Denver Regional Transportation Operations Strategy

DRCOG

Denver Regional Council of Governments

October 2010 Update

Denver
Regional Transportation Operations Strategy

December 2007
Updated October 2010

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Acronyms and Abbreviations

AVL	Automated Vehicle Location
C2C	Center-to-Center
CAD	Computer-aided Dispatch
CDOR	Colorado Department of Revenue
CDOT	Colorado Department of Transportation
CSP	Colorado State Patrol
CTE	Colorado Tolling Enterprise
CTMC	Colorado Transportation Management Center
DMS	Dynamic Message Sign
ESS	Environmental Sensor Station
HAR	Highway Advisory Radio
HAZMAT	Hazardous Materials
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
IGA	Intergovernmental Agreement
IMP	Incident Management Plan
ITS	Intelligent Transportation Systems
LRT	Light Rail Train
MDSS	Maintenance Decision Support System
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MVRTP	Metro Vision Regional Transportation Plan
NIMS	National Incident Management System
PHA	Public Highway Authority
ROSS	Resource Ordering and Status System
RTD	Regional Transportation District
RTOS	Regional Transportation Operations Strategy
TMC	Transportation Management Center
T-REX	Transportation Expansion Project
TSP	Transit Signal Priority
USDOT	U.S. Department of Transportation

Regional Transportation Operations Strategy
Executive Summary

There is a strong desire by people and businesses in the Denver region to travel in motor vehicles along our roadways and rail lines, whether alone in a car, carpooling with family members, in a truck with packages to be delivered, or on a bus or train with 20 other passengers. When we hop in our car or step onto the bus, we often take for granted the thousands of workers and coordinated activities involved in the day-to-day operation of the transportation system.

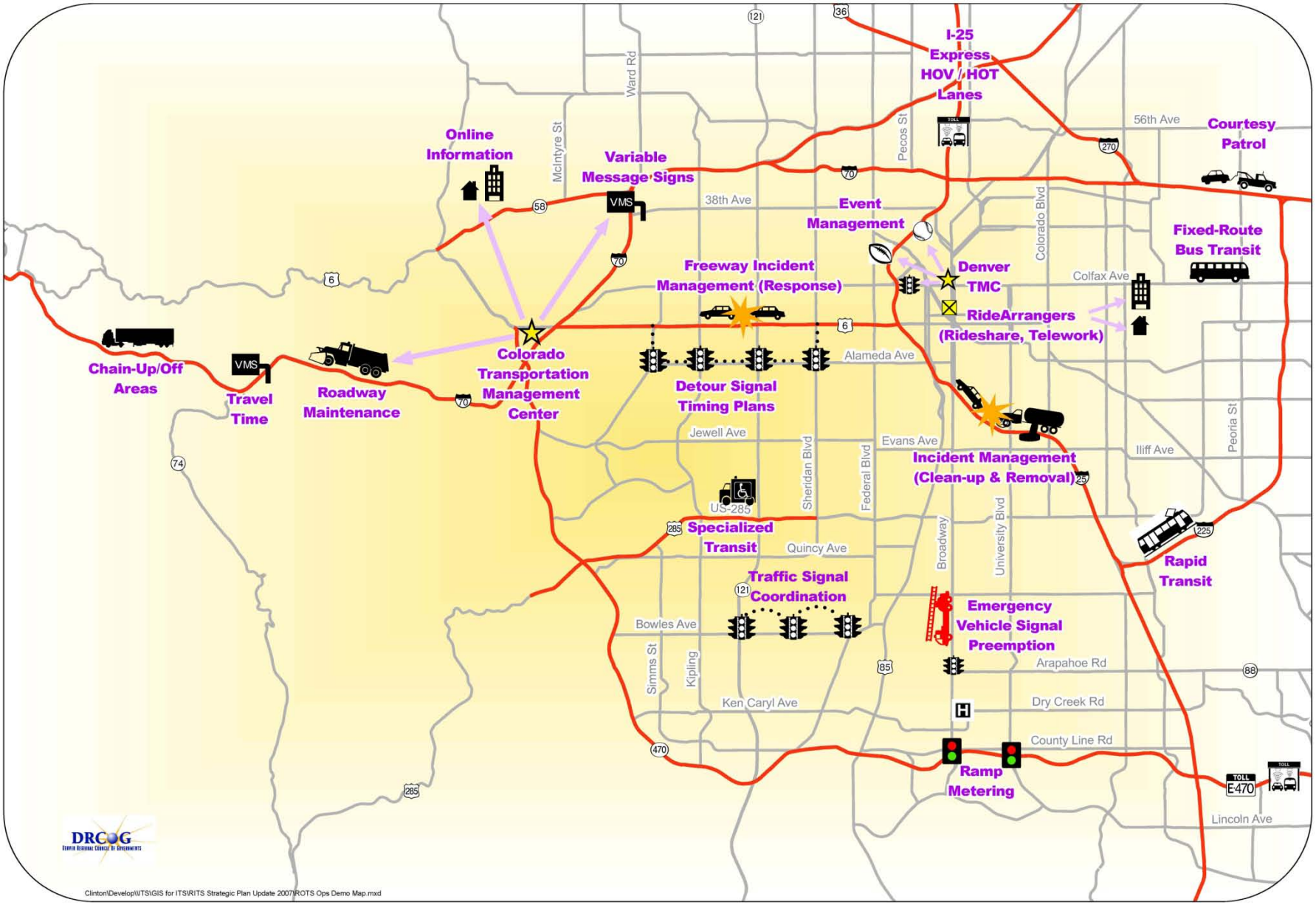
- Who drives the 1,200 buses and trains, monitors the adherence to schedules, and puts messages on transit information signs?
- Who maintains the traffic signals at over 3,500 intersections, implements signal coordination plans, and communicates with neighboring jurisdictions?
- Who detects and responds to vehicle breakdowns, crashes, and injuries and helps to clear the incident scenes?
- Who changes the direction of the reversible HOV Express lanes on I-25 twice a day, operates the ramp meters, and monitors tunnels?
- Who keeps the roadways clear and open during construction projects or bad weather conditions?
- Who monitors real-time roadway conditions and provides information to variable message signs, web sites, the public, and the media?

Whether going to work on a Monday morning or heading to the mountains to ski in fresh powder on a Saturday, the day-to-day operation of the transportation system is critical to the efficient movement of people, goods, and services. Currently, each jurisdiction and transportation agency dedicates itself to providing safe and efficient travel within their domain. Coordinating day-to-day operations across jurisdictional lines and between agencies is seen as an opportunity to generate greater operational efficiencies.

The purpose of the *Regional Transportation Operations Strategy* (RTOS) is to chart the path upon which regional transportation managers can cost-effectively use their existing resources to coordinate their functions to improve the efficiency of travel across the region. The goal is to implement these strategies in the next five to seven years while minimizing the need for major capital investment. The focus will be on cooperative and coordinated operations between jurisdictions and agencies.

The figure on the following page illustrates a sample set of functions that are included in this document.

Samples of Daily Transportation Operation Activities



The RTOS focuses on roadway and transit facilities since these involve a significant amount of operations personnel and equipment. This document addresses the four highest priority transportation service areas, each of which has a significant day-to-day operational component:

Regional Traveler Information – Regional traveler information involves a variety of systems that collect and process transportation data then distribute the information to the public. It includes such information as: traffic conditions, travel times, incident locations, construction closures, weather condition, transit operations, and alternative travel options. The regional vision is to consolidate access to all traveler information sources through CDOT's traveler information system consisting of the 511 phone system and the CoTrip.org website. This information will also be available for redistribution through other means such as traveler information kiosks, personalized e-mail or text messaging, mobile access, third-party traveler information, etc.

Regional Transportation Operations & Management – Regional transportation management provides coordinated transportation monitoring, response, and control functions. Regional partners will collect local data and control their local transportation systems while sharing the data through a display system that offers a regional view of traffic operations (e.g. website). This view will give transportation managers the opportunity to cooperate and respond quickly with management strategies that benefit regional travelers.

