

Biannual Greenhouse Gas Emissions Reductions Implementation Report



Report Pursuant to Executive Order B 2021 01 | December 2021

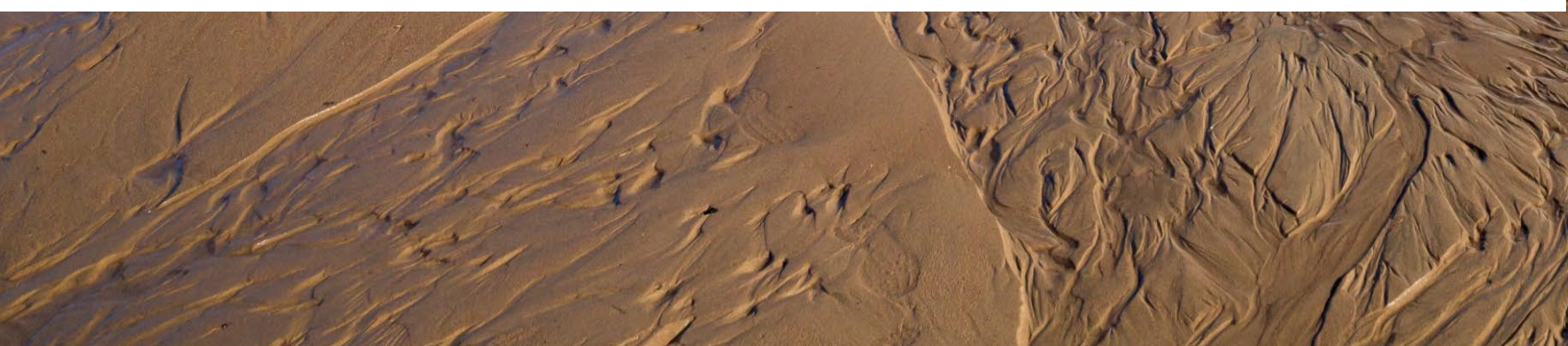


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Overview and Summary

The Governor signed an executive order directing the Executive Directors of the Colorado Energy Office (CEO), Colorado Department of Public Health and Environment (CDPHE), Department of Natural Resources (DNR), Colorado Department of Agriculture (CDA), and Colorado Department of Transportation (CDOT) to submit a bi-annual report to the Governor. This report outlines opportunities State Agencies may pursue to further the new policies enacted in the 2021 legislative session and to accelerate our State's progress towards the State's Greenhouse Gas Pollution Reduction Roadmap.

The State has made significant progress on the actions identified in the Roadmap since it was released on January 14, 2021. The Roadmap includes sectoral emissions reduction targets for 2025 and 2030, and a suite of near term actions to achieve these targets. In particular, State agencies have followed the Near Term Actions identified in the roadmap. This comprehensive set of actionable strategies were chosen not only to meet the established goals, but also to keep environmental justice and equity considerations at the center, reduce local air pollution, generate economic growth, ensure a just transition to clean energy, and create high-quality jobs. Agencies track the State's progress on these actions as part of the Governor's Bold Four goals including setting Colorado on a path to 100% renewable electricity by 2040 and positioning Colorado as a leader in the clean energy economy. On a quarterly basis, State agencies report the percentage of Near Term Actions on track under this Wildly Important Goal, with the objective of taking action of at least 90% of the actions identified in the Roadmap. To date, the State is on track for 93% of Near Term Actions.

As modeled in the Roadmap, these actions - including policies and programs - will propel the State to accomplish a 50% reduction in greenhouse gas emissions by 2030, all while improving air quality, advancing equity, and reducing energy costs for Coloradans. While on track, the State has much remaining work. The sections below not only identify progress made to date, but also discuss additional actions in development and outline opportunities to further the State's goals. In addition, this report briefly outlines the Governor's Proposed fiscal year 2022-23 budget which includes over half a billion dollars of one-time investments in air quality and climate action that build on the substantial work the State has done to date.

Table 1 highlights near term actions identified in the Greenhouse Gas Pollution Reduction Roadmap that are completed or underway. Additional actions that are not included in the table are discussed throughout this report.

Table 1. Near Term Actions Identified in Greenhouse Gas Pollution Reduction Roadmap: Completed or underway actions in Green.

