ADVANCED MOBILITY PARTNERSHIP

AGENDA

EXECUTIVE COMMITTEE
Wednesday, December 1, 2021
2:00 p.m.

Remote Meeting

DRCOG is hosting this meeting remotely (no in-person option). The meeting will be held using Microsoft Teams. Please see event calendar or calendar invite for details.

1. **Welcome and Introductions**

2. **AMP Working Group Briefing**
   Emily Lindsey, DRCOG

3. **AMP Activities and Related Projects**
   All AMP Partners
   a. **MCB Tactical Action Updates and New Priorities**
      Emily Lindsey, DRCOG
   b. **AMP Data Workshop Debrief**
      Emily Lindsey, DRCOG
   c. **Reimagine RTD Update**
      Brian Welch, RTD

4. **Other Partner Agency Projects**
   All AMP Partners
   Facilitated by Brian Welch, RTD
   a. ETRP Debrief
   b. GHG Rule
   c. Senate Bill 260
   d. Federal Infrastructure Investment and Jobs Act
   e. Pandemic response and recovery

5. **AMP Executive Committee Calendar 2022 and Engagement Strategies**
   Emily Lindsey, DRCOG

6. **Next Meeting: March 2, 2022**

Attendees can request additional aids or services, such as interpretation or assistive listening devices, by calling 303-480-6701 or emailing elindsey@drcog.org. Please notify us at least 48 hours in advance so we can coordinate your request.

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DENVER METRO CHAMBER OF COMMERCE
RTD
CDOT COLORADO Department of Transportation

ADVANCED MOBILITY PARTNERSHIP

DATE: December 1, 2021
TO: AMP Executive Committee
FROM: Emily Lindsey, Transportation Technology Strategist, DRCOG
SUBJECT: AMP Working Group Briefing
ACTION: Information

SUMMARY

At the December meeting of the AMP Executive Committee, staff will provide an overview of the Advanced Mobility Partnership Working Group collaboration since the last meeting. The AMP Working Group meets monthly to collaborate and coordinate on transportation technology-related efforts in the Denver region. Since March 2021, the Working Group has covered topics at their meetings such as:

- CSU Mobility and Energy Project
- NSF Civic Innovation Challenge: Valverde Movement Project
- AMP Focus Area Updates
- CDOT Mobility Hub Handbook
- RTD Mobility Hub Guidelines
- Denver Mobility Hub Strategy
- Future of Work Discussion
- RTO Visioning
- Transit Priority at RTD
- CDOT Connected Vehicle Program
- CDOT Open GIS
- Transit Emissions Dashboard
- City of Aspen Smart Zone Pilot
- Colorado CarShare
- DRCOG UPWP AMP-Related Activities
- CU Research Project
- Electrification Briefing
- CSU Drone Center
- E-470 Mobility Improvements
- CDOT Aeronautics Division Updates

ATTACHMENT(S)

N/A

ADDITIONAL INFORMATION

For additional information, please contact Emily Lindsey, Transportation Technology Strategist, DRCOG at elindsey@drcog.org.

ADVANCED MOBILITY PARTNERSHIP

DATE: December 1, 2021
TO: AMP Executive Committee
FROM: Emily Lindsey, Transportation Technology Strategist, DRCOG
SUBJECT: AMP Activities and Related Projects
ACTION: Information

SUMMARY

Following the discussion at the March AMP Executive Committee meeting, staff continued work outlined in the AMP Next Steps document and completed activities on the AMP priority tactical actions. With recent staffing changes, staff is currently seeking a new lead for the Shared Mobility Focus area. The current lead/co-leads by focus area are:

- **Shared Mobility:** <currently seeking new leadership>
- **Data and Data Sharing** led by Ashley Nylen, CDOT and Emily Lindsey, DRCOG
- **System Operations** led by Greg MacKinnon, DRCOG

For detailed information about each tactical action, please see Attachment 1. At the December AMP Executive Committee meeting, staff leads for AMP and related activities will share information about recent efforts including:

- **AMP Data Workshop Debrief**
  Emily Lindsey, DRCOG
- **Reimagine RTD Update**
  Brian Welch, RTD

ATTACHMENT(S)

1. AMP Tactical Action Matrix – Status Updates November 2021

ADDITIONAL INFORMATION

For additional information, please contact Emily Lindsey, Transportation Technology Strategist, DRCOG at elindsey@drcog.org.

