



MEMORANDUM

**TO:** THE TRANSPORTATION COMMISSION  
**FROM:** KAY KELLY, INTERIM DIRECTOR, INNOVATIVE MOBILITY  
**DATE:** OCTOBER 6, 2020  
**SUBJECT:** MOBILITY SYSTEMS COMMITTEE - OFFICE OF INNOVATIVE MOBILITY (OIM) FY21 BUDGET

**Purpose:** This memorandum provides an update on the state's draft greenhouse gas (GHG) roadmap study, reviews FY20 accomplishments from OIM and proposes an OIM budget for FY21.

**Action:** Updates on the state GHG roadmap process and FY20 OIM accomplishments are informational items. A vote on the proposed FY21 OIM budget is being requested for the November Commission meeting.

**Background:**

Colorado Greenhouse Gas Roadmap Process Update

The Colorado Energy Office has been leading an interagency GHG Roadmap process in response to HB19-1261, which established GHG reduction targets for the state. The roadmap process will culminate in a final report detailing the sector-specific recommendations to meet the statewide targets. A public comment draft of the roadmap was released on September 30, 2020, which outlined the following seven proposed near-term actions for the transportation sector:

- GHG pollution standards for transportation plans
- Trip reduction/Transportation Demand Management (TDM) requirements and encouraging telecommuting for large employers
- Clean trucking strategy including evaluation of Advanced Clean Truck Zero Emission Vehicle (ZEV) standards
- New revenue mechanism to fund infrastructure and incentives to transition to low and zero emissions cars, trucks and buses
- Incentives for land use decisions by local governments that reduce pollution and support greater access to housing near jobs.
- Indirect source standards for some types of new development.
- Expansion of public transit, including setting the stage for front range rail

Many of these recommendations directly align with the goals and objectives of OIM to reduce pollution in our air and congestion on our roads by expanding multimodal transportation options and using traditional and emerging mobility technologies. OIM addresses these topics through tools including mobile sources (vehicles), infrastructure (planning and projects) and human factors (behavior change).

FY20 OIM Accomplishments

OIM received \$10,444,835 in funds for FY20. These funds were allocated to projects in three categories:



- Mobility Services - exploring ways to make transportation efficient and more accessible to underserved populations by working with technology, legislation, and conducting research and analysis.
- Mobility Technologies - guiding Colorado's strategy and policy on connected, autonomous and emerging transportation technologies
- Electrification and Energy - working with partners across the public and private sectors to facilitate the expansion of both electric vehicles and infrastructure across Colorado.

Of this approved FY20 budget, \$2,966,000 has already been allocated to projects and, due to the OIM budget approval happening late in the fiscal year, \$3,800,000 is being rolled forward for approved projects. Several projects were unable to be executed as expected due to Covid-19 impacts and changing conditions. These funds (\$3,400,000) will require reprogramming and are part of the FY21 budget proposal. A portion of the FY20 budget (\$278,835) has been identified to balance the FY21 budget against reduced revenue and will be returned to the program reserve.

FY 20 Funds Available	\$10,444,835
Budgeted Projects	-\$2,966,000
Rolling Forward for Approved Projects	-\$3,800,000
Rolling Forward to be Reprogrammed	-\$3,400,000
Returned to Program Reserve	-\$278,835

**FY21 OIM Budget Proposal**

OIM has \$10,579,902 in FY21 funds available and \$9,900,000 in new projects are being proposed. This will leave \$679,902 remaining in program reserve to balance the FY21 budget against reduced revenue.

FY 21 Funds Available	\$10,579,902
Proposed Projects	-\$9,900,000
Returned to Program Reserve	-\$679,902

In addition to the \$9,900,000 in new projects, OIM will be requesting commission approval for \$3,400,000 in reprogrammed funds from FY20 to account for projects that were unable to be executed in FY20 due to changing conditions and Covid-19 impacts. The FY21 OIM budget is being proposed in the three program areas as follows:

*Mobility Services:* The major project areas of Emerging Mobility and Mobility Data Integration are requested to continue into FY21 with comparable budgets to FY20. The Active Traffic Management System (ATMS) is a continuation of work started in FY20 with DMO and Strategic TDM is a modification to the existing TDM project area in support of complementary CDOT priorities.

- Emerging Mobility includes tools to make emerging mobility more sustainable, projects that address first and last mile delivery, transportation network company strategies and micromobility efforts.