	Fall/Winter 2020	Spring 2021	Summer 2021	Fall 2021	Winter 2021	2022
Public Utility Commission	Tri-State electric resource plan	Xcel Energy electric resource plan & clean energy plan	Xcel renewable energy plan			
	Xcel Energy transportation electrification plan	Black Hills transportation electrification plan	Black Hills Energy efficiency plan			
			Black Hills Energy renewable energy plan			
Air Quality Control Commission	Regional haze rules phase 1		Transportation emission rules (GHG standards for transportation plans, moved to Transportation Commission for adoption)	Greenhouse gas emission reduction progress evaluation Regional haze rules phase 2	Oil and gas emission reduction rules	Next round, transportation emission rules (Advanced Clean Trucks)
	Ozone Plan	Stakeholder processes for transportation, industrial, oil and gas rules		Greenhouse Gas Emissions and Energy Management for Manufacturing Rule I	Structures/building emission reduction rules	Greenhouse Gas Emissions and Energy Management for Manufacturing Rule II
	Oil and gas well monitoring rules					
	Outreach on 2021 oil and gas rules					
Colorado Oil and Gas Conservation Commission	200 Series - general and record keeping			Greenhouse gas emission reduction progress evaluation in coordination with CDPHE		
	300 Series - permitting process					
	400 Series - operational practices					
	500 Series - hearing process					
	600 Series - safety (and residential setbacks)					
	800 Series - underground injection control wells					
	900 Series - environmental & E&P waste management					
	1200 Series - wildlife (and riparian setbacks)					
		Financial assurance rulemaking (bonding)				Financial assurance rulemaking (bonding) completed
						Imposing permit fee; and requiring

	Fall/Winter 2020	Spring 2021	Summer 2021	Fall 2021	Winter 2021	2022
						worker certification (these three topics complete mandatory SB 19-181 rulemakings)
Other State Agency Actions	Clean trucking strategy initiated	Electric vehicle equity plan initiated	Clean trucking technical analysis completed	Natural and working lands task force pathways analysis completed	Draft natural and working lands strategic plan completed	Administrative and legislative action items from land use study
	Just transition plan finalized	Convene taskforce on Carbon Capture, Utilization and Storage (CCUS)	Begin smart land use stakeholder process and study	CDOT Transportation Commission GHG Pollution Reduction for Transportation Planning Rulemaking		
	Draft Climate equity framework completed				Climate equity framework completed	
Legislation		<ul style="list-style-type: none"> • Fund infrastructure and incentives to transition to low and zero emissions cars, trucks and buses • Buildings & Gas Utilities <ul style="list-style-type: none"> • Set carbon reduction targets for gas utilities • Set Biogas requirements for gas utilities • Require existing large commercial buildings to track energy use and make progress toward energy and pollution performance standards • Require regulated electric utilities to create programs that support beneficial electrification • Expand energy efficiency investments from gas utilities • Governor's Proposed FY 21-22 Budget <ul style="list-style-type: none"> • Fund Clean Energy Finance - \$40 M • Fund wildfire relief, mitigation and prevention - \$78 M • Support local government investment in renewables and Efficiency - \$5 M • Create Climate Resilience Office at the CO Department of Agriculture • Build capacity of Colorado's Office of Just Transition 				

List of Abbreviations

Departments/Regulatory Bodies

AQCC	Air Quality Control Commission
CDA	Colorado Department of Agriculture
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CEO	Colorado Energy Office
COGCC	Colorado Oil and Gas Conservation Commission
CTO	Colorado Tourism Office
DNR	Department of Natural Resources
DOLA	Department of Local Affairs
OEDIT	Office of Economic Development and International Trade
PUC	Public Utilities Commission
RAQC	Regional Air Quality Council

Other Terms

ACRE3	Advancing Colorado's Renewable Energy and Energy Efficiency Program
ACT	Advanced Clean Truck
CCUS	Carbon Capture, Utilization, and Storage
CO2	Carbon Dioxide
CO2e	Carbon Dioxide Equivalent
CEP	Clean Energy Plan
DCFC	Direct Current Fast Charge
EV	Electric Vehicle
GHG	Greenhouse Gas
HFC	Hydrofluorocarbons
M/HD	Medium- and Heavy-Duty
MMT	Million Metric Tons
NOx	Nitrogen Oxides
PM	Particulate Matter
SIP	State Implementation Plan
TDM	Transportation Demand Management
TEP	Transportation Electrification Plan
ZEV	Zero Emission Vehicle

