

REGIONAL TRANSPORTATION OPERATIONS WORKING GROUP
MEETING SUMMARY
SEPTEMBER 25, 2019

Present at meeting:

Aurora (Tanya Bower); Arapahoe County (Mike Comstock); Arvada (Scot Lewis, Ed Brady); CDOT (Eskinder Muslah); Castle Rock (Jacob Vargish); Centennial (Jim Paral); Denver (Rebecca LaFond, Brian Tennent); Douglas County (Danny Montoya); DRCOG (Greg MacKinnon, Steve Cook, Emily Lindsey, Jerry Luor); Lakewood (Matt Duncan); Littleton (Shane Roberts); North Central Region (Stephany Peltekov); Northglenn (Kyle Haworth); WL Contractors (Tim March)

Signing and Marking Implications of Connected Vehicles and Automated Vehicles

- Matt Duncan (City of Lakewood), a member of the National Committee on Uniform Traffic Control Devices and the Connected and Automated Vehicle task force, gave a presentation (attached) on the implications on public infrastructure, particularly signs and markings, of connected and automated vehicles.
- His main point was that the improvements anticipated by the auto industry to accommodate these vehicles are also improvements that can provide better service to today's aging drivers. He also recommended that, as a region, the transportation operators should consider consistent application of any changes to present a consistent and uniform landscape for travelers. For example, this region's jurisdictions frequently restripe due to the environment – perhaps the next restriping should include 6-inch striping.
- Discussion:
 - Rebecca LaFond noted that Denver adds MAP files transmitted from RSE (in addition to SPaT) at intersections. She expects it will help vehicle positioning at intersections and suggests similar applications for work zones.
 - Steve Cook noted that in addition to the real and present needs for maintenance and operations that the group face day-to-day, this presentation brings to mind issues that need to be reflected in the long range planning – maintenance funding must increase.
 - Jerry Luor noted that the pavement quality is a significant contributor to the quality of the pavement markings. This led to a significant discussion of financial and maintenance implications.
 - Mr. Luor also noted that our industry and the auto industry (and the auto fleet) are currently in a period of transition and we, as an industry, are currently uncertain how to account for operations in this interim.
 - Mr. MacKinnon confirmed that the message is that there are actions jurisdictions can take now to improve safety now that will also support the needs of connected and automated vehicles in the future. Mr. Duncan

also emphasized the need for consistency and uniformity across the region. The group generally agreed on this approach.

Operational Concepts and Evaluation Criteria for Call-for-Projects

- Mr. MacKinnon noted that the last two meetings discussed the high-level operational coordination priorities. This meeting initiated the discussion regarding evaluation criteria for the pending call-for-projects. He highlighted that this will be input to the AMP, which will strongly influence the final evaluation criteria.
- Mr. MacKinnon noted that there are three main objectives for the evaluation criteria:
 - Regional operations perspective
 - projects are aligned with established regional standards and guidance
 - projects are based on or support interjurisdictional coordination
 - the implementations are modular and transferable
 - Addressing significant needs
 - Physical – where do problems exist?
 - Functional – what necessary functions are jurisdictions currently unable to provide?
 - Effecting the significant positive impact
 - Ensure projects will provide measurable/observable positive benefits

Regional Operations Perspective

- Mr. MacKinnon described regional coordination as two elements that relate directly to the high-level operational requirements (regional data sharing, regional situational awareness, and regional performance monitoring).
 - **SUPPORT**
 - Many projects will rely on process-related development as much as technology itself:
 - Establish data governance, data management policies and procedures
 - Establish standards, formats, structure
 - Projects that implement data management infrastructure and resources are critical

- Similarly, common data sharing philosophies (i.e. curation of data catalogs, APIs, “apps”) and transportation operations philosophies will be necessary. AMP-level guidance may support this sort of project development.
- **OPERATIONS IMPLEMENTATION**
 - The infrastructure that supports the above data collection and data integration philosophies is a key requirement for projects deploying:
 - Field devices
 - Communications infrastructure
 - System monitoring and control
 - Additionally, implementation of performance measurement systems that are compatible and support the operations philosophies above are priorities.
 - Finally, design and implementation of “apps” – analytics, dashboards, etc, which are new, is extremely important to allow operators to use the data that is planned to be collected.

How would we evaluate these factors?

- Mr. MacKinnon suggested the following:
 - Foundational items would receive higher consideration:
 - Regional Data/Information Sharing
 - Regional Policies and Procedures
 - Relative ordering/prioritization of project types
 - Extent of coordination and partnership should be rewarded:
 - Number of partners
 - Commitment of resources
 - Transferability of solution

Addressing Significant Needs

- Mr. MacKinnon described how applications may describe the regional and local needs:
 - Physical location and environment
 - Operational projects must be on Regional Roadway System (RRS)
 - Need can be expressed by DRCOG’s Congestion Score (safety, congestion, reliability)
 - Multimodal elements and non-SOV elements are of particular interest

- There may be localized issues that are common from jurisdiction to jurisdiction
- Functional issues
 - Key or base functionality missing or inadequate
 - Inability of jurisdiction's technology to align with regional guidance
 - System incompatibility