- Mobility Data Integration includes data, payment and software tools and is closely linked to the Connected Colorado effort.
- ATMS is the fulfillment of OIM’s commitment to supporting the ATMS project. OIM is requesting to contribute \$1M in FY20 reprogrammed funds and an additional \$500,000 in FY21 funds.
- Strategic TDM encompasses traditional TDM activities including working with the TMOs/TMAs, supporting CDOT employee TDM and enabling micromobility/bike/pedestrian safety, along with an expansion of efforts to support targeted TDM activities in priority areas identified by CDOT through the 1601 process. This area includes \$2,100,000 in reprogrammed FY20 funds.

*Mobility Technology:* The Connected Vehicles project was discussed and approved by the Commission in March 2020. It does not require a Commission vote; however, it is included here to give the Commission the full picture of the FY21 OIM budget.

*Electrification and Energy:* This area continues to focus on supporting electrification of fleets and providing grants to support use-case specific charging opportunities. In FY21, funds are also requested to be allocated toward fulfilling the objectives of the state medium- and heavy-duty (MHD) vehicle electrification efforts, including support for transit electrification and workforce training.

- MHD Vehicle Electrification - In prior years, OIM has supported light duty electrification efforts through partnership with the Colorado Energy Office (CEO) and the Regional Air Quality Council (RAQC). With a forthcoming MHD vehicle strategy and in support of the state’s Clean Trucking Strategy, FY21 funds are requested to support fleet turnover in the MHD sector.
- Use-Case Specific Grant Offerings to Target Charging Opportunities - In prior years, OIM has also supported interagency collaboration to expand electric vehicle charging opportunities across the state. This work is requested to continue and includes continued support for use-case specific grants to close gaps in charging corridors.
- Support Transit Electrification - This includes on-going efforts to support transit agencies as they transition to zero emission vehicles including planning grants, guidebooks for transit electrification, partnerships with the Colorado Association of Transit Agencies (CASTA) for education opportunities, exploration of innovative financing options and development of a roadmap to achieve 100% ZEV transit vehicles in alignment with the state EV plan. This area includes \$300,000 in reprogrammed FY20 funds.
- Workforce Training for MHD Electrification - Also in support of the state Clean Trucking Strategy, funds are being requested to develop workforce training to ensure technicians are ready to service ZEVs as they enter the Colorado market.

Program Area	Projects Included	FY20 Reprogrammed Funds Request	FY21 Budget Request
Mobility Services	Emerging Mobility, Mobility Data Integration, Strategic TDM, ATMS	\$3,100,000	\$4,400,000
Mobility Technology	Connected Vehicles (already approved)		\$1,000,000
Electrification and Energy	Transit Electrification, MHD Electrification, Workforce Training for MHD Electrification, Use Case Specific Grants to Target Charging Opportunities	\$300,000	\$4,500,000
	<b>OIM FY21 Budget Total</b>	<b>\$3,400,000</b>	<b>\$9,900,000</b>

