up to the date and hour set for closing. Once bids have been accepted by the NFRMPO and closing has occurred, failure to enter into contract or to honor the purchase order will be cause for removal of supplier's name from the NFRMPO's bidders list for a period of 12 months from the date of the opening. The NFRMPO may also pursue any remedies available at law or in equity. Bid prices must be held firm for a period of 90 days after bid openings.

Submission of a bid is deemed as acceptance of all terms, conditions, and specifications contained in the NFRMPO's specifications initially provided to the bidder. Any proposed modification must be accepted in writing by the NFRMPO prior to award of the bid.

Only bids properly submitted through RMEPS, via mail, or in person will be accepted. All bids should be clearly identified by the bid name contained in the bid proposal.

No proposal will be accepted from, or any purchase order awarded, to any person, firm, or corporation in default on any obligation to the State of Colorado.

The NFRMPO may elect, where applicable, to award bids on an individual item/group basis or on a total proposal basis, whichever is most beneficial to the NFRMPO. The NFRMPO reserves the right to accept or reject any and all proposals, and to waive any irregularities or informalities.

**Sales prohibited/conflict of interest:** no employee, TAC member, or member of NFRMPO Planning Council, shall solicit or accept any gift, gratuity, favor, entertainment, kickback, or any item(s) of monetary value from any person who has or is seeking to do business with the NFRMPO.

**Collusive or sham bids:** any bid deemed to be collusive or a sham bid will be rejected and reported to authorities as such. Your authorized signature of this bid assures that such bid is genuine and is not a collusive or sham bid.

## **ATTACHMENTS**





## **APPENDIX A: CERTIFICATION REGARDING LOBBYING**

The undersigned Contractor certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq.*)]
- (3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

***[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure or failure.]***

The Contractor, \_\_\_\_\_, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq.*, apply to this certification and disclosure, if any.

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**Signature of Contractor's Authorized Official**

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**Name and Title of Contractor's Authorized Official**

**Date:** \_\_\_\_\_

## **APPENDIX B: DEBARMENT AND SUSPENSION CERTIFICATION**

Choose one alternative:

- The Proposer, \_\_\_\_\_, certifies to the best of its knowledge and belief that it and its principals:
1. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
  2. Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or Contract under a public transaction; violation of federal or state antitrust statutes or commission or embezzlements, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
  3. Are not presently indicated for or otherwise criminally or civilly charged by a government entity (federal, state, or local) with commission of any of the offenses enumerated in Paragraph 2 of this certification; and
  4. Have not within a three-year period preceding this Proposal had one or more public transactions (federal, state or local) terminated for cause or default.

**OR**

- The Proposer is unable to certify to all of the statements in this certification, and attaches its explanation to this certification. (In explanation, certify to those statements that can be certified to and explain those that cannot.)

The Proposer certifies or affirms the truthfulness and accuracy of the contents of the statements submitted on or with this certification and understands that the provision of Title 31 USC § Sections 3801 are applicable thereto.

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Executed in (City) \_\_\_\_\_, state of \_\_\_\_\_

Printed Name: \_\_\_\_\_

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Authorized Signature

Date

## **APPENDIX C: FEDERALLY REQUIRED CONTRACT CLAUSES**

- A. CIVIL RIGHTS REQUIREMENTS**
- B. DISADVANTAGED BUSINESS ENTERPRISE (DBE)**
- C. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)**
- D. LOBBYING**
- E. ADA ACCESS**
- F. NO OBLIGATION BY THE FEDERAL GOVERNMENT**
- G. RECORDS AND REPORTS**
- H. TERMINATION**
- I. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS**
- J. BREACHES AND DISPUTE RESOLUTION**
- K. CLEAR AIR**
- L. CLEAN WATER REQUIREMENTS**
- M. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**
- N. ENERGY CONSERVATION REQUIREMENTS**
- O. RECYCLED PRODUCTS**
- P. GOVERNING LAW**
- Q. SEVERABILITY**
- R. PATENT RIGHTS**
- S. RIGHTS IN DATA AND COPYRIGHTS**