Regional Traffic Incident Management – Traffic incident management requires coordination between transportation managers and the public safety community. Currently, they have cooperated in the development and use of corridor-level incident management plans (IMPs), but one regional-level incident management plan is envisioned for the future. This plan will have the transportation managers using ITS devices to detect and verify incidents and will disseminate traveler information regarding the incident. Public safety personnel will be responsible for incident site management and incident clearance while coordinating with transportation managers.

Transit Operations & Management – Specific coordination between transit operations and other transportation managers is key to the regional traveler information and the regional transportation operations service areas above. ITS investment in transit operations is intended to improve the operational efficiency and attractiveness of public transit.

Each of these transportation service areas include the following components as described in the document:

Objective – a general description of an achievable and measureable short-term objective.

Approach, Roles and Responsibilities – a preliminary approach and the roles and responsibilities of the stakeholders as per the vision and operational concept.

Physical Improvements – an identification of minor physical improvements that may be required to effectively implement the operations approach.

Resource Arrangements – an identification of the types of interagency agreements and other arrangements required to effectively implement the operations approach.

The *Regional Transportation Operations Strategy* documents the first step on the path to improve coordination and cooperation between jurisdictions and agencies in the region. The next step will involve further definition of the components for each transportation service area including a specific operations objective to be measured at the regional level, draft interagency agreements and other resource arrangements built upon the operations approach defined in this document, and definition of specific physical improvements and associated cost estimates. At this point, the strategies may be implemented and subsequently evaluated based on the operations objective. The strategies may be implemented in phases and the operational objectives may evolve as implementation progresses.

1. Introduction

The DRCOG region consists of over 50 county and municipal governments, nearly all of which maintain transportation management and operations capabilities within their jurisdiction. In addition, the Colorado Department of Transportation (CDOT) is responsible for over 1,125 miles of highways in the region and the Regional Transportation District (RTD) provides bus and rail transit service to more than 100,000 people per day. Regional travelers and commercial vehicles frequently pass through multiple jurisdictions on their daily trips. The public is generally unaware of what jurisdiction or agency is responsible for the roadways they are traveling on, but there is an expectation that the system is operating properly and efficiently. If neighboring jurisdictions or agencies did not work together, much greater traffic congestion would occur.

Coordination of management and operations across jurisdictional boundaries and between agencies is necessary to offer regional travelers the most efficient travel conditions. DRCOG's Traffic Signal Program has demonstrated for more than a decade that implementing coordinated traffic signal timing plans along regional roadways crossing multiple jurisdictional boundaries produces significant benefits to regional travelers through reduced travel times and reduced delays.

The purpose of the *Regional Transportation Operations Strategy* (RTOS) is to chart a path upon which regional transportation managers can cost effectively use their existing resources to coordinate their functions to improve the efficiency of travel across the region. The structure includes processes, roles, responsibilities, and agreements that allow jurisdictions and agencies to coordinate transportation operations in response to conditions or events that cause congestion. Examples include coordinated operations in a corridor that involves local governments and CDOT during incident conditions or coordinated signal timing plans that accommodate special event patrons around an event center. Key to the RTOS is the focus on short-term deployment of operational strategies over the next five to seven years. These strategies will depend primarily on existing field devices and infrastructure – with limited reliance on new capital equipment.

The concept of regional operations falls within the realm of intelligent transportation systems (ITS). ITS is the application of technology to the transportation system, with specific emphasis on the coordination and integration of transportation system operations across a region. DRCOG maintains two documents regarding ITS: the *Denver Regional Intelligent Transportation Systems Strategic Plan* (which guides regional capital investment in ITS) and the *ITS Architecture for the Denver Regional Area* (which is a technical document describing the existing and future relationships between regional stakeholders and

systems). The RTOS must logically follow the capital investment strategies and the technical details of these documents. Figure 1 illustrates the relationship between these documents.

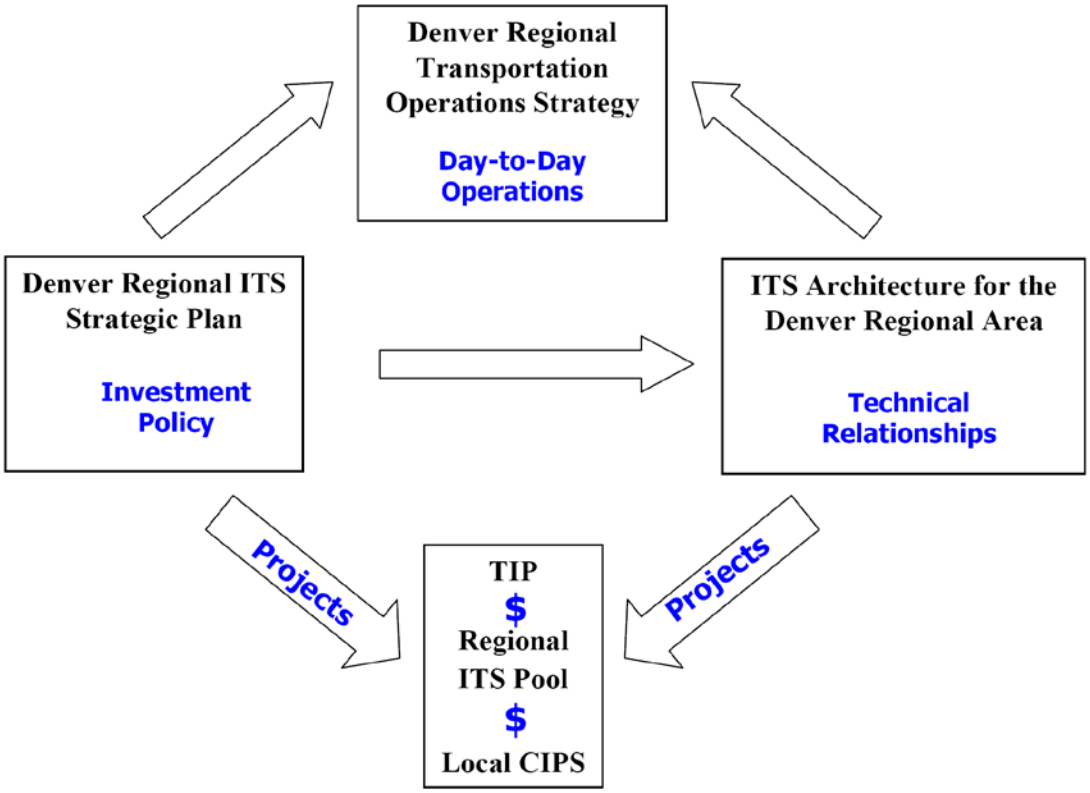


Figure 1: Relationship between ITS and Operations Planning Documents

2. Transportation and Congestion Issues

The main day-to-day issues experienced across the region are traffic congestion and unreliable travel times, affecting all modes of travel. For example, a traffic crash on a major bus corridor will not only impact cars and trucks, but also transit travel time reliability. Operational and management activities can help to significantly reduce travel delays, especially the delay associated with traffic incidents.

Figure 2 presents a view of the estimated growth in travel delay and the conceptual benefits provided by operational and management activities. Current federal estimates suggest that about 60 percent[1] of delays experienced on our regional roadway network are due to specific incidents or events (these are discussed in detail on the following pages). Travel is expected to increase greatly in the future as the population and economy grows. Delays and congestion will grow at a much higher rate since very few new roadway lane miles will be added. Improved operations and management efficiencies will be even more important in the future than today.