ADVANCED MOBILITY PARTNERSHIP

Mobility Choice Blueprint tactical actions to date

November 2021

Action ID	Tactical action	Description	Initiator	Status
1.1	Establish a Mobility Technology Advisory Committee.	Establish a committee that may include several functions, including: • Establish standards for public and private mobility data sharing to ensure interoperability among regional stakeholders. • Coordinate Pilot Projects conducted throughout the region to avoid duplication of efforts and share findings. • Provide guidance on best uses of available pooled funding across the agencies for coordinated technology Pilot Projects. • Coordinate agency staff resource sharing for technology-related projects. • Create a process to prioritize corridors for technology projects. • Develop partnerships with private sector providers to incentivize private ridesharing. • Identify costs and potential funding associated with retrofitting infrastructure to support and maintain emerging technologies such as connected vehicles, autonomous vehicles and sensor data collection. • Benefit from a broad membership beyond public agency representatives.	All groups	Developed the Advanced Mobility Partnership: • Kickoff in late 2019 with a memorandum of understanding signing and first executive committee meeting. • Monthly Advanced Mobility Partnership working group meetings beginning Jan 2020.
1.2	Establish a new public-private partnership mobility entity, or entities, to pursue mobility technology implementation.	Establish public-private partnership(s) to engage mobility technology innovators, coordinate and secure funding, identify projects and public partners, identify and implement pilot projects and simplify coordination with governments across the region. Desired characteristics of such an entity could include: • Nationally-recognized center of excellence for new mobility project deployment and commercialization. • Public and private sector participation/collaboration/ownership. • Not-for-profit status. • Physical presence of staff and office space. • Connection to Colorado Smart Cities Alliance and Colorado local governments. • Collaboration with Colorado universities and the National Renewal Energy Laboratory. • Governance of the organization is balanced between the public and private sectors.	All groups	No active efforts.

Action ID	Tactical action	Description	Initiator	Status
1.3	Engage university resources to establish technology mobility research and development.	Build capability around emerging mobility by partnering with a regional academic institution to establish a university research center to benefit from the U.S. Department of Transportation University Transportation Centers program that establishes and funds transportation research centers at host universities around the country.	Denver Regional Council of Governments	Continued conversations with the University Transportation Alliance for Colorado. Participation in the fall 2019 workshop was around urban freight. Partnering with the Harvard Kennedy School to conduct workshops for regional mobility data platforms. RTD pursuing a dynamic transit scheduling project with Colorado University Innovation Council. Regular university speakers are invited to Advanced Mobility Partnership working group meetings to present research and build cross-sector relationships.
1.4	Make Mobility as a Service available to all.	Offer Mobility as a Service to all travelers equitably by developing subsidies or policies through a public-private partnership. Mobility as a Service offers a single point of access through a subscription account to public and private mobility services through which users travel across various modes. Residents could choose from a selection of travel pass packages with different price structures for peak and off-peak travel — this may evolve from the universal mobility app described in Tactical Action 3.1.	Regional Transportation District	RTD implemented the Metro Taxi pilot program to enhance and improve FlexRide service in the Denver Tech Center area. RTD partnered with Uber Technologies to bring enhanced demand-response paratransit services. RTD partnered with DemandTrans to provide integrated trip planning and payment for FlexRide and fixed-route services.
1.5	Develop regional guidelines for drone delivery and drone passenger travel.	Convene a working group to develop a set of recommendations to prepare for managing short-range and low-altitude unmanned aerial vehicles (drones) for freight and, eventually, traveler transportation. This group could conduct an assessment to determine locations and conditions where services like automated parcel delivery would not pose a safety hazard.	Colorado Department of Transportation	No active efforts.
1.6	Establish a regional smart mobility navigator.	Establish a single point of contact for the region that will inform new mobility providers about common standards and guidelines for operating the shared services in the region. The navigator will also provide individual municipalities resources to begin negotiations and contracting with service providers.	DRCOG	DRCOG assisted municipalities with shared micromobility program deployment on data-sharing requirements and associated language for agreements; as-needed moving forward. Assistance includes: • Developing the Shared Micromobility in the Denver Region guide. • Continuing the partnership with Ride Report. • Ongoing membership in the Open Mobility Foundation — among others.
2.1	Evaluate technology upgrades and interoperability in projects in DRCOG's Transportation Improvement Program.	Incentivize local jurisdictions to include adaptable infrastructure and interoperable technology systems by creating a new project selection process criterion of the DRCOG Transportation Improvement Program.	DRCOG	Considered this as part of the Regional Transportation Operations and Technology TIP Set-Aside program.
2.2	Prepare for technology upgrades and interoperability in transportation construction projects.	Develop and recommend standards and best practices for new infrastructure installations of digital or electronic equipment along the roadside to be interoperable and capable of supporting future technologies.	CDOT, DRCOG	See Tactical Action 2.1.