## **A. CIVIL RIGHTS REQUIREMENTS**

**Civil Rights** – The following requirements apply to the underlying contract:

- (1) *Nondiscrimination* – In accordance with Title VI of the Civil Rights Act, as amended, 42 U.S.C. § 2000d, section 303 of the Age Discrimination Act of 1975, as amended, 42 U.S.C. § 6102, section 202 of the Americans with Disabilities Act of 1990, 42 U.S.C. § 12132, and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees that it will not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, or disability. In addition, the Contractor agrees to comply with applicable Federal implementing regulations and other implementing requirements FTA may issue.
- (2) *Equal Employment Opportunity* – The following equal employment opportunity requirements apply to the underlying contract:
  - a) *Race, Color, Creed, National Origin, Sex* – In accordance with Title VII of the Civil Rights Act, as amended, 42 U.S.C. § 2000e, and Federal transit laws at 49 U.S.C. § 5332, the Contractor agrees to comply with all applicable equal employment opportunity requirements of U.S. Department of Labor (U.S. DOL) regulations, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor,” 41 C.F.R. Parts 60 et seq., (which implement Executive Order No. 11246, “Equal Employment Opportunity,” as amended by Executive Order No. 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” 42 U.S.C. § 2000e note), and with any applicable Federal statutes, executive orders, regulations, and Federal policies that may in the future affect construction activities undertaken in the course of the Project. The Contractor agrees to take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, creed, national origin, sex, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
  - b) *Age* – In accordance with section 4 of the Age Discrimination in Employment Act of 1967, as amended, 29 U.S.C. § 623 and Federal transit law at 49 U.S.C. § 5332, the Contractor agrees to refrain from discrimination against present and prospective employees for reason of age. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
  - c) *Disabilities* – In accordance with section 102 of the Americans with Disabilities Act, as amended, 42 U.S.C. § 12112, the Contractor agrees that it will comply with the requirements of U.S. Equal Employment Opportunity Commission, “Regulations to Implement the Equal Employment Provisions of the Americans with Disabilities Act,” 29 C.F.R. Part 1630, pertaining to employment of persons with disabilities. In addition, the Contractor agrees to comply with any implementing requirements FTA may issue.
- (3) The Contractor also agrees to include these requirements in each subcontract financed in whole or in part with Federal assistance provided by FTA, modified only if necessary to identify the affected parties.

## **B. DISADVANTAGED BUSINESS ENTERPRISE (DBE)**

- (1) This contract is subject to the requirements of Title 49, Code of Federal Regulations, Part 26, *Participation by Disadvantaged Business Enterprises in Department of Transportation Financial Assistance Programs*. The national goal for participation of Disadvantaged Business Enterprises (DBE) is 10%. The agency's overall goal for DBE participation is 0.03%. A separate contract goal has not been established for this procurement.
- (2) The contractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of this DOT-assisted contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as NFRMPO deems appropriate. Each subcontract the contractor signs with a subcontractor must include the assurance in this paragraph (see 49 CFR 26.13(b)). The successful bidder/offeror will be required to report its DBE participation obtained through race-neutral means throughout the period of performance.
- (3) The contractor is required to pay its subcontractors performing work related to this contract for satisfactory performance of that work no later than 30 days after the contractor's receipt of payment for that work from the NFRMPO.
- (4) The contractor must promptly notify the NFRMPO whenever a DBE subcontractor performing work related to this contract is terminated or fails to complete its work, and must make good faith efforts to engage another DBE subcontractor to perform at least the same amount of work. The contractor may not terminate any DBE subcontractor and perform that work through its own forces or those of an affiliate without prior written consent of the NFRMPO.

## **C. GOVERNMENT-WIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)**

This contract is a covered transaction for purposes of 49 CFR Part 29. As such, the contractor is required to verify that none of the contractor, its principals, as defined at 49 CFR 29.995, or affiliates, as defined at 49 CFR 29.905, are excluded or disqualified as defined at 49 CFR 29.940 and 29.945.

The contractor is required to comply with 49 CFR 29, Subpart C and must include the requirement to comply with 49 CFR 29, Subpart C in any lower tier covered transaction it enters into.

By signing and submitting its bid or proposal, the bidder or proposer certifies as follows:

The certification in this clause is a material representation of fact relied upon by the NFRMPO. If it is later determined that the bidder or proposer knowingly rendered an erroneous certification, in addition to remedies available to the NFRMPO, the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment. The bidder or proposer agrees to comply with the requirements of 49 CFR 29, Subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions.

## **D. LOBBYING**

**Byrd Anti-Lobbying Amendment, 31 U.S.C. 1352, as amended by the Lobbying Disclosure Act of 1995, P.L. 104-65 [to be codified at 2 U.S.C. § 1601, et seq.] –** Contractors who apply or bid for an award of \$100,000 or more shall file the certification

required by 49 CFR part 20, "New Restrictions on Lobbying." Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose the name of any registrant under the Lobbying Disclosure Act of 1995 who has made lobbying contacts on its behalf with non-Federal funds with respect to that Federal contract, grant or award covered by 31 U.S.C. 1352. Such disclosures are forwarded from tier to tier up to the recipient.