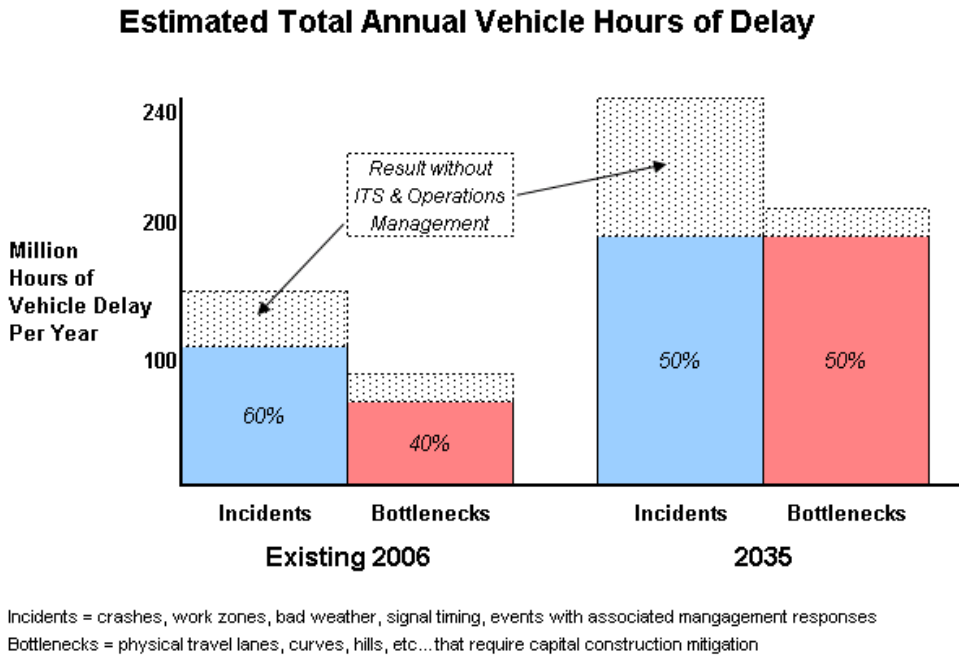


Figure 2: Proportion of Congestion Related to Operations

Traffic Incidents

Traffic incidents such as the crashes and breakdowns that we hear about from media reports every day cause about 25 percent of the congestion in the region. Over 75,000 traffic crashes are reported in the Denver region each year. To provide a perspective of a typical day in the region, Figure 3 was prepared

[1] Source: *Traffic Congestion and Reliability: Linking Solutions to Problems*, Federal Highways Administration, 2004

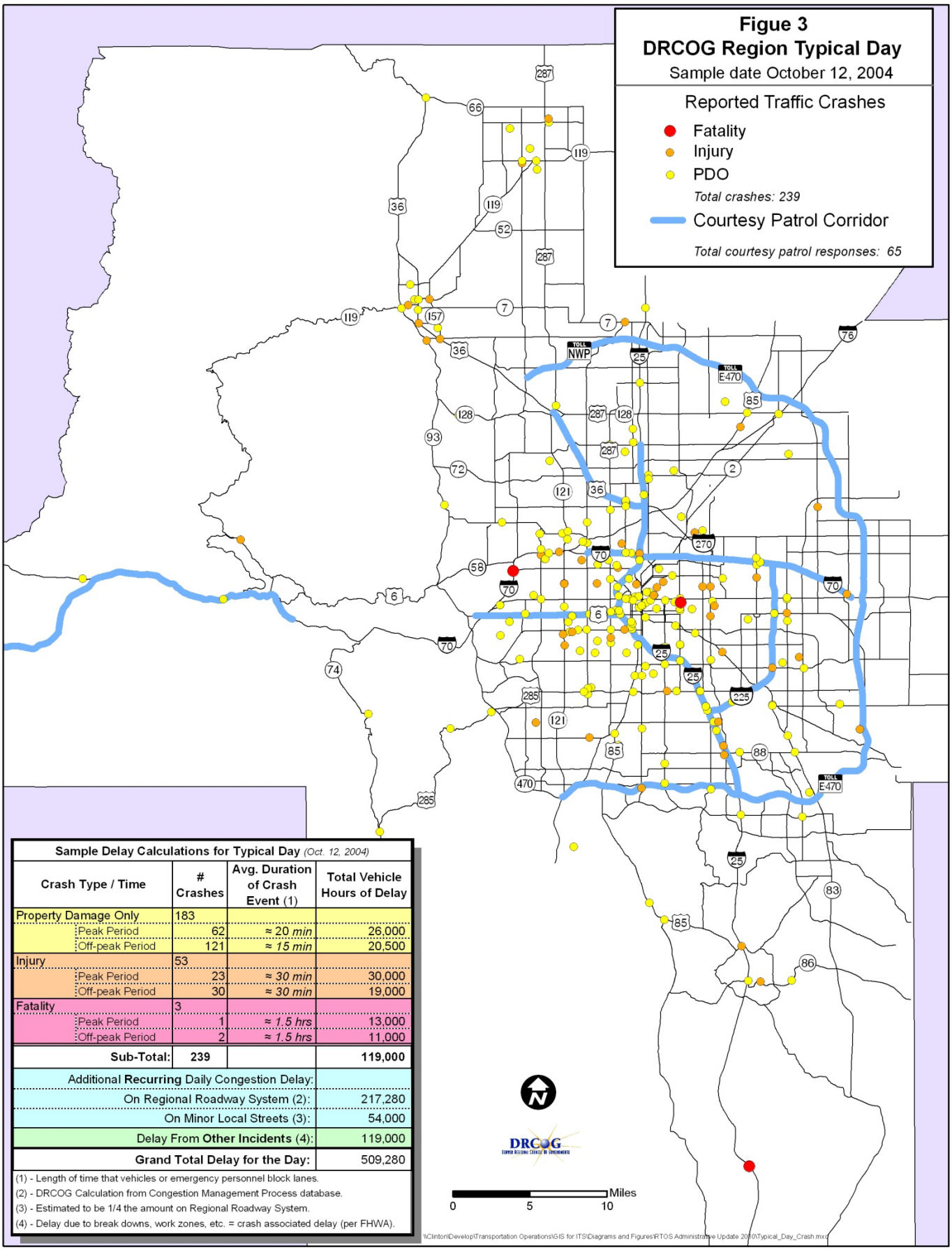
using the most recently available crash data. It shows the location of the 239 crashes reported in the region (not including Weld County) on the sample day of October 12, 2004. The timing and location of crashes are important factors in determining the congestion that may result. Those crashes on higher volume freeways and roadways during peak hours will have much greater impact than other crashes. For this sample day it was estimated that about 119,000 hours of extra vehicle travel delays were experienced because of the reported crashes. This figure illustrates the pervasiveness of crashes throughout the region and the importance of efficiently and safely managing the response to and clearing of crash scenes. Lane closures associated with crashes often occur, and often for extended periods for fatal crashes or cargo spills. However, it is important to have policies and procedures established to aid in the clearance of crashes such as incident management plans, public information procedures, equipment sharing agreements, insurance and investigation procedures, hazardous material identification, and cargo spill cleanup procedures. Colorado has adopted legislation to support Quick Clearance (CRS 42-4-1803) and Move-It (CRS 42-4-1602) programs that allow incident responders and drivers to clear crashes and related material as quickly as practicable. The sooner that crashes are removed the less congestion will result.

In addition to crashes, there are also frequent breakdowns and other similar events that reduce the carrying capacity of roadways. For example, on the sample day along freeways in the region, CDOT's courtesy patrol fleet responded to 65 "incidents", which mainly involved a vehicle on the shoulder of the freeway needing assistance (i.e. run out of gas or flat tire). As is well known, these shoulder blockages can also have an impact on the capacity of freeways, often causing curiosity delays (or rubber-necking).

Bad Weather

Over an entire year, bad weather is estimated to cause about 15 percent of all congestion delays. Of course, it is much higher on snowy winter days. The DRCOG Congestion Mitigation Program prepared a white paper (February 2007) entitled *Impacts of Snow on Traffic Congestion*, which provides general estimates of extra travel delay due to snowstorms. The base assumption for an average snowfall is that regional roadway capacity is reduced by 45 percent, resulting in the following impacts:

- Peak period travel times will more than double
- The average vehicle driven encounters 38 minutes of delay time on a snowy day (compared to nine for a typical day)
- Drivers and passengers face an additional 980,000 delay hours compared to a typical day
- The cost of the extra delay is nearly $26 million



Sample Delay Calculations for Typical Day *(Oct. 12, 2004)*				
Crash Type / Time		# Crashes	Avg. Duration of Crash Event (1)	Total Vehicle Hours of Delay
Property Damage Only		183		
	Peak Period	62	≈ 20 *min*	26,000
	Off-peak Period	121	≈ *15 min*	20,500
Injury		53		
	Peak Period	23	≈ *30 min*	30,000
	Off-peak Period	30	≈ *30 min*	19,000
Fatality		3		
	Peak Period	1	≈ *1.5 hrs*	13,000
	Off-peak Period	2	≈ *1.5 hrs*	11,000
Sub-Total:		**239**		**119,000**
Additional **Recurring** Daily Congestion Delay:				
On Regional Roadway System (2):				217,280
On Minor Local Streets (3):				54,000
Delay From **Other Incidents** (4):				119,000
Grand Total Delay for the Day:				509,280

(1) - Length of time that vehicles or emergency personnel block lanes.
(2) - DRCOG Calculation from Congestion Management Process database.
(3) - Estimated to be 1/4 the amount on Regional Roadway System.
(4) - Delay due to break downs, work zones, etc. = crash associated delay (per FHWA).