Action ID	Tactical action	Description	Initiator	Status
2.3	Accelerate testing of bicycle and pedestrian detection on arterial roads.	Test and learn from multiple pilot projects of pedestrian and bicyclist detection — as new technology applications become available.	Local Jurisdictions	Denver and Aurora have embarked on bicycle detection projects funded through DRCOG's Regional Transportation Operations and Technology Set-Aside — detecting bicycles on cross-street approaches to bring up specific bike phases in the cycle. Denver, through Advanced Transportation and Congestion Management Technologies Deployment, is implementing sophisticated pedestrian crossings that automatically detect pedestrians approaching — and in the crosswalk — and activate notification systems for approaching vehicles.
2.4	Implement transit priority on all major bus corridors.	Develop policies and incentives to implement transit priority along all high-use bus corridors through tools such as transit signal priority, queue jumps, bypass lanes, bus bulb-outs and peak-hour exclusive bus lanes.	RTD	DRCOG identified priority corridors and funding for bus rapid transit implementation in the 2050 Metro Vision Regional Transportation Plan. Transportation safety planning projects are in place, or planned, for Federal Boulevard, Havana Street, E. Colfax and the City of Westminster. RTD completed a report on conditional transportation safety planning synthesis, operation review and design criteria. RTD was awarded two DRCOG Regional Transportation Operations and Technology Set-Aside funding grants to enhance an integrated transportation safety planning/transit real-time data sharing system and implement conditional transportation safety planning operations.
2.5	Implement traffic signal control technology on all major regional arterial corridors.	Implement technology that continually monitors and adjusts to traffic demands to optimize signal timing for prevailing conditions. To monitor effectiveness, evaluate according to Federal Highway Administration automated traffic signal performance measures.	DRCOG	Projects funded throughout the region through Regional Transportation Operations and Technology Set-Aside.
2.6	Pilot integrated corridor management on 10 arterial corridors.	Fund and implement 10 pilot projects on key Denver region corridors — using smart signal technology — as well as enhanced institutional coordination and operational adaptability using real-time information for all modes.	DRCOG	See Tactical Action 2.1.
2.7	Implement "smart corridor" operations on all regional freeways.	Implement adaptive ramp metering, variable speed limits and enhanced enforcement that use real-time traffic data to maximize capacity on the regional freeway system.	CDOT	No active efforts.
2.8	Coordinate traffic management centers systems and operations.	Integrate management, operations and center-to-center communications of the region's traffic management centers where real-time operational data is managed and processed to initiate control strategies and responses to incidents and provide information to the traveling public and media.	CDOT	The City and County of Denver, the City of Lakewood and CDOT are currently implementing traffic signal system integration. Additionally, the City of Centennial is leading a multijurisdictional team to integrate multiple traffic signal systems.
2.9	Pilot mobility technologies on mountain corridors.	Identify mobility technology pilot projects particularly well-suited to address and respond to the unique conditions of the Front Range's mountain corridors (I-70, US-285, US-6) and communities. The Front Range generates high demand on weekends and holidays to access the Rocky Mountains using a highway system often constrained by challenging topography and winter weather conditions.	CDOT	No active efforts.
2.10	Pilot modular lanes.	Conduct a pilot project to investigate the feasibility and required technologies to implement modular lanes. Modular lanes use technology to adjust lane width and usage at different times of the day or week.	CDOT	No active efforts.