**\*\* MUST COMPLETE AND SUBMIT APPENDIX A: 49 CFR PART 20 – CERTIFICATION REGARDING LOBBYING \*\***

**E. ADA ACCESS**

Accessibility. Facilities to be used in public transportation service must comply with 42 U.S.C. Sections 12101 *et seq.* and DOT regulations, "Transportation Services for Individuals with Disabilities (ADA)," 49 CFR Part 37; and Joint ATBCB/DOT regulations, "Americans with Disabilities (ADA) Accessibility Specifications for Transportation Vehicles," 36 CFR Part 1192 and 49 CFR Part 38. Notably, DOT incorporated by reference the ATBCB's "Americans with Disabilities Act Accessibility Guidelines" (ADAAG), revised July 2004, which include accessibility guidelines for buildings and facilities, and are incorporated into Appendix A to 49 CFR Part 37. DOT also added specific provisions to Appendix A modifying the ADAAG, with the result that buildings and facilities must comply with both the ADAAG and amendments thereto in Appendix A to 49 CFR Part 37.

**F. NO OBLIGATION BY THE FEDERAL GOVERNMENT**

The purchaser and Contractor acknowledge and agree that notwithstanding any concurrence by the Federal Government in or approval of the solicitation or award of the underlying contract, absent the express written consent by the Federal Government, the Federal Government is not a party to this contract and shall not be subject to any obligations or liabilities to the Purchaser, Contractor, or any other party (whether or not a party to that contract) pertaining to any matter resulting from the underlying contract.

**G. RECORDS AND REPORTS**

The MPO and Contractor shall maintain all books, records, and other documentation pertaining to the Scope of Services and necessary to completely substantiate all costs incurred and billed to the MPO for a period of three (3) years from the date of final payment. These records shall be made available for inspection and audit to any state or federal authority authorized to inspect such records and copies thereof shall be furnished at the expense of Contractor, if so requested.

**H. TERMINATION**

If the Contractor fails to deliver supplies or to perform the services within the time specified in this contract or any extension or if the Contractor fails to comply with any other provision of this contract, the MPO may terminate this contract for default. The MPO shall terminate by delivering to the Contractor a Notice of Termination specifying the nature of the default. The

Contract will only be paid the contract price for supplies delivered and accepted, or services performed in accordance with the manner of performances set forth in this contract.

#### **I. PROGRAM FRAUD AND FALSE OR FRAUDULENT STATEMENTS AND RELATED ACTS**

- (1) The Contractor acknowledges that the provisions of the Program Fraud civil Remedies Act of 1986, as amended, 31 U.S.C. §3801 et seq. and U.S. DOT regulations, 'Program Fraud Civil Remedies, "49 C.F.R. Part 31, apply to its actions pertaining to the Project. Upon execution of the underlying contract, the Contractor certifies or affirms the truthfulness and accuracy of any statement it has made, it makes, it may make, or cause to be made, pertaining to the underlying contract of the FTA assisted project for which this contract work is being performed. In addition to other penalties that may be applicable, the Contractor further acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification, the Federal Government reserves the right to impose the penalties of the Program Fraud Civil Remedies Act of 1986 on the Contractor to the extent the Federal Government deems appropriate.
- (2) The Contractor also acknowledges that if it makes, or causes to be made, a false, fictitious, or fraudulent claim, statement, submission, or certification to the Federal Government under a contract connected with a project that is financed in whole or in part with Federal assistance originally awarded by the FTA under the authority of 49 U.S.C. § 5307, the Government reserves the right to impose the penalties of 18 U.S.C. §1001 and 49 U.S.C. § 5307(n)(1) on the Contractor, to the extent the Federal Government deems appropriate.
- (3) The Contractor agrees to include the above two clauses in each subcontract financed in whole or in part with Federal assistance provided by FTA. It is further agreed that the clauses shall not be modified, except to identify the subcontractor who will be subject to the provisions.