Some may argue that a snowstorm is an exceptional event, but it does illustrate the general negative impacts to be expected from general capacity reductions across the region (or a portion of the region) due to weather. In fact, *Empirical Studies on Traffic Flow in Inclement Weather*, published by the FHWA, illustrated that even light rain and light snow can have reductions in free-flow speed and speed at capacity in the order of 10 to 15 percent, which translates directly into reduced roadway capacity.

Another situation with potential safety and congestion impacts related to bad weather is Colorado's Chain Law (CRS 42-4-106(5)) which is especially significant for commercial vehicles on I-70 in the mountains. CDOT maintains chain-up areas for the benefit of the commercial vehicles. In order for chain-up areas to be most effective, they must be wide enough to allow trucks to park completely off of the through-lanes, and the snow must be plowed away to the extent possible. All of these factors underscore the importance of procedures and personnel training with regard to these operational activities, including the provision of accurate real-time conditions information to the traveling public, maintenance crews and Colorado State Patrol when responding directly to bad weather.

Work Zones

With the arrival of springtime and warmer weather also comes "cone zone" season. Every year there are several construction or repaving jobs in the region that close down travel lanes and cause significant travel delays. The work zones are normally associated with badly needed repairs and projects and also include construction and maintenance activities not related to roadways (e.g. water system repairs or phone or cable system installation and repair). As hard as crews try to limit peak hour delays, they are bound to occur sometime.

Safety and further delays caused by crashes in work zones are another major concern. In 2004, CDOT reported that 1,906 crashes occurred in Colorado work zones resulting in 768 injuries and 14 deaths. In 2003, there were 2,406 crashes in Colorado work zones resulting in 1,036 injuries and 11 deaths.

These statistics illustrate that work zones are common and can present a safety hazard to both regional travelers and construction crews. Additionally, as we have all experienced, work zones reduce roadway capacity, which adds to roadway congestion.

Transportation agencies implement specific policies and procedures to mitigate the impact of construction and maintenance (such as the lane closure policies maintained by the CDOT regions) and attempt to provide travelers with real-time information regarding work zones locations and conditions, but the congestion resulting from work zones suggests improvements are required. An additional regional concern is that multiple local work zones must be coordinated among agencies so that further problems do not arise, such detour routes leading to other construction zones.

Signal Timing

The USDOT identifies poor signal timing as one of the contributing factors leading to congestion. Thankfully, the DRCOG Traffic Signal Program has been addressing this issue at a regional level for over a decade. The program invests in traffic signal system and communication improvements and conducts routine signal timing and coordination projects in which signal operations are analyzed and improved signal timing plans implemented on key regional corridors.

On average each signal retiming project reduces travel times on the subject corridor from 5 to 15 percent.[2] The success highlights the importance of daily operations and management including both equipment and personnel, which must implement and monitor multiple timing plans during the day.

Traffic incidents also call for signal timing support. Incidents and the resulting congestion cause a certain amount of traffic to divert to other corridors. The impact of additional, unplanned volume on these corridors is that the signal timing is no longer optimized for the expected traffic. This means that there is also an opportunity to employ flexible signal timing plans that can react to and better accommodate diverting traffic. As an example, the US 6 Incident Management Plan has Denver, Lakewood and CDOT collaborating to implement specific traveler information and special signal timing plans in a coordinated response to incidents on US 6.

Special Events

Special events are non-transportation events that are centered at one location (i.e. a sports arena) and generate a lot of traffic moving to and from the event. Special events are similar to traffic incidents in that there are capacity constraints and possibly road closures that impact the special event patrons as well as the routine travelers in the area. The main difference is that special events are planned – there is a specific start and end time. Thus, transportation agencies can plan ahead with special signal timing plans or information distribution to the public.

Special events are more common than one may think; the City and County of Denver alone manages about 250 events per year that require attention from traffic management staff. These include events at specific event centers (i.e. Pepsi Center, Invesco Field at Mile High and Coors Field), and also includes events (i.e. parades and fairs) that directly impact the city roadway network. Regionwide there are other locations that are considered special event centers such as the Comfort Dental Amphitheatre in Greenwood Village, Red Rocks Amphitheatre, the 1STBANK Center, and Dick's Sporting Goods Park. Shopping districts such as Park Meadows, Flatirons Crossing, Colorado Mills and Southlands can also be

[2] *Traffic Signal System Improvement Program – 2007 Update Summary Report*, DRCOG, 2007

considered special event centers as periods of increased shopping activity between Thanksgiving and the end of the year are known and plans for their transportation impacts can be prepared.

3. Regional Transportation Operations Strategy (RTOS)

Several workshops were conducted by DRCOG to bring regional transportation managers together to develop an operational concept and vision for several transportation service areas that will improve transportation management through technology. The four highest priority transportation service areas have a significant day-to-day operational component that deserves further development in this RTOS. These transportation service areas are:

- Regional Traveler Information
- Regional Transportation Operations & Management
- Regional Traffic Incident Management
- Transit Operations & Management

Note that the definition of the transportation service areas serve to focus the discussion of the strategies around a specific set of functions; however, we must keep in mind, especially in the case of roles and responsibilities, that these are all day-to-day operations activities that must inter-relate on a day-to-day basis as well. For example, from the point of view of an individual agency, their roles and responsibilities in each transportation service area combine to become their complete set of roles and responsibilities with respect to the *Regional Transportation Operations Strategy*.

For each of these transportation service areas the operations strategies are organized as follows:

Objective – a general description of an achievable and measureable short-term objective.

Approach, Roles and Responsibilities – a preliminary approach and the roles and responsibilities of the stakeholders as per the vision and operational concept.

Physical Improvements – an identification of minor physical improvements that may be required to effectively implement the operations approach.

Resource Arrangements – an identification of the types of interagency agreements and other arrangements required to effectively implement the operations approach.

Service Area 1: Regional Traveler Information

Currently, traveler information is collected and distributed from various sources within the region. For example, CDOT ITS Branch, which manages the Colorado Transportation Management Center (CTMC), maintains a website (www.cotrip.org) that provides travel times, speeds, alerts, camera views, and dynamic message sign information. It also operates the 511 traveler information phone number, which

focuses on freeway and major state highway information; RTD maintains a website (www.rtd-denver.com) and distributes schedule and bus arrival information by phone and other wireless devices; Denver posts snapshot images from traffic monitoring cameras (www.denvergov.org/traffic); and, commercial companies such as Traffic.com offer traveler information for a fee.

There is only a moderate level of coordination both among public agencies and between public agencies and commercial entities that provide traveler information. The distributed array of information may not be used efficiently by travelers. Also, inconsistencies between traveler information services may confuse travelers.

Objective

The general operations objective for regional traveler information is to improve the public's access to all traveler information in the region. Although it is difficult to identify a measurable improvement for regional traveler information, a possible measure for this objective could be a count of the information items available through the regional traveler information system and possibly a count of the number of times the traveler information system is accessed.

Approach, Roles and Responsibilities

The approach for implementing a regional traveler information system is to consolidate access to all traveler information through CDOT's traveler information services, which consist of the CoTrip.org website, the current 511 phone system, and a possible future 511 website (referred to hereafter as the CoTrip/511 system). Regional partners will collect and process their own data (i.e. traffic conditions, travel times, incidents, construction, weather, transit operations, and alternative travel options) and either feed the CDOT traveler information system with updates or maintain access to their traveler information through the CDOT's system. Other services to distribute this information (i.e. personalized e-mail or text messaging, mobile access, third party traveler information) will grow from this consolidated traveler information. Plus, the new regional traveler information system can be more easily promoted to the public.