Electric Utility Sector

Clean Energy Plans and Voluntary Fossil-Plant Retirements

In 2019, utilities that operate more than 99% of the fossil generation in Colorado committed to meet at least an 80% greenhouse gas (GHG) emissions reduction by 2030. That commitment was codified for Xcel Energy in Senate Bill 19-236, which introduced the requirement to file a Clean Energy Plan (CEP). The requirement for the other utilities to create a CEP was codified in HB 21-1266. Right now, Xcel Energy’s CEP is before the Colorado Public Utilities Commission (PUC). While Xcel initially filed a plan that achieves an 84% reduction in GHGs, many parties to the docket, including Xcel, CEO, the staff of the PUC, the Utility Consumer Advocate, labor representatives, and the cities of Boulder, Denver and Pueblo have signed on to a settlement that would achieve an 85-87% reduction by 2030, and early reductions starting in 2022, if approved by the PUC. The settlement would also result in Xcel meeting energy needs with 85% renewable energy by 2030. Looking forward, the PUC is just beginning the process of evaluating Tri-State’s Responsible Energy Plan, which proposes an 80% GHG reduction. Black Hills Electric will file its CEP in the spring of 2022.



Figure 1. Status of Utility GHG Reduction Plans

Regional Haze Rule

The federal Regional Haze Rule directs states and federal agencies to work together to improve air quality in national parks and class 1 wilderness areas. Over the past 2 years Colorado updated its Regional Haze State Implementation Plan (SIP) for the second round of 10-year planning. The SIP updates incorporate the closure and fuel switching of coal-fired generating units in Colorado. Adopted in December 2021, the Commission’s actions make voluntary closures and closures approved by the PUC as part of electric resource plans or clean energy plans federally enforceable by incorporating

them in the SIP, upon EPA approval. As a result of these revolutionary changes in how we generate electricity in Colorado the state will achieve massive reductions in GHG emissions from this critical sector over the next decade and beyond. Additional information is available on the Division’s [Regional Haze website](#).