**Next Steps:** A vote on the proposed FY21 OIM budget is requested for the November Commission meeting.



**Attachments:** Attachment A - Presentation





**COLORADO**

Department of Transportation

# Office of Innovative Mobility: Greenhouse Gas Strategy, FY20 Project Review & FY21 Budget Proposal

October 14, 2020

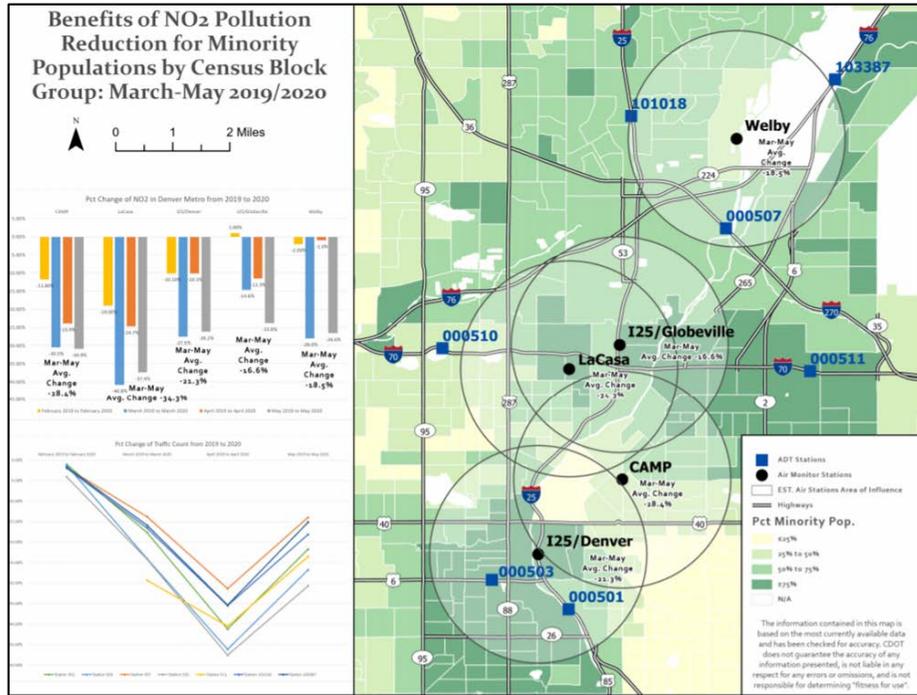


# Greenhouse Gas Emission Reduction Strategy

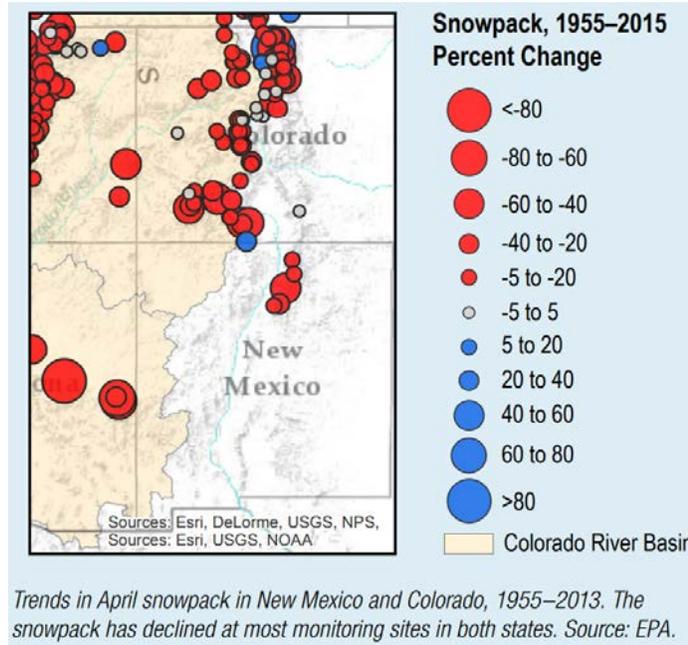


# Reminder: Why are we doing this?

*Climate change is already impacting Colorado's way of life, outdoor recreation industry and the resilience of our transportation infrastructure.*



*Poor air quality impacts low-income and environment justice communities disproportionately*



*Trends in April snowpack in New Mexico and Colorado, 1955–2013. The snowpack has declined at most monitoring sites in both states. Source: EPA.*



Orjan F. Ellingvag / Dagens Naringsliv / Corbis via Getty Images

A RIVER RUNS THROUGH ITSELF

**40 million Americans depend on the Colorado River. It's drying up.**

By Eric Holthaus on Dec 13, 2018



# TC discussions to implement GHG strategy

- July: Initial TC feedback on available tools
  - Launched clean trucking strategy, including ongoing outreach through October
  - Hosted internal GHG workshop (70+ CDOT staff participated)
- August: Focused discussion on near-term actions
  - Regional Air Quality Commission adoption of an Ozone State Implementation Plan (SIP) for serious nonattainment status. Strategies for this SIP (and possible Severe SIP) have GHG co-benefits
  - Posted new GHG environmental specialist position (modeling and technical capability)
- September: Workshop to update mobility measures within PD 14
  - Finalized first Draft of GHG Roadmap report with other agencies (issued for public comment on 9/30)
- October: Workshop on FY21 OIM budget
- November/December: Vote on remaining policy or budget decisions
  - STAC Workshop to update PD 1601 with TDM Measures
- December/January: Workshop to update PD 1601 with TDM Measures



# Proposed Near-Term Transportation Actions included in the CO GHG Roadmap Draft

- GHG pollution standards for transportation plans
- Trip reduction/TDM requirements and encouraging telecommuting for large employers
- Clean trucking strategy including evaluation of Advanced Clean Truck ZEV standards
- New revenue mechanism to fund infrastructure and incentives to transition to low and zero emissions cars, trucks and buses
- Incentives for land use decisions by local governments that reduce pollution and support greater access to housing near jobs.
- Indirect source standards for some types of new development.
- Expansion of public transit, including setting the stage for Front Range Rail



# Tools to achieve these goals

## Mobile sources (vehicles)



Potential action steps include:

- New regulatory actions
- Charging infrastructure
- Consumer education
- Fleet replacements

Mobility Services

Mobility Technology

Electrification and Energy

## Infrastructure (planning and projects)



Potential action steps include:

- GHG conformity budgets
- NEPA processes
- Green construction
- Multimodal funding
- Land use

Mobility Services

Mobility Technology

## Human factors (behavior change)



Potential action steps include:

- Managed lanes/pricing strategies
- Voluntary/mandatory TDM (marketing and tools to support mobility options)

Mobility Services



# FY20 OIM Project Review



# Office of Innovative Mobility



OIM activities add onto DTR projects with the areas at right. DTR projects funds come from FTA, state FASTER Funds, and SB 267 funds

## Mobile Sources

- Fleet Turnover
- Develop ZEV Infra.
- Green Procurement

## Infrastructure

- Multimodal Funding
- Land Use

## Human Factors

- TDM

## Mobile Sources

- Exploring New Business Models

## Infrastructure

- Study New Technologies

## Mobile Sources

- Fleet Turnover
- Develop ZEV Infra.
- Workforce Training
- Green Procurement

All offices support blended team for Front Range Passenger Rail



# Mobility Services - FY20

Program/Project	Project Description	Status
<b>Emerging Mobility</b>	SB 19-239 Study	Analysis and Report Complete
	Ride-hailing and urban delivery data collection, pilots and research	Covid-impacted (\$1,000,000 to be reprogrammed)
<b>Mobility Data Integration</b>	Data, Payment and Software Tools	Incorporating into Connected Colorado project to streamline trip planning and ticketing across transit systems
	Pilots for non-emergency medical and/or rural transport	OIM did not have capacity to execute in FY20 (\$100,000 to be reprogrammed)
<b>Transportation Demand Management</b>	Grants to TMAs	CanDo Colorado Telework grant program in response to Covid
	I-70 Coalition	Complete, Future support by Region 1
	CDOT Employee TDM	Support for CDOT employee telework
	ITS Integration with Park and Rides	On hold, too early to implement
	Bustang, Vanpool and Carpool Support	Covid-impacted (\$1,000,000 to be reprogrammed)
	Micromobility Bike/Ped Safety	To be incorporated into statewide plan survey



Mobility Services explores ways to make transportation efficient and more accessible to underserved populations by working with technology, legislation, and conducting research and analysis.



# Mobility Technology - FY20

The Mobility Technology program focuses on guiding Colorado's strategy and policy on connected, autonomous and emerging transportation technologies.



Program/Project	Project Description	Status
Automated Vehicles	Develop strategy for autonomous vehicle deployments in Colorado, including future of Autonomous Mobility Task Force, standards, and interoperability; CAV challenge, data templates	<ul style="list-style-type: none"> <li>Automation strategy drafted and being refined</li> <li>Continue to Chair the Autonomous Mobility Task Force</li> <li>Lead member on the Advanced Mobility Partnership - supports data standards/templates and interoperability</li> <li>CAV Data University Challenge Scope drafted and working with procurement. Received match grant from CDOT Research Branch</li> <li>Supporting autonomous truck mounted attenuator program at CDOT</li> </ul>
	CDOT Equipment Automation	<ul style="list-style-type: none"> <li>Bustang automation efforts on hold (<i>\$1,000,000 to be reprogrammed</i>)</li> </ul>
Connected Vehicles	Utilize existing infrastructure and start to learn from data collection so we are ready as the technology evolves	<ul style="list-style-type: none"> <li>Deployed USDOT open source software</li> <li>Increasing staff capacity utilizing the OSS, connecting existing RSUs, while planning for migration</li> <li>Closely aligned with other units (ITS, CDO, etc) given the ecosystem future state into Google Cloud and with CDOT's other future digital assets</li> <li>Completed and distributed Connected Vehicle Systems Engineering Analysis (completed in-house) - laying the existing and future states and requirements of the Colorado CV program</li> </ul>

## Program FY20 Highlights:

- Onboarding of software developer interns that build the CV digital assets
- CDOT asked to chair the Partners for Automated Vehicles Public Sector Advisory Board
- Participated in several NCHRP research studies as a stakeholder
- Submission of Work Zone Data Exchange Demonstration grant with Traffic and Safety Branch
- Building Smart Work Data Roadmap and Feed



# Electrification and Energy - FY20

The Electrification group works with partners across the public and private sectors to facilitate the expansion of both electric vehicles and infrastructure across Colorado.