The following summarizes the roles and responsibilities for the regional partners as defined through initial workshops to define an operational concept for regional traveler information. The roles and responsibilities are grouped into four areas: implementation, maintenance, management and operations.

Service Area 1: Regional Traveler Information

1. Air Pollution Control Division (APCD)

Implementation:
- Implement emissions monitoring equipment.
- Implement RapidScreen and AirCare Colorado - two elemental programs of auto emissions inspection.

Maintenance:
- Maintain emissions monitoring equipment.

Management:
- Participate in emissions management planning for the region.

Operations:
- Provide air quality update information to CoTrip/511 system.

2. CDOT ITS Branch

Implementation:
- Deploy traffic monitoring systems elements on freeways.
- Deploy weather monitoring systems elements.
- Integrate existing broadcast and interactive traveler information systems into the CoTrip/511 system. Establish regional partner access to CoTrip/511 system.
- Enhance data interpretation to provide intelligence about future weather related conditions.

Maintenance:
- Maintain field monitoring systems.
- Maintain core CoTrip/511 system, including database, website, and phone system.
- Maintain regional partner access to CoTrip/511 system database.
- Maintain existing broadcast and interactive traveler information systems.

Management:
- Develop a regional strategic plan for CoTrip/511 system deployment and operation.
- Establish and promote standards and protocols for CoTrip/511 system.
- Assist in the promotion of the CoTrip/511 system both with other agencies and with the public.
- Support development of system elements by other entities that are compatible with the CoTrip/511 system.
- Review the potential of public-private initiative to advertise before traveler info is provided.
- Explore the potential of “pushing” traveler information into vehicles as they travel.

Operations:
- Serve as the regional clearinghouse for traveler information. This will mainly be achieved through the CoTrip/511 system, which will be automatically or manually updated by regional partners.
- Serve as the regional link to private information service providers (ISP) with an interest in encouraging consistency in traveler information available to the public.
- Coordinate with Public Safety the wide area alert messaging (i.e. Amber alert or evacuation messaging) to be included in CoTrip/511 system.

3. CDOT Regions

Operations:
- Manage field monitoring systems and detect transportation system issues.
- Update CoTrip/511 system database with traffic conditions, incident information, and construction and maintenance work details.

4. Colorado Tourism Organizations

Implementation:

- Implement system of support for stakeholders looking for information other than traveler information.

Management:

- Coordinate with CoTrip/511 system to provide links to tourist-related information systems.

5. DRCOG

Implementation:

- Deploy rideshare and telework services (RideArrangers).
- Prepare bicycle and pedestrian traveler information resources.
- Develop and deploy alternative travel options educational and promotional material.

Maintenance:

- Maintain RideArrangers telephone number and website.

Management:

- Support the development of a regional strategic plan for CoTrip/511 system deployment and operation.
- Lead public promotion of the CoTrip/511 system regionally.
- Support the CoTrip/511 system branding and the development of effective and attractive public interfaces.

Operations:

- Operate RideArrangers.
- Coordinate access to RideArrangers service through CoTrip/511 system.

6. Event Centers and Parking

Management:

- Develop methods to coordinate with local jurisdictions to automatically update CoTrip/511 system database sharing information about local special events and parking availability.

7. Local Jurisdictions

Implementation:

- Deploy traffic monitoring systems elements on major and regional arterials.
- Deploy weather monitoring systems elements.
- Deploy highway-rail interface systems to update CoTrip/511 system on train disruptions.

Maintenance:

- Maintain field monitoring systems.
- Maintain TMC operations.
- Maintain communications with the CTMC and CoTrip/511 system.
- Maintain communications with other external entities.

Management:

- Coordinate with local special event centers.
- Use CoTrip/511 system's standards in storage of data and sharing of information feeds with both the CTMC and other entities.
- Develop methods to automatically update CoTrip/511 system database from other entities.

Operations:

- Manage field monitoring systems and detect transportation system issues.
- Update CoTrip/511 system database with traffic conditions, incident information, weather conditions and construction and maintenance work details.

- Coordinate with local event centers and update CoTrip/511 system database with event details and projected impacts on transportation system.
  Provide transportation-based public information in other forms.

8. North Central All-Hazards Region

Operations:

- Coordinate with CDOT ITS for wide area alert messaging to be included in CoTrip/511 system.

9. Public Highway Authorities

Operations:

- Manage field monitoring systems and detect transportation system issues.
- Update CoTrip/511 system database with traffic conditions, incident information, and construction and maintenance work details.

10. Public Safety

Operations:

- Coordinate with CDOT ITS for wide area alert messaging to be included in CoTrip/511 system.
- Pass emergency routing information to CoTrip/511 system.

11. Railroad Companies

Operations:

- Send freight train schedule and real-time information to CoTrip/511 system.
- Provide AMTRAK passenger arrival and departure information to the CoTrip/511 system.

12. Regional Transportation District (RTD)

Implementation:

- Deploy fleet monitoring systems.
- Deploy multimodal trip planner (both website and telephone).
- Deploy network of information kiosks.
- Deploy real-time bus arrival information system.

Maintenance:

- Maintain equipment and software supporting the real-time bus arrival system.
- Maintain equipment and software supporting the transit traveler information system.

Management:

- Support integration of CDOT and transit traveler information systems.
- Use CoTrip/511 system's standards in storage of data and sharing of information feeds with both the CTMC and other entities.

Operations:

- Operate real-time bus arrival time system.
- Operate web and phone information systems providing: fixed route schedules, real-time bus arrival information, other transit traveler information.
- Coordinate access to transit traveler information (web and phone) through CoTrip/511 system.

Physical Improvements

Physical improvements should be relatively minor as the approach is to consolidate currently available traveler information sources. It is likely that physical improvements will include the acquisition or reconfiguration of computer network equipment to permit partner agencies to connect directly to CDOT. Additionally, software integration will likely be required to complete these connections.

For CDOT, the additional communications requirements with other partner agencies along with the potential increase in demand for data storage may require additional equipment. Also, the nature of the consolidated access will likely increase the demand for information from current levels at CDOT. It is likely that support equipment will be required to improve the capacity of both the web services and the telephone service.

Resource Arrangements

Resource arrangements for the regional traveler information system will likely revolve around the format, quality and reliability of the data provided to the system. Generally, a memorandum of understanding (MOU) or an intergovernmental agreement (IGA) will be required to identify the traveler information data that will be provided and the conditions under which they will be provided. Special attention in the MOU/IGA will be required for instances where there are failures in the system. For example, if the communications between an agency and CDOT were to fail, who is responsible for the repair? What is the process for notification? What will be presented to the public until such time that the repair is completed? The MOU/IGA should also address the financial responsibilities with regard to physical improvements, day-to-day operations, and promotion of the service.

Service Area 2: Regional Transportation Operations & Management

Recurring congestion occurs when the capacity of a transportation facility is insufficient to serve the demand for certain time periods. Generally, this is a predictable daily or weekly occurrence. This congestion results in reduced travel speed, increased travel time, and vehicle delays. Strategies to mitigate congestion must ignore jurisdictional boundaries and must promote coordinated operations between neighboring jurisdictions. An excellent example is DRCOG's Traffic Signal Program, which collaborates with multiple jurisdictions to optimize signal timing on key regional corridors especially across jurisdictional boundaries.

The Traffic Signal Program is a good base from which to work as the signal timing plans that are implemented address regular day-to-day traffic operations. However, work zones, bad weather, special events are also day-to-day situations that impact traffic operations.

Objective

The general operations objective is to provide transportation managers both with an awareness of traffic system conditions at a regional level and processes to coordinate transportation operations across jurisdictional lines. During detailed project development, both the specific objectives and the performance measures will require definition. It is likely that similar measures used to measure traffic signal operations performance such as travel times and travel time reliability will be appropriate for this objective.

Approach, Roles and Responsibilities

The operations approach is twofold. First, the capability to share transportation operations data between transportation managers will be expanded using both existing center-to-center (C2C) communications links and the internet. The result will be a dynamic, map-based display that will present to transportation managers such information as roadway traffic conditions, traffic incidents, work zones, special event information, systems availability information, and forecasted weather information for the entire region. The display will be a synthesis of the available data. The foundation for this effort, the City and County Transportation Management Desktop secure website, has already been deployed.