Transportation Sector

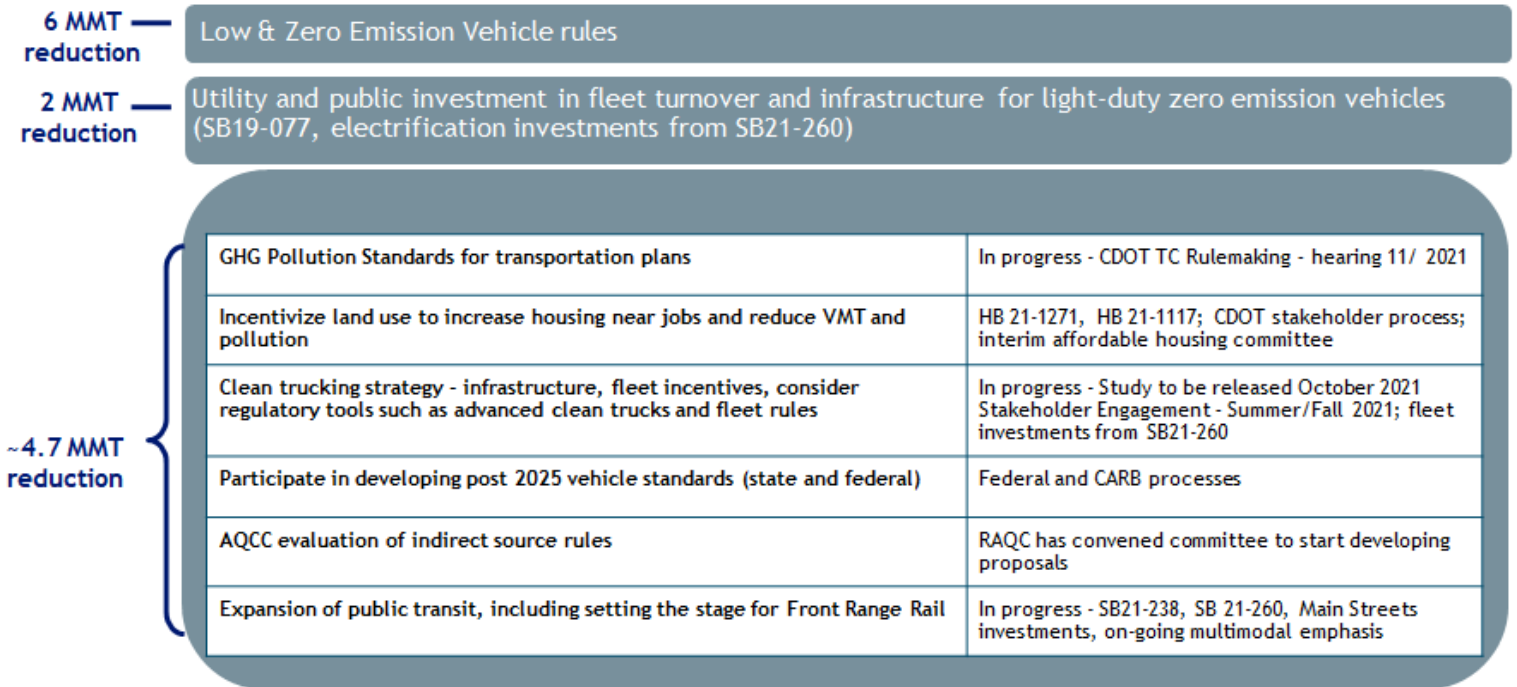


Figure 2. Summary of expected GHG emission reduction by 2030 attributable to various transportation emissions reduction strategies, with a target of 12.7 MMT reduction by 2030

Zero Emission Vehicles

SB21-260 Transportation Electrification Enterprises

In spring 2021, Governor Polis signed SB21-260 “Sustainability of the Transportation System” which, among other elements, established three new state enterprises focused on transportation electrification in an effort to reduce emissions while also improving local air quality. Each of these entities is funded by new fee revenues (including retail delivery fees and transportation network company fees) and each will be managed by an appointed Board that will allocate and prioritize funding across eligible projects and programs.

- The Community Access Enterprise will have an estimated \$310 million over ten years to support charging infrastructure and equity

programs;

- The Clean Fleet Enterprise will invest an estimated \$289 million to support public and commercial fleet vehicle electrification, and;
- The Clean Transit Enterprise will fund an estimated \$134 million in transit vehicle, charging, planning, and infrastructure grants over the coming decade. The governor has appointed all three boards, which have begun the process to develop their 10-year investment plans; fees will begin to be collected and programs started in July 2022.

Charge Ahead Colorado

Charge Ahead Colorado provides grant funding for Level 2 and Direct Current Fast Charge (DCFC) charging stations throughout Colorado via several competitive application rounds per

year, with every grant covering 80% of the cost of a charging station (up to a set maximum per charger type). The Charge Ahead grants fund stations at diverse locations including multi-family housing, workplaces, local governments, utilities, convenience stores, amongst many others. To date, the program has funded over 1,500 stations statewide.

Alt Fuels Colorado Corridor Program

The Corridor program is funding DCFC stations at 34 sites along Colorado’s major corridors in an effort to enable statewide travel in electric vehicles. These 34 sites are developed in partnership with ChargePoint and site hosts such as local governments, utilities and private companies.

Alt Fuels Colorado DCFC Plazas Program

The DCFC Plazas program funds DCFC stations throughout Colorado. During the first two competitive application rounds, the program focused on funding projects located in the Denver Metro Area. It recently has evolved to fund locations statewide and to complement the Corridor program in fully developing the statewide DCFC infrastructure required to meet our ambitious electrification goals. The DCFC Plazas program will offer funding on an ongoing basis to ensure robust EV infrastructure throughout the state including the Denver Metro Area, Front Range, and rural communities.

Electrified Scenic Byways Program

Beginning in 2019, the Colorado Energy Office, Colorado Department of Transportation, and Colorado Tourism Office (CTO) collaborated to develop a set of criteria to define EV-friendly Scenic and Historic Byways and work with the tourism community to build awareness and drive applications to existing grant programs. As of November 2021, eight of the state’s 26 Scenic and Historic Byways are considered “electrified” based on proximity to corridor DC fast-charging and destination Level 2 charging, and several more are in-progress. The CTO is

currently in the process of developing promotional materials to boost national awareness of the program and help visitors plan their electric road trips.

100% Light-Duty Electrification Roadmap

This Roadmap will analyze policies, programs, incentives, and actions the state could adopt or undertake and their various implications, costs, benefits, and timeframes. This analysis will then be used to develop the Roadmap (with stakeholder input) that meets the vision in Colorado’s 2020 EV Plan of 100% electrification of the light-duty sector.

Colorado Electric Vehicle Equity Study

The objectives of this study are to baseline, define, and map marginalized, minority, and frontline Colorado communities (“EV equity communities”) which are or may be disproportionately affected by transportation pollution and/or experience barriers preventing them from equitably accessing electric transportation or the benefits of transportation electrification. Transportation air pollution, including medium- and heavy- duty vehicle emission impacts, will be evaluated and summarized graphically through mapping. Barriers (i.e., economic, infrastructure, and social) to EV adoption and strategies to remove or overcome these barriers will be examined.