#### **J. BREACHES AND DISPUTES**

- (1) *Disputes* – Disputes arising in the performance of this Contract which are not resolved by agreement of the parties shall be decided in writing by the NFRMPO's Executive Director. This decision shall be final and conclusive unless within then (10) days from the date of receipt of its copy, the Contractor mails or otherwise furnishes a written appeal to the Transportation Planning Director. In connection with any such appeal, the Contractor shall be afforded and opportunity to be heard and to offer evidence in support of its position. The decision of the Executive Director shall be binding upon the Contractor and the Contractor shall abide by the decision
- (2) *Performance During Dispute* – Unless otherwise directed by the NFRMPO, Contractor shall continue performance under this Contract while matters in dispute are being resolved.
- (3) *Claims for Damages* – Should either party to the Contract suffer injury or damage to person or property because of any act or omission of the party or of any of his employees, agents or others for whose acts he is legally liable, a claim for damages therefore shall be made in writing to such other party within a reasonable time after the first observance of such injury or damage.
- (4) *Remedies* – Unless this contract provides otherwise, all claims, counterclaims, disputes and other matters in question between the NFRMPO and the Contractor arising out of or relating to this agreement or its breach will be decided by arbitration if the parties



mutually agree, or if a court of competent jurisdiction with the State in which the NFRMPO is located.

- (5) *Right and Remedies* – The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to and not a limitation of and duties, obligations, rights and remedies otherwise imposed or available by law. No action or failure to act by the NFRMPO or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

**K. CLEAN AIR**

- (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. §§ 7401 et seq. The Contractor agrees to report each violation to the purchaser and understands and agrees that the Purchaser will, in turn, report each violation as required to assure notification to FTA and the appropriate EPA Regional Office.
- (2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

**L. CLEAN WATER REQUIREMENTS**

- (1) The Contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 22 U.S.C. § 1251 et seq. The Contractor agrees to report each violation to the Purchaser and understands and agrees the Purchaser will, in turn, report each violation as required to assure notification to FTA and the Appropriate EPA Regional Office.
- (2) The Contractor also agrees to include these requirements in each subcontract exceeding \$100,000 financed in whole or in part with Federal assistance provided by FTA.

**M. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

- (1) *Overtime requirements* – No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) *Violation; liability for unpaid wages; liquidated damages* – In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefore - shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.
- (3) *Withholding for unpaid wages and liquidated damages* – The MPO shall upon its own action or upon written request of an authorized representative of the Department of

Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract of any other federal contract with the same prime contractor, of any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquated damages as provided in the clause set forth in paragraph (2) of this section.

- (4) *Subcontracts* – The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (1) through (4) of this section and also a clause requiring subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

**N. ENERGY CONSERVATION REQUIREMENTS**

The Contract agrees to comply with mandatory standards and policies relating to energy The laws of the State of Colorado shall govern the construction, interpretation the Energy Policy and Conservation Act.

**O. RECYCLED PRODUCTS**

The contractor agrees to comply with all the requirements of Section 6002 of the Resource Conservation and Recovery Act (RCRA), as amended (42 U.S.C. § 6962), including but not limited to the regulatory provisions of 40 CFR part 247, and Executive order 12873, as they apply to the procurement of items designated in Subpart B of 40 CFR Part 247

**P. GOVERNING LAW**

The laws of the State of Colorado shall govern the construction, interpretation, execution and enforcement of this Agreement.

**Q. SEVERABILITY**

In the event any provision of the Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision of this Agreement

**R. PATENT RIGHTS**

The Contractor Agrees that (a) Depending on the nature of the Underlying Agreement, the Federal Government may acquire patent rights when the contractor produces a patented or patentable invention, improvement or discovery, (b) The Federal Governments rights arise when the patent or patentable information is conceived or reduce to practice with federal assistance or (c) When a patent is issued or patented information becomes available as described in the preceding section (b) of section r., the FTA will be notified immediately and a detailed report satisfactory to FTA will be provided.

**S. RIGHTS IN DATA AND COPYRIGHTS**

*“Subject data”* means recorded information whether or not copyrighted, and that is delivered or specified to be delivered as required by the underlying agreement. Examples of ‘subject data’ include, but are not limited to computer software, standards, specifications, engineering

drawings and associated lists, process sheets, manuals, technical reports, catalog item identifications, and related information, but do not include financial reports, cost analyses, or other similar information used for performance or administration of the underlying agreement.

Upon final payment, all designs, plans, reports, specifications, drawings, subject data and other services rendered by Contractor shall become the sole property of the MPO, which shall have the royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use and authorize others to use all such materials for authorized government purposes. Other entities that may reproduce, publish, or otherwise use the designs, plans, reports, specifications, drawings, and other services rendered by Professional include, but are not limited to the Colorado Department of Transportation ("CDOT"), the Federal Transportation Administration ("FTA"), and the Federal Highway Administration ("FHWA").