Second, deployment and use of this tool will involve three phases. In the first phase, transportation managers will use this tool to independently make informed operations decisions. In the second phase, transportation managers will agree on procedures to coordinate operations across jurisdictions through direct communication and cooperation of the transportation managers. In the final phase, the capability to control equipment in other jurisdictions or implement specific response plans given observed conditions will be explored with select jurisdictions.

The following summarizes the roles and responsibilities for the regional partners as defined through workshops to define an operational concept for regional transportation operations & management. The roles and responsibilities are grouped into four areas: implementation, maintenance, management and operations.

Service Area 2: Regional Transportation Operations & Management

1. CDOT ITS Branch

Implementation:

- Deploy new traffic monitoring system elements on freeways and major state highways.
- Deploy new travel time monitoring system elements on freeways and major state highways.
- Deploy traffic information dissemination system elements on freeways and major state highways.

Maintenance:

- Maintain traffic and travel time monitoring equipment.
- Maintain CTMC.
- Maintain backbone communications system connecting with other traffic management centers.
- Maintain shared software agreements (i.e. video and camera control sharing software).

Management:

- Develop modular travel time monitoring and display system specific to an urban area.
- Develop a plan for a regional backbone communications system.
- Develop standards for communications system.
- Develop Dynamic Message Sign (DMS) and Highway Advisory Radio (HAR) use policy (specifically considering how non-freeway messages can be posted).
- Develop a plan for the design and deployment of City and County Transportation (CCTM) Desktop (regional transportation operations display).
- Develop a plan to establish purchasing contracts for equipment that any jurisdiction can use.
- Develop a plan to improve maintenance and operation level of service by reducing cost and response time.

Operations:

- Monitor freeway and major state highway operations including both congestion and traffic incident detection.
- Use DMS and HAR for post freeway control messages.
- Post other information to DMS and HAR upon request from regional partners.
- Dispatch Service Patrols using computer-aided dispatch (CAD) who can serve as another form of traffic operations monitoring.
- Serve as concentration points for Regional Traffic Control, consolidating links from other traffic management centers in the region and presenting a regional view for both traffic conditions and system health - the CCTM Desktop.
- Support stakeholders with TMCs with after-hours monitoring and operations of local elements.
- Improve after-hours decision making for non-recurring, non-scheduled events supporting a distributed management system during business hours and scheduled events.

2. CDOT Regions

Implementation:

- Deploy ramp metering system elements on freeways.
- Deploy interconnected traffic signal system elements along state highways.
- Deploy reversible lane systems elements on freeways.
- Expand coverage of service patrols to arterials in immediate interchange area.

Maintenance:

- Maintain field system elements.
- Maintain communications to CTMC.

Management:

- Develop deployment plan for ramp meters.
- Assist CTE in development of a plan for management and operations of managed lanes.
- Manage Service Patrol(s) IGA(s).

Operations:

- Monitor and operate ramp meter system.
- Monitor and operate traffic signal system.
- Monitor and operate reversible system(s), HOV lane system(s), and HOT lane system(s).
- Feed system health and traffic conditions data to the CCTM Desktop.

3. High Performance Transportation Enterprise

Implementation:

- Deploy toll collection and violation enforcement system elements.

Maintenance:

- Maintain toll collection and violation enforcement system elements.

Management:

- Establish plans for managed lane deployment and operations.
- Establish design and operational standards for the deployment of managed lanes.

Operations:

- Collect tolls and conduct violation enforcement.
- Perform managed lane operations.

4. DRCOG

Management:

- Develop signal timing plans for major regional and principal arterials.
- Lead development of a plan for the development and deployment of TSP.
- Lead development of a plan for performance monitoring of regional system operations.
- Develop with stakeholders an operations concept for after-hours center-to-center communication and operational protocols.
- Develop with stakeholder's specifications and lead purchasers for ITS equipment and contractors.
- Develop a process to test products and develop acceptable products list.

5. Public Highway Authorities (E-470, Northwest Parkway)

Implementation:

- Deploy new traffic monitoring system elements on freeways.
- Deploy new travel time monitoring system elements on freeways.
- Deploy traffic information dissemination system elements on freeways.
- Deploy toll collection and violation enforcement system elements.
- Deploy Service Patrols.
- Deploy communications elements to support center-to-center interfaces with adjacent jurisdictions and CTMC.

Maintenance:

- Maintain field system elements.
- Maintain communications to CTMC.
- Maintain toll collection and violation enforcement system elements.

Operations:

- Monitor freeway operations including both congestion and traffic incident detection.

- Use DMS and HAR for post freeway control messages.
- Post other information to DMS and HAR upon request from regional partners.
- Conduct tolls and violation enforcement.
- Dispatch Service Patrols using computer-aided dispatch (CAD) who can serve as another form of traffic operations monitoring.
- Feed system health and traffic conditions data to the CCTM Desktop.

6. Local Jurisdictions

Implementation:
- Deploy interconnected traffic signal system elements on major regional arterials.
- Deploy traffic monitoring system elements on major regional arterials.
- Deploy field system elements necessary to support TSP operations.
- Deploy communications elements to support center-to-center interfaces with adjacent jurisdictions and CTMC, including after-hours operational protocols.

Maintenance:
- Maintain traffic signal system.
- Maintain traffic monitoring system.

Management:
- Define local transportation management strategies.
- Develop DMS and HAR use policy (specifically considering how non-freeway messages can be posted).
- Coordinate with regional transportation management strategies.
- Improve after-hours response to non-recurring, non-scheduled events.
- Assist the development of after-hours operational protocols.

Operations:
- Implement signal timing plans for regional arterials, as defined by DRCOG.
- Monitor traffic signal system health and traffic conditions on the local network.
- Feed system health and traffic conditions data to the CCTM Desktop.

7. North Central All-Hazards Region

Operations:
- Include information contained on the CCTM Desktop in decision-making during emergencies.

8. Public Safety

Operations:
- Dispatch emergency vehicles based on information available from the CCTM Desktop.
- Feed emergency routing information to the CCTM Desktop.

9. Regional Transportation District (RTD)

Implementation:
- Deploy fleet monitoring systems.
- Deploy fleet equipment elements necessary to support TSP operations.
- Deploy fleet management CAD systems.
- Deploy communications elements to support center-to-center interfaces with adjacent jurisdictions and CTMC.

Maintenance:
- Maintain fleet systems elements.

- Maintain fleet management CAD systems.

Management:

- Define transit system management strategies.
- Coordinate with regional transportation management strategies.

Operations:

- Monitor transit system operations.
- Coordinate real-time schedule issues between transit agencies.
- Feed CAD system data to the CCTM Desktop.

Physical Improvements

Minor physical improvements, leveraging from the existing C2C communications links, will be required. A new computer system that collects the real-time transportation operations data, consolidates the information, and prepares the map for viewing on a secure web page. Some software modification may be necessary in order to format the data streams to meet the needs of the system. Also, significant software integration will be required to coordinate the various systems and databases, which may be complicated by firewalls and IT policy.

As with the regional traveler information system, additional communications equipment may be required at CDOT to accommodate the additional data flow and communications other stakeholders.

Resource Arrangements

Resource arrangements for regional transportation operations & management will likely revolve around the format, quality and reliability of the data provided to the system. Generally, a MOU/IGA will be required to define the operations data that will be provided and the conditions under which they will be provided. Special attention in the MOU/IGA will be required for instances where there are failures in the system. For example, if the communications between an agency and CDOT were to fail – Who is responsible for the repair? What is the process for notification? What will be presented to the public until such time that the repair is completed?

The MOU/IGA should also define when and how contact should be made between the stakeholders in the second phase of the deployment.

For the third phase of the deployment, the MOU/IGA should also define the roles and responsibilities regarding the control of equipment in other jurisdictions. Issues regarding liability will have to be specifically addressed. From preliminary discussions, the control allowed may be very limited (i.e. selecting a preprogrammed traffic signal timing plan in a neighboring jurisdictions traffic signal system.)

The MOU/IGA should also address the financial responsibilities with regard to physical improvements, day-to-day operations, and promotion of the service.