Criteria to evaluate and prioritize potential programming in these communities will also be developed. The outputs from this study will provide information and tools to help guide how to develop, prioritize, and locate policies and programs enabling all Coloradans to equitably access the benefits of vehicle electrification. As a final step, the study will use the tools to evaluate and provide EV equity recommendations on state programming that provide funding and support for the electrification of transportation.

Low-Carbon Hydrogen Roadmap

The Colorado Low-Carbon Hydrogen Roadmap identifies opportunities, barriers, and recommended actions for the deployment of low-carbon hydrogen in the State of Colorado over the next fifteen years. The roadmap and its recommendations were developed through conversations with state agencies in Colorado, a range of hydrogen experts and hydrogen stakeholders, and research into the state of the hydrogen market today.

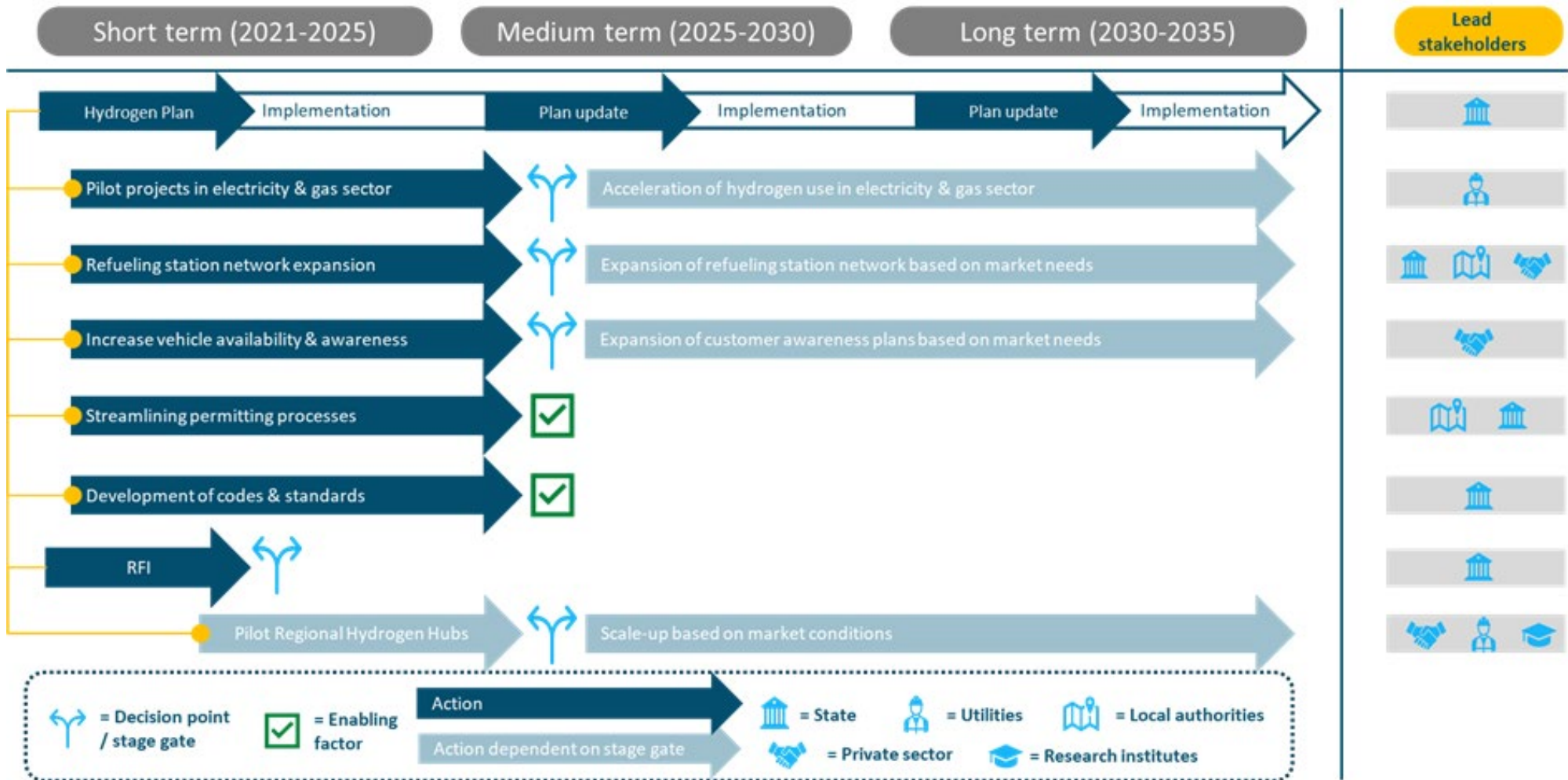


Figure 3. Roadmap towards accelerated low-carbon hydrogen deployment in Colorado

Clean Truck Strategy, Advanced Clean Truck Rule, and Fleet Rules

The Colorado Clean Truck Strategy began development in 2020 with Governor Polis' signing of a multi-state Memorandum of Understanding (MOU) to collaboratively advance the market for zero-emission trucks and buses, followed by a series of public stakeholder meetings to identify challenges and opportunities for reducing emissions in the medium- and heavy-duty transportation sector. In 2021, CEO, CDPHE, and CDOT collaborated on a Medium- and Heavy-Duty (M/HD) Vehicle Study to analyze the costs and benefits associated with several regulatory and investment scenarios to address this market. Modeling completed for the M/HD Vehicle Study found that if the State of Colorado pursues strategies that support an accelerated transition to M/HD ZEV, it could reduce the state's M/HD emissions by 45-59%, nitrous oxide (NOx) emissions 54-93%, and particulate matter (PM) emissions 53-68% annually by 2050 from a baseline scenario. The modeling also projects significant health benefits in the form of reduced asthma cases, hospital visits, and premature mortality from these reductions, particularly in low-income communities and communities of color.

A key component of the Clean Truck Strategy is deciding whether or not Colorado should adopt the Advanced Clean Truck (ACT) rule and the Low NOx Omnibus rule, which are actions that would send a clear signal to manufacturers to grow and scale the market for clean trucks. Adopted by the California Air Resources Board (CARB) in June of 2020, ACT requires manufacturers to sell an increasing percentage of M/HD ZEVs each year beginning in model year 2024. The Low NOx Omnibus rule would require manufacturers to comply with tougher emissions standards, overhaul engine testing procedures, and further extend engine warranties. It would reduce NOx emissions per non-ZEV new vehicle sold by 75% below current standards in 2024 and 90% below current standards in 2027. Under the Clean Air Act, other states like