Action ID	Tactical action	Description	Initiator	Status
3.1	Develop a universal mobility app for trip planning and payment.	Implement an account-based, multipurpose user-friendly mobility app accessible to all. The app would provide one-stop-shop access to trip planning, fare payment and vehicle arrival times across all mobility providers, public agencies (RTD and the E-470 Public Highway Authority) and private providers (Lyft, Uber, B-Cycle and others). Development of the app would require a vendor partner to integrate and market the branded regional app.	RTD	RTD and CDOT are concurrently exploring the development of universal trip planning and payment apps. Work is underway to unify trip planning and payment between RTD and Bustang. CDOT is working on the Connected Colorado project.
3.2	Adopt a regional compact defining common standards for micromobility services.	Adopt common standards and guidelines for micromobility services that address issues such as ensuring equitable access, data sharing requirements, protection of personal information and use of the public right-of-way (including shared mobility lanes and mobility hubs).	DRCOG	Convened the regional Micromobility Work Group in early 2019 to discuss regional best practices, and, where applicable, standards by policy area. Finalized state of the practice guidance document “Shared Micromobility in the Denver Region” which outlines regional and local components for implementation. DRCOG hosts a regional data-sharing platform for Mobility Data Specification/General Bikeshare Feed Specification data for entities throughout the region. Current participants include CDOT, RTD, DRCOG, the City and County of Denver, the Cities of Aurora, Boulder and Littleton
3.3	Develop incentives to improve ride-hailing and ridesharing operations.	Develop a suite of incentives encouraging ride-hailing services to integrate with the regional transit network, increase shared-ride pooling, provide services in mobility-challenged communities, minimize travel without a passenger, decrease idling time and improve the safety of passenger loading.	RTD, Local Jurisdictions	RTD has implemented a partnership with Uber to provide enhanced demand-response paratransit services.
3.4	Implement curbside management standards.	Implement standards for curbside passenger loading and freight delivery by developing policies and employing technologies to monitor, enforce and monetize curbside operations.	DRCOG, RTD	DRCOG awarded the Community Mobility Planning and Implementation Set-Aside project to evaluate and plan for curbside management in Boulder, potential transferability for other communities in the region. DRCOG participating in Open Mobility Foundation discussions around the development of a Curb Data Specification to digitize and manage the curb.
3.5	Pilot neighborhood-scale mobility hubs.	Conduct pilot projects of neighborhood mobility hubs at different scales in diverse locations — including mobility-challenged communities. Mobility hubs are nodes on the transportation network that connect many modes of transportation, such as transit, bike sharing, car sharing and other on-demand services.	DRCOG, RTD	DRCOG funded mobility hub projects and participated in Valverde Movement Project discussions around neighborhood scale mobility hub deployment.
3.6	Partner with the private sector to provide transportation in mobility-challenged communities.	Create partnerships with ride-hailing, microtransit and other providers to establish mobility services in areas that do not meet fixed-route bus service standards. Consider connections to and from elderly housing, low-income areas and human services facilities.	DRCOG, RTD	DRCOG funded mobility hub projects and participated in Valverde Movement Project discussions around neighborhood-scale mobility hub deployment.
3.7	Pilot smart parking at Park-n-Rides.	Fund and implement a smart parking system that could provide digital signage, dynamic pricing and real-time occupancy information. Conduct the pilot projects at congested park-n-rides on the RTD rail and Bus Rapid Transit system.	RTD	No active efforts.
4.1	Establish a regional mobility data platform.	Create a regional mobility data platform that houses transportation-related data from all transportation sources with access provided to all agencies. The platform consolidates archived and real-time data from multiple agencies and private providers into a single data repository. Implementation of the data platform will involve: • Establishing policy standards for data sharing between regional stakeholders for interoperability. • Establishing security standards for maintaining privacy and data anonymity. • Creating policies that will ensure the interoperability of infrastructure and software. • Developing open, machine-readable data publication from instrumented infrastructure. • Promoting the development of open, well-documented Application Program Interfaces.	All groups	Joined the Open Mobility Foundation and SAE International Mobility Data Collaborative to participate in national discussions with public and private sector partners on data standards, specifications, privacy, security, performance metrics, etc. Work ongoing through the Advanced Mobility Partnership led by CDOT and DRCOG currently underway.