Service Area 3: Regional Traffic Incident Management

Incidents are non-predictable events that can affect traffic flow and reduce capacity, causing congestion, and great economic costs. Tragically, fatalities and severe injuries are sometimes an outcome of these incidents. Depending on the severity of the incident and the time of day in which it has occurred, the impact of incidents on the traffic network can be amplified beyond the duration and location of the incident itself, and the potential for secondary incidents can be increased.

To address the impact of incidents, several incident management plans (IMP) have been prepared by CDOT for key freeway corridors in the region. The intent of an IMP is to coordinate the response of several agencies and jurisdictions in the case of an incident on the freeway. IMPs have been prepared for the following freeway corridors: I-25 Express Lanes, US 36 (Boulder Turnpike), US 6, South I-25 (Lincoln to El Paso Line), I-25 (Broadway to Lincoln) [T-REX corridor], and I-70. In addition, the Northwest Parkway has prepared an incident management plan for that facility. In general, these incident management plans include a definition of three levels of incidents along with a general response plan that includes:

- alternate routes to be implemented as part of some response plans;
- the location of resources to support the response plan;
- agency resource personnel contact lists;
- agency public information officers contact list; and,
- a fax list to quickly distribute information regarding the response plan (usually in the case of a roadway closure).

Maintaining and using multiple response plans has been recognized as burdensome, especially by those agencies directly involved in incident response. Plus, the focus on specific freeway corridors does not benefit any other agencies dealing with incidents within their own jurisdiction. In addition, ITS technology provides another opportunity to detect incidents, which increases the responsibility of the agency that detected the incident.

Objective

The operations objective for regional traffic incident management is to reduce the impact of traffic incidents on regional freeways and key arterials. The main goal is to reduce the total duration of each incident. The measures to be used to determine progress with this objective may include total incident duration, time required to detect and verify incidents, incident response time and incident clearance time.

Approach, Roles and Responsibilities

The operations approach for regional traffic incident management is to prepare and implement a unified regional incident management plan – one plan that coordinates the efforts of both the transportation community and the public safety community and provides consistency in the management of incidents. The common features of the existing corridor IMP will form the core of the unified plan. These include the mainly the sections that address incident response (including traveler information), incident site management, and incident site clearance. The incident detection and verification component of the plan will reflect the new capabilities of the transportation community to use tools such as automated incident detection and camera monitoring to speed the process of identifying traffic incidents.

As important as the similarities between the existing corridor IMP is the differences between these plans. Specifically, the stakeholders and physical resources involved in incident management depend on the location of the incident. So does the set of alternative routes that may be employed. In some cases, agencies may not define specific alternative routes, but concepts that will be used to prepare alternative routes depending on other incident factors. To assist with the management of this information, the existing IMP will be consolidated into a single set of databases and expanded to cover other key regional roadways. This will allow more consistent application of incident detection methods and it will also allow regional agencies to more easily keep incident management resources information current. Plus, the availability of remote computing devices and wireless technology will insure that all field staff have access to the same information as other incident management staff.

As the CTMC is the central hub for communications related to transportation in the region and since they are directly involved in the existing IMP, CDOT is the logical choice to host and maintain the regional IMP databases.

The following summarizes the roles and responsibilities for the regional partners as defined through initial workshops to define an operational concept for regional traffic incident management. The roles and responsibilities are grouped into four areas: implementation, maintenance, management and operations.

Service Area 3: Regional Traffic Incident Management

1. CDOT ITS Branch

Implementation:
- Deploy incident detection on freeway corridors.
- Deploy public safety CAD display at CTMC.
- Assist in deployment of the CCTM Desktop at public safety dispatch.

Maintenance:
- Maintain incident detection and verification systems.
- Maintain contact list related to incident management. Maintain the CCTM Desktop.

Management:
- Assist in development of a unifying Regional Incident Management Plan.
- Develop incident management plans for key arterial corridors or entire jurisdiction.
- Develop incident detection and verification protocol.
- Coordinate notification protocol with regional partners.
- Ensure staff is adequately trained in National Incident Management System (NIMS).

Operations:
- Dispatch courtesy patrol throughout region.
- Update the CCTM Desktop.
- Lead traveler information response.
- Contact other CDOT resources required to respond to the incident.
- Implement alternate routes as determined by incident management plan.
- Notify jurisdictions impacted by alternate route.
- Track incident for clearance; close incident on the CCTM Desktop when incident is cleared.
- Utilize Resource Ordering and Status System (ROSS) to identify equipment needed during incident response.

2. CDOT Regions

Maintenance:
- Maintain Resource Ordering and Status System (ROSS) database with availability of incident management equipment.
- Maintain a ready stock of incident management equipment.

Management:
- Assist in development of a unifying Regional Incident Management Plan.
- Manage courtesy patrol.
- Ensure staff is adequately trained in National Incident Management System (NIMS).

Operations:
- Region Maintenance assists in incident response and clearance.

3. Local Jurisdictions

Implementation:
- Deploy incident detection on arterials.
- Deploy public safety CAD display at TMC.

Maintenance:
- Maintain ROSS database with availability of incident management equipment. Maintain incident detection and verification systems.

- Maintain contact list related to incident management.

Management:

- Assist in development of a unifying Regional Incident Management Plan.
- Develop incident management plans for key arterial corridors or entire jurisdiction.
- Develop incident detection and verification protocol.
- Coordinate notification protocol with regional partners.
- Ensure staff is adequately trained in National Incident Management System (NIMS).

Operations:

- Update the CCTM Desktop.
- Review diversion routes to be sure they are clear of incidents and roadwork prior to the diversion.
- Implement signal timing plan that supports the diverted traffic.
- Lead traveler information response locally - coordinate with regional traveler information response.
- Contact other local jurisdiction resources (i.e. public safety) required to respond to the incident.
- Track incident for clearance; close incident on the CCTM Desktop when incident is cleared.

4. Public Safety

Implementation:

- Support deployment of CAD display at CTMC.
- Deploy the CCTM Desktop at dispatch.

Maintenance:

- Maintain Resource Ordering and Status System (ROSS) database that tracks the availability of traffic incident management equipment and resources.
- Maintain CAD system.

Management:

- Assist in development of a unifying Regional Incident Management Plan.
- Train both field and dispatch staff to update dispatch and CAD in a timely manner at the change of status of the event.
- Educate transportation operations staff on public safety operations.
- Ensure staff is adequately trained in National Incident Management System (NIMS).

Operations:

- Field staff communicate with their dispatch.
- Dispatch update the CAD system.
- Access the CCTM Desktop to provide public safety emergency vehicle route guidance.
- Alert field staff to transportation network issues while dispatching.

Physical Improvements

Similar to regional traveler information and regional transportation operations & management, physical improvements for regional traffic incident management will leverage off of existing communications infrastructure, and may include the acquisition or reconfiguration of computer network equipment to permit partner agencies to connect directly to CDOT. Software integration will also be required.

For the regional IMP databases themselves, new computer equipment or expansion of existing equipment at the CTMC will be required to support the databases.

Resource Arrangements

Resource arrangements for the regional traffic incident management will involve a larger group of stakeholders as the public safety community is involved. There may be existing MOU/IGA and mutual aid agreements already in place, but another region-wide MOU/IGA should be required to define the roles and responsibilities of the partners for regional traffic incident management. Some items that must be addressed include:

- The agency's commitment to keep resource and contact information up to date;
- The agency's commitment to staff training (of particular importance is National Incident Management System [NIMS] training, training regarding the application of the regional incident management plan, and training that provides an understanding of the standard procedures used by each of the partner agencies);
- The agency's commitment to use of existing resources (i.e. ROSS) that support incident management;
- The agency's commitment to the security of information shared between the agencies;
- Roles and responsibilities involved in public safety sharing computer-aided dispatch information with transportation managers; and,
- Roles and responsibilities in the development and improvement automated incident detection systems.
- Financial responsibilities of each of the partners will be defined.

Service Area 4: Transit Operations & Management

Travelers make travel mode decisions based upon the competitive features of each mode. The region is strongly committed to expanding and improving the transit system. There are several challenges facing the transit system that impact its viability as an alternative travel mode: longer trip travel times compared

to other modes, travel time reliability, transfers, provision of timely traveler information, ease of use when compared to other modes, and apparent and perceived security issues.