Colorado may adopt these standards; they would then go into effect in the state a minimum of two years after adoption (model year 2026 for Colorado). Combined with the other actions outlined in the Clean Truck Strategy, these rules will help ensure adequate supply and economies of scale to bring M/HD ZEV vehicle purchase costs into parity with traditional technologies. There is currently a placeholder on the AQCC long-range calendar for a notice of proposed rulemaking on ACT and the Low NOx Omnibus rule in April 2022.

Transit Zero-Emission Vehicle Roadmap

The goal of the Colorado Transit Zero-Emission Vehicle (ZEV) Roadmap is to identify the strategies, policies, and funding levels necessary to achieve the state's goal of 1,000 transit ZEVs on the road by 2030 and a 100% ZEV transit fleet by 2050. Over the course of 2021, CDOT staff engaged with transit agencies, local governments, utilities, and industry stakeholders to conduct an inventory of the current state fleet make-up, identify the challenges and opportunities presented by transit electrification, and recommend future actions necessary to achieve the numerical targets established in the 2020 Colorado EV Plan. The final Roadmap will be released in January 2022 and implementation will begin in 2022.

Transportation Electrification Plans

Senate Bill 19-077 allows utilities to invest in EV infrastructure and requires each investor-owned utility to file a transportation electrification plan (TEP) that supports widespread electrification every three years. Plans can include utility- or customer-owned charging, make-ready infrastructure, customer rebates, education, and promotion. Xcel's first plan was approved in January to invest roughly \$105 million over three years, with 15% of the budget focused on equity programs, specifically expansion of EV infrastructure for income qualified customers and in disproportionately impacted communities. The plan also includes \$5 million for income-qualified EV rebates; support for residential, workplace, and multifamily charging; and \$2.2 million for electric school buses. Black Hills filed its TEP on May 8, 2020

as required by statute. Because of its smaller size compared to Public Service, Black Hills proposed an overall smaller budget, though one that was roughly commensurate with its size. Parties to the proceeding agreed to a partial settlement that increased the scope programs. In November, the PUC issued its final decision approving Black Hills TEP approving a budget above that Black Hills had initially proposed. The overall Commission approved an overall budget of roughly \$500,000. As part of that, the PUC approved an Equity EV Purchase Rebate program with a budget of \$100,000 that will provide an upfront \$5,500 rebate for new vehicles and \$3,000 for used vehicles. In adopting this program the PUC noted, “that SB 19-077 emphasizes environmental benefits and access for income-qualified customers as objectives of a utility’s TEP, we conclude that this additional income-qualified program is reasonable and consistent with the statutory directives.”¹