Action ID	Tactical action	Description	Initiator	Status
4.2	Establish data sharing requirements for private-sector roadway users.	Establish standard data-sharing agreements that address travel use, privacy and data security with private sector mobility providers to be offered to municipalities and other public agencies in the region for negotiating and contracting.	DRCOG	DRCOG and partners currently piloting with shared micromobility.
5.1	Incentivize ride-hailing and ridesharing providers to use electric vehicles.	Develop a goal, create a policy and incentivize the deployment and use of electric and other zero-emission vehicles by ride-hailing providers.	DRCOG	Work ongoing through the Advanced Mobility Partnership led by CDOT and DRCOG.
5.2	Create an electrified mobility development program.	Identify regulatory hurdles and develop recommendations to encourage the adoption of electric vehicles by public and private fleets.	Chamber	No active efforts.
5.3	Transition government fleets to electric and other zero-emission vehicles.	Work with public agencies to create an aggressive and agreed-upon goal for converting a portion of their fleets into zero-emission vehicles. The goals may be tailored to fleet types, as well as available vehicle technology.	CDOT, DRCOG, RTD	Provided Transportation Improvement Program funding to Regional Air Quality Council for fleet conversion. The Clean Fleet Enterprise will help with this process. Reimagine RTD includes an exhaustive examination of a potential transition to zero-emission revenue vehicles. At the state level, SB21-230, Transfer To Colorado Energy Office Energy Fund, allocated $5 million for charging infrastructure across state agencies to support rapid electric vehicle adoption over the next five years. Xcel Energy is funding more than $100 million over the next three years to support transportation electrification and fleet coaching services to help public and private fleet owners plan for their transition.
6.1	Pilot driverless microtransit to increase public exposure to automated vehicle technology.	To ease the transition to a new mobility paradigm, conduct additional demonstrations of automated microtransit to increase First and Last Mile connections to FasTracks stations and create more opportunities for the general public to experience driverless vehicle technology firsthand.	RTD	The Mines Rover (EasyMile) automated shuttle demonstration project launched in August 2021 and is the largest of its kind in the U.S.
6.2	Minimize zero occupancies and encourage shared use of driverless automated vehicles.	Investigate and develop recommendations for policies to discourage zero-occupant trips. Also, develop a goal, create a policy and provide incentives to build a framework that encourages sharing rides in driverless, automated vehicles as they enter the regional market.	CDOT, DRCOG	Participation in SB19-239, Address Impacts Of Transportation Changes study.
6.3	Support legislative efforts to ensure that automated vehicles operate safely.	Develop recommendations for the state legislature on potential approaches to testing, licensing and regulating private and shared automated vehicles to ensure the safe operation of such vehicles in Colorado.	CDOT	No active efforts.
7.1	Expand DRCOG funding earmarked for a mobility technology innovation fund.	Expand upon the current funding set aside for mobility technology projects within the DRCOG Transportation Improvement Program.	DRCOG	In addition to the DRCOG Transportation Improvement Program Regional Transportation Operations and Technology set-aside program, upcoming Transportation Improvement Program policy discussions include a proposal for an innovative mobility set-aside to pursue pilot technology programs and projects.
7.2	Explore the concept of a road usage charge for Colorado.	Build on past CDOT studies to pilot systems, develop policies and formulate recommendations to the state legislature on the potential creation of a Road Usage Charge system that provides an alternative funding source for transportation.	CDOT	SB21-260, Sustainability Of The Transportation System, requires CDOT to conduct a study of road usage charge systems, barriers and examples from other states and present results to the state legislature in 2023.
7.3	Support legislative efforts to ensure driverless automated vehicles generate appropriate funding.	Develop recommendations for the state legislature on potential new user fees, registration fees or other appropriate revenue streams to prepare the region for the anticipated future deployment of private and shared driverless automated vehicles.	Denver Metro Chamber of Commerce	Similar to the previous note, SB21-260 requires CDOT to conduct a study of autonomous vehicle technology, including safety benefits/risks, legal issues and necessary transportation infrastructure upgrades.

ADVANCED MOBILITY PARTNERSHIP

DATE: December 1, 2021
TO: AMP Executive Committee
FROM: Emily Lindsey, Transportation Technology Strategist, DRCOG
SUBJECT: Other Partner Agency Projects
ACTION: Discussion

SUMMARY

There have been several major efforts that, while not directly associated with an AMP tactical action, are related to core work at the AMP partner agencies. There will be time at the AMP Executive Committee meeting in December to discuss other agency work as related, but not limited to topics such as:

a. ETRP Debrief
b. GHG Rule
c. Senate Bill 260
d. Federal Infrastructure Investment and Jobs Act
e. Pandemic response and recovery

Brian Welch, from RTD will facilitate the conversation.

ATTACHMENT(S)

N/A

ADDITIONAL INFORMATION

For additional information, please contact Emily Lindsey, Transportation Technology Strategist, DRCOG at elindsey@drcog.org.

ADVANCED MOBILITY PARTNERSHIP

DATE: December 1, 2021
TO: AMP Executive Committee
FROM: Emily Lindsey, Transportation Technology Strategist, DRCOG
SUBJECT: AMP Executive Committee 2022 Meeting Calendar
ACTION: Information

SUMMARY

The AMP Executive Committee meets quarterly on the first Wednesday from 2:00-3:00pm. The AMP Executive Committee meeting schedule for calendar year 2022 is as follows:

- March 2, 2022
- June 1, 2022
- September 7, 2022
- December 7, 2022

ATTACHMENT(S)

N/A

ADDITIONAL INFORMATION

For additional information, please contact Emily Lindsey, Transportation Technology Strategist, DRCOG at elindsey@drcog.org.