Through the use of technology, improvements in transit operations & management may be able to address several of these challenges. Coordination with transportation management agencies may shorten trip travel times and improve travel time reliability, which will ultimately improve operations as a whole. Comprehensive access to traveler information and a visible and effective security system will improve the transit user's comfort with using the system.

Much of the transit operations & management strategies rely on the capability of transit managers to track the location of their transit vehicles in real time. RTD has identified this as a key capital investment, which has been programmed in 2013. Therefore, much of the operational efficiency of the transit system is currently dependant on an unreliable system, which does not warrant a tremendous amount of effort in terms of investment until such time as the vehicle tracking capability is improved.

Objective

The operations objective is to coordinate transit operations with other transportation operations, which has a direct tie to both regional transportation operations & management and regional traveler information above. The measures for this objective will likely involve the general transit performance measures including: on-time performance (especially at transfer points), travel time reliability, ridership, etc.

Approach, Roles and Responsibilities

The approach for transit operations & management is to participate in both regional traveler information and regional transportation operations & management. Transit traveler information will not only be available to patrons through the RTD transit traveler systems, but will also be available through the consolidated access point at CDOT. RTD will also become part of the network of agencies connected with existing communications to share operations data. RTD has a computer-aided dispatch system (which lists transit system exceptions and issues) that can be shared with the regional transportation operations overview display. This may included real-time link travel time estimates based on the transit vehicle tracking systems. In addition, RTD dispatchers can use the same regional overview display to assist in their operational decisions regarding fixed and demand responsive route operations. For example, transit dispatchers could advices transit drivers to route around major incidents, road closures, and major congestion.

The following summarizes the roles and responsibilities for RTD as defined through initial workshops to define an operational concept for transit operations & management. The roles and responsibilities are grouped into four areas: implementation, maintenance, management and operations.

Service Area 4: Transit Operations & Management

1. Regional Transportation District (RTD)

Implementation:

- Deploy fleet tracking system for both fixed-route and demand-responsive services.
- Deploy computer-aided dispatch (CAD).
- Deploy automated dispatch for demand responsive systems.
- Deploy transit security system elements.
- Deploy passenger counting system elements.
- Deploy automated transit vehicle conditioning monitoring elements that meet multiple needs (i.e. fare collection and passenger data, schedule info, arrival times).
- Deploy fare collection system.

Maintenance:

- Maintain fleet tracking system.
- Maintain CAD.
- Maintain automated dispatch for demand responsive systems.
- Maintain transit security system elements.
- Maintain passenger counting system elements.
- Update radio equipment.
- Update other communication equipment.

Management:

- Coordinate fleet tracking procurement amongst transit agencies and transportation agencies.
- Coordinate fare collection procurement amongst transit agencies, tolling agencies, and parking management entities.
- Coordinate traveler information sharing directly between transit agencies.
- Coordinate with other agencies to deploy communications to serve multiple agencies.

Operations:

- Collect data from transit operations (i.e. schedule adherence, passenger counts, security issues, etc.) and share data with the CCTM Desktop.
- Collect data from transit operations and disseminate to both transit passengers and to regional traveler information system.
- Push traveler information to transit travelers including bus arrival information, schedule change information, route connection information, roadway conditions, and weather conditions.
- Integrate the weather, speed, construction, and maintenance information gathered by others into the transit agency's systems.
- Link bus driver observations to the appropriate agency.
- Automate functions of call-n-ride services, install laptops with broadband service.

Physical Improvements

Physical improvements for transit operations & management mainly involve the coordination with other jurisdictions and agencies related to traveler information and transportation operations & management. RTD's roles and responsibilities for those transportation service areas may require minor equipment acquisitions and software integration to support communications with the stakeholders.

Resource Arrangements

Resource arrangements for transit operations & management mainly involve the coordination with other jurisdictions and agencies related to traveler information and transportation operations & management. RTD's roles and responsibilities for those transportation service areas require that they become party to the MOU/IGA that define the data and communications requirements, physical improvements, and funding responsibilities.

4. Next Steps

The *Regional Transportation Operations Strategy* describes the first step on the path to improve operational coordination and cooperation between jurisdictions and agencies in the region. To move from here to implementation involves three more steps that involve intensive coordination and cooperation between stakeholders. Further steps and an action plan will facilitate the full implementation of the strategies defined in this document.

These next steps will involve further definition of the strategy components for each transportation service area:

- Prepare a detailed RTOS Action Plan
- Define specific measurable objectives for the four transportation service areas. For example, measures may be related to time to respond to or clear traffic incidents, number of people or businesses having access to traveler information, amount of information items provided, or transit reliability and performance measures. The stakeholders will work to reach consensus on suitable measures and an objective. Additionally, a baseline has to be set for the measures that will be used.
- Prepare interagency agreements and other resource arrangements based on the operations approach defined in this document. These agreements are the critical component of the operations strategies. The transportation managers and other stakeholders need to reach a consensus on the roles and responsibilities of the participating agencies, agreements to share resources, commitments to maintain operations, and funding responsibilities.
- Define specific physical improvements required to implementation of the operations approaches for each transportation service area. Cost estimates associated with the physical improvements will also be defined.
- Finalize and sign the interagency agreements and move them through the process required by each agency and jurisdiction. Generally, a legal review is required and, for some jurisdictions, legislative action is required.
- Implement, monitor, and evaluate the strategies. It is likely that the strategies will be implemented in phases allowing jurisdictions and agencies to participate when they are ready. The measures defined to mark progress towards the specific operational objective will be monitored. At a minimum, annual progress reports will be prepared and shared with stakeholders. Stakeholders may collaborate to determine if modifications to the operational objectives should be made or if improvements in the operational approach are possible.

Adopting Resolution

DENVER REGIONAL COUNCIL OF GOVERNMENTS

STATE OF COLORADO

BOARD OF DIRECTORS RESOLUTION NO. 19, 2010

A RESOLUTION TO ADOPT THE ADMINISTRATIVE UPDATES TO BOTH THE DENVER REGIONAL INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC PLAN AND THE DENVER REGIONAL TRANSPORTATION OPERATIONS STRATEGY.

WHEREAS, the Denver Regional Council of Governments, as the Metropolitan Planning Organization, is responsible for the operation and maintenance of the continuing transportation planning process designed to prepare and adopt regional transportation plans and programs; and

WHEREAS, the urban transportation planning process in the Denver region is carried out through cooperative agreement between the Denver Regional Council of Governments, the Regional Transportation District, and the Colorado Department of Transportation; and

WHEREAS, the Denver Regional Intelligent Transportation Systems (ITS) Strategic Plan is needed to provide a regional vision regarding use of specific ITS applications to address regional transportation problems and provide a policy basis for development of the federally required Regional Intelligent Transportation Systems Architecture; and

WHEREAS, the Denver Regional Transportation Operations Strategy is needed to guide improvements in coordination and cooperation between regional jurisdictions and agencies for the purpose of improving regional transportation operations; and

WHEREAS, the Denver Regional Council of Governments Metropolitan Planning Area boundary changed in February, 2008, to include southwest Weld County; and

WHEREAS, both documents, being completed in December 2007, required administrative updates to account for the Metropolitan Planning Area boundary change; and

WHEREAS, the Regional Transportation Committee has recommended approval of the administrative updates for both the Denver Regional Intelligent Transportation Systems Strategic Plan and the Denver Regional Transportation Operations Strategy.

A RESOLUTION TO ADOPT THE ADMINISTRATIVE UPDATES TO BOTH THE DENVER REGIONAL INTELLIGENT TRANSPORTATION SYSTEMS STRATEGIC PLAN AND THE DENVER REGIONAL TRANSPORTATION OPERATIONS STRATEGY.

NOW, THEREFORE, BE IT RESOLVED that the Denver Regional Council of Governments hereby adopts the administrative updates to both the Denver Regional Intelligent Transportation Systems Strategic Plan, dated October 2010, and the Denver Regional Transportation Operations Strategy, dated October 2010.

RESOLVED, PASSED AND ADOPTED this 20th day of October, 2010 at Denver, Colorado.

Rod Bockenfeld, Chair
Board of Directors
Denver Regional Council of Governments

ATTEST:

Jennifer Schaufele, Executive Director