Providing more travel choices to Coloradans to help reduce traffic

Greenhouse Gas Pollution Reduction Planning Standards

On Dec. 16, 2021, the Transportation Commission voted to approve CDOT's new GHG Planning Standards to reduce GHG emissions from the transportation sector, improve air quality and reduce smog, and provide more travel options. The standard focuses on transportation planning – the process for how CDOT and the state’s largest metropolitan regions select future transportation projects. Long before a transportation project is built, it is first identified in plans developed with local public input. These plans often include a decade or more of projects and thus represent a short- and medium-term vision for coming changes.

The GHG Pollution Standard Rule requires CDOT and the state’s five Metropolitan Planning Organizations to determine the total pollution and GHG emission increase or decrease expected from future transportation projects and take steps to ensure that GHG emission levels do not exceed set reduction amounts. This approach will also streamline the planning and delivery of innovations that have proven successful in improving quality of life and air quality, like adding sidewalks, improving downtowns for active transportation with “complete streets,” improving local and intercity transit and first-and-last-mile connectivity to transit facilities, and adding bike-shares. This policy recognizes that the transportation projects we build have an impact on how Coloradans travel and encourages choices for travelers across the state.

CDOT is currently in the process of filing the rule with the Secretary of State and it is anticipated to become effective in mid-February 2022.

Front Range Passenger Rail

Current planning efforts towards passenger rail service linking Pueblo, Colorado Springs, and Fort Collins to Denver – a 173-mile corridor which contains the majority of Colorado’s population – will benefit all Coloradans. Front Range passenger rail service would address the mobility demands of existing Coloradans and of future population growth, improve mobility and system capacity by providing an alternative travel option, enhance economic growth and development through improved connectivity, improve the state’s environmental quality and energy efficiency, and provide economic benefits sufficient to attract new funding sources. Two Consolidated Rail Infrastructure and Safety Improvements (CRISI) grants from the Federal Railroad Administration provide financial support for project planning. And the passage of Colorado Senate Bill 21-238 established the Front Range Passenger Rail District with an oversight Commission.

¹ Decision No. C21-0651, Proceeding No. 20A-0195E, at ¶ 30



Figure 4. A map of Bustang services across Colorado; the routes from Sterling to Greeley, Sterling to Denver, and Trinidad to Pueblo will begin service in early 2022

Bustang

Bustang, which began operating in 2015, is CDOT's interregional express bus service that connects urbanized areas across the State. Bustang primarily provides express service along four lines: the North Line (Denver to Fort Collins), West Line (Denver to Grand Junction), South Line (Denver to Colorado Springs), and Colorado Springs to Denver Tech Center Line. Bustang also operates four specialty bus services: RamsRoute provides service from Fort Collins to Denver; Bustang to Broncos offers service between Fort Collins/Loveland to Denver and Colorado Springs/Monument to Denver; Snowstang operates seasonally to Loveland, Arapahoe Basin, and Steamboat Springs resorts; finally, Bustang also provides seasonal service to Estes Park, with one stop at the US-36 and Sheridan Station. In 2018, CDOT initiated an interregional lifeline transit service, Bustang Outrider, to serve rural Colorado. Bustang continues to add new routes, providing more people with an alternative to single-occupancy vehicle use and increasing their mobility options.

Mobility Hubs

Over the next decade, CDOT plans to re- envision traditional park-and-ride transit locations into "mobility hubs" – transportation centers at select locations which emphasize multimodal options, seamless mode to mode transitions, real-time passenger information, convenient amenities, and opportunities to create higher-intensity, transit-friendly development surrounding these hubs. Years 1-4 of the mobility hub plan includes the addition of new buses for Bustang (CDOT's transit service), the start of construction of some of the proposed mobility hub sites such as Centerra-Loveland and Berthoud, and the planning and designing of new hubs, such as Castle Rock and Lone Tree. Years 5-10 will continue the strategic investment in both road and transit infrastructure along both I-25 and I-70 while addressing roads like US-285 to manage overflow congestion from I-70.

Transportation Demand Management

Building from the work of the Regional Air Quality Council, the Denver Regional Council of Governments, and local transportation management associations, the Air Pollution Control Division explored an Employee Traffic Reduction Program (ETRP) as a GHG reduction and air quality improvement strategy in 2020 and 2021. ETRP was adapted from transportation demand management (TDM) strategies that have been implemented to decrease single-occupancy vehicle trips to and from worksites for decades in various cities, counties, and states throughout the U.S. After an extensive stakeholder process, it was decided that a voluntary program would be more successful to meet the state's GHG reduction goals. The Division is currently developing a voluntary TDM program that is anticipated to be launched in late 2021 or early 2022.