Program/ Project	Project Description	Status
<b>Electrification and Energy</b>	Draft and implement CDOT's Clean Transportation Plan, building on existing strategies to support sustainable transportation	Plan to be drafted using internal resources (\$300,000 to be reprogrammed)
	Support Light-Duty ZEV Adoption	Ride & Drive event work postponed due to COVID, current focus on developing education and outreach materials in partnership with CEO and other key stakeholders.
	Support Transit Electrification	Developing statewide roadmap for accomplishing transit electrification goals from 2020 EV Plan.
	Use Case Specific Grants to Target Charging Opportunities	Ongoing collaboration with CEO, CTO, and others to fund EV charging along scenic byways, state parks, and rural tourist destinations
	Charging Equipment to Electrify Bustang and CDOT Properties	Providing guidance to CDOT mobility hub project teams, light duty fleet manager, and facilities team to support EV charging installation
	Educating first responders;. Fund mobile charging for motor safety patrol and/or mobile solar stations	Hosted a breakout session at the Traffic Incident Management conference to identify opportunities for future training and support





# FY20 Budget Status

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# FY21 OIM Budget Proposal



# Mobility Services - FY21

Program	Projects	FY20 Reprogrammed Funds Request	FY21 Budget Request
<b>Emerging Mobility</b>	Tools to make emerging mobility more sustainable; First and last mile delivery; TNCs; Statewide Guide to Implement Micromobility		\$500,000
<b>Mobility Data Integration</b>	Rural Transit Data Integration with CDOT Connected Colorado: Create software for trip planning, coordinated dispatch and universal one-click ticketing.		\$400,000
<b>Strategic TDM</b>	On-going traditional TDM efforts (working with the TMOs/TMAs, supporting CDOT employee TDM and enabling micromobility/bike/pedestrian safety); Support for TDM priority areas identified by CDOT (1601, Mobility Hubs, etc.)	\$2,100,000	\$3,000,000
<b>Active Traffic Management System (ATMS)</b>	Joint project with DMO discussed with commission in March	\$1,000,000	\$500,000
<b>Mobility Services Subtotal</b>		<b>\$3,100,000</b>	<b>\$4,400,000</b>



# Mobility Technology - FY21

Program/Project	Project Description	FY20 Reprogrammed Funds Request	FY21 Budget Request
<b>Connected Vehicles</b> (already approved)	Utilize existing infrastructure and start to learn from data collection so we are ready as the technology evolves		\$1,000,000
	<b>Mobility Technology Subtotal</b>		<b>\$1,000,000</b>



# Electrification and Energy - FY21

Program/Project	Project Description	FY20 Reprogrammed Funds Request	FY21 Budget Request
<b>Support Transit Electrification</b>	Statewide transit ZEV planning; Support fleet turnover; planning grants; draft guidebook for transit electrification; utilize CASTA conferences for education opportunities; explore innovative financing options	\$300,000	\$1,000,000
<b>Support Medium- and Heavy-Duty Electrification</b>	Provide funds to support fleet turnover and recommended outcomes from the CEO Medium and Heavy Duty vehicle analysis study and the Colorado Clean Trucking Strategy		\$1,500,000
<b>Workforce Development for MHD Electrification</b>	Provide funds to support recommended outcomes for vocational education and workforce training from the CEO Medium and Heavy Duty vehicle analysis study		\$500,000
<b>Use Case Specific Grants to Target Charging Opportunities</b>	Utilize existing CEO grant programs to address specific charging gaps (Multi-Family Housing, TNCs, Scenic Byways, Freight hubs, etc.)		\$1,500,000
	<b>Electrification and Energy Subtotal</b>	<b>\$300,000</b>	<b>\$4,500,000</b>



# FY21 Budget Request

Program Area	Projects Included	FY20 Reprogrammed Funds Request	FY21 Budget Request
<b>Mobility Services</b>	Emerging Mobility, Mobility Data Integration, Strategic TDM, ATMS	\$3,100,000	\$4,400,000
<b>Mobility Technology</b>	Connected Vehicles <b>(already approved)</b>		\$1,000,000
<b>Electrification and Energy</b>	Transit Electrification, MHD Electrification, Workforce Training for MHD Electrification, Use Case Specific Grants to Target Charging Opportunities	\$300,000	\$4,500,000
	<b>OIM FY21 Budget Total</b>	<b>\$3,400,000</b>	<b>\$9,900,000</b>

FY 21 Funds Available	\$10,579,902
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# Questions/Discussion