Measuring Impact

- Mr. MacKinnon offered measuring impact using several key quantitative measures:
 - Air Quality (emissions)
 - Travel Time
 - Congestion (VMT)
 - Travel Time Reliability
 - Fatalities
 - Mr. Duncan states that fatalities is too narrow of a metric. He recommends injuries.
 - Emily Lindsey suggested that the killed and serious-injury (KSI) data is being used to define a high-injury network (HIN) for the Vision Zero effort, which may address Mr. Duncan's concern.
 - Jim Paral echoed that improving safety is broader than fatalities and injuries. In addition, the capability to improve safety with operations improvements must also be considered.
- Additional Functional Scope
 - Greater monitoring and management coverage
 - Greater monitoring and management functional capability
 - Greater interjurisdictional coordination

Other Considerations

Federal Share

- The signal program has benefited from 100% federal participation as described in "23 CFR § 120 Federal Share Payable"

"The Federal share payable on account of any project **for traffic control signalization**, ... or **priority control systems** for emergency vehicles or transit vehicles at signalized intersections may amount to **100 percent** of the cost of construction of such projects ..."

- As such, the primary project purpose (result) MUST be focused on supporting interjurisdictional traffic signal coordination AND new functionality must be provided in:
 - Traffic signal monitoring and control systems (specific capabilities and specifications)
 - Traffic signal controllers and cabinets (specific capabilities and specifications)
 - UPS for traffic signal controllers/cabinets
 - Traffic signal system communications infrastructure
 - Field equipment
 - Communications medium
 - TMC equipment
 - TSP field equipment, firmware, and software
 - Communications equipment and medium between TMCs for system-to-system coordination
 - Signal system performance monitoring systems
 - System/advance detection
 - Connected Vehicle communications infrastructure

Past Performance

- Mr. MacKinnon revisited past performance as an item to consider during evaluation.
- There was general agreement that jurisdictions successfully deploying will likely repeat that success. However, the last time it was discussed with this group, there were questions:
 - How do we account for jurisdictions with “no history”?
 - What items score for/against “successful” jurisdictions?
 - Schedule delays
 - Budget overruns/overestimation
 - Successful project application (continuing service)
- Mr. Paral suggested an alternative approach is to require a risk management plan with the application. Not only does this illustrate the level of effort the applicant invested in the conceptualization of the project, but it allows jurisdictions to get credit for lessons learned from past projects with performance issues.
- Mr. MacKinnon agreed that this is a superior approach. In fact, the CDOT Project Management Office (PMO) has published their process that include a risk management plan component.

DRCOG Regional ITS Architecture Update

- Mr. MacKinnon reviewed the current state of the architecture and outlined next steps.
- DRCOG has delayed the annual publication of the architecture for several reasons; however, the application process must allow applicants to illustrate the portions of the architecture that are being implemented (SEA requirements).
- There is a need to coordinate the state of architecture with call-for-projects. Mr. MacKinnon presented the following next steps:
 1. Publish latest architecture update
 2. Project sponsors confirm prospective projects are in the architecture
 3. Project sponsors notify DRCOG of issues
 4. DRCOG prepares minor revisions to accommodate
 5. DRCOG and RTO Working Group review to confirm

Regional Project Coordination

- **Advanced Mobility Partnership (AMP):**
 - Presented to DRCOG RTC and Board in September.
 - DRCOG filled Technology Strategist position.
 - Initiating MOU to establish group.
- **RTO&T Set-Aside Call-for-Projects Update** – draft schedule:

Step	Current Target
Take Process to TAC	January 27
Take Process to RTC	February 18
Take Process to Board	February 19
Initiate Call-for-Projects	February 20
LOI Discussion at RTO	March 25
Submission Deadline	April 9
Staff recommendations to RTO	April 22
Seek TAC approval	April 27 or May 18
Seek RTC approval	May 19
Seek Board approval	May 20

- **CDOT**

- **Regional Incident Management** – West Metro SPMT (October 30); North Metro SPMT (??); Annual TIM Conference (October 28-29).
- **Statewide ITS Architecture** – Draft under review.
- **Smart 25** – No update.
- **CDOT Video Sharing Alliance** –
- **RTD Coordination:**
 - **Colfax TSP** – RTD is preparing a white paper; preparing MOU with Denver.
 - **Regional BRT Study** –
- **Denver**
 - **Denver ATCMTD:** Pedestrian-related effort in design; bid for pedestrian BOS to come out soon. Other efforts (freight signal priority and TMC back-end) are in the process of completing Concepts of Operations.
 - **Denver Center-to-Center Project** – Draft ConOps to be distributed by the end of September.
- **TransSuite User Group** –
- **Centracs User Group** –
- **Coordinated Operations**
 - Lone Tree and Centennial are deploying a pilot MAC reidentification pilot. The bulk of the devices are operational. The next step is to connect them to controllers.
 - Lone Tree, Centennial and Greenwood Village jointly issued an RFP for a multijurisdictional adaptive control system to be deployed on Yosemite.
 - Castle Rock coordinating travel time monitoring implementation with CDOT.
 - Arapahoe County, Centennial still need to work with CDOT to distribute travel time monitoring information.

Other Items/Announcements

- The next regularly-scheduled meeting is **October 23, 2019**