Separate from discussions about ETRP, state agencies are working on a variety of incentives to help support TDM on a voluntary basis. CDOT is providing support for TDM through three funding opportunities – to support and enhance existing TDM initiatives, promote innovative new approaches and partnerships, and create additional long-term TDM capacities and champions statewide. The program is designed to create the initial framework for a more consolidated statewide approach to TDM, and to complement a robust and compelling campaign for voluntary employer-based trip reduction.

Carpooling

Carpooling is a low cost and effective strategy to reduce vehicle miles traveled and wear and tear on Colorado highways. By encouraging carpooling, additional reductions in GHG emissions can be achieved. Carpool internet application (apps) companies provide ride-matching services which will increase the number of passengers occupying passenger vehicles. Prior to the passage of Colorado House Bill 21-1076, carpool internet application

companies fell under the definition of Transportation Network Companies (e.g. ride-hailing companies, such as Uber and Lyft) and were required to register with the Colorado Public Utilities Commission. The fee was cost prohibitive for new start-up companies to enter the Colorado market. With the new legislation, carpool internet companies are defined separately and are required to register with the Colorado Department of Transportation beginning on October 1, 2021. Two companies, TreadShare and Carpool Caravan, have registered with the Department.

Transportation Demand Management Conference

On November 5, 2021, CDOT and Association of Commuter Transportation hosted its first TDM conference to increase education and information exchange about effective TDM strategies among statewide transportation stakeholders. The three themes of the conference were: Data and Measurement in TDM, Employer Based Approaches and Equity in TDM, and Local Examples of TDM Deployment. Almost 150 attendees participated. The 29 speakers provided a suite of tools for practitioners to implement TDM in their communities and the sessions were published on the conference [website](#). CDOT plans on hosting the event again in 2022 to continue encouraging TDM best practices.

Indirect Source Standards

Indirect source standards are rules designed to reduce emissions from existing facilities or new developments that are reasonably expected to generate significant vehicle traffic. The RAQC has convened a Control Group Strategies sub-working group focused on exploring indirect source standard concepts with stakeholders. Representatives from CEO and CDPHE are participating in the working group, and are simultaneously working to plan the state's approach to conducting the research and stakeholder engagement necessary to develop potential indirect source standards.

Land Use Strategies

Revised Interchange Approval Policy Directive 1601

CDOT Policy Directive 1601 for Interchange Approval requires applicants to submit a TDM plan. The TDM requirement is a significant step toward helping to preserve the overall functionality and operability of the state highway system. As our state continues to grow and develop, the new TDM amendment emphasizes the benefits TDM can lend toward maximizing the use of transportation infrastructure and reducing vehicle miles traveled through strategies like increased transit, mobility hubs, ridesharing, walking, biking, and telework to reduce reliance on single-occupant vehicle usage.

Land Use Stakeholder Group

In 2021, CDOT initiated facilitation of the Land Use Stakeholder Group as directed by the GHG Roadmap. This group is composed of state agencies and local government representatives, and the intent is to submit a report to the state legislature by January 2022 detailing potential land use strategies that would reduce GHG emissions for implementation in 2022 and beyond.

The primary strategy of the report is anticipated to be the “Strong Communities” grant program proposed to be administered by DOLA. This will be a competitive grant program for infrastructure investment to support infill development, particularly of affordable housing. The grant criteria will include the extent to which local governments reform zoning and planning rules in order to allow and encourage more housing within communities, near jobs and schools. Not only will this catalyze more housing, it will have multiple benefits—less time spent commuting, lower GHG pollution from driving, and cost savings for residents.

Revitalizing Main Streets

As a part of Colorado's COVID-19 Recovery Plan,

CDOT launched the Safer Main Streets and Revitalizing Main Streets Programs thanks to a \$40 million allocation from the state legislature in March 2021. These programs help communities across the state implement transportation-related projects that improve safety and yield long-term benefits (such as emissions and single-occupancy vehicle reductions) to community main streets, particularly through a focus on pedestrian, biking, and transit infrastructure improvements.

In the fall of 2020, CDOT launched the Revitalizing Main Streets Program to help businesses and downtowns prosper during COVID-19. The state legislature expanded the program with \$30 million in March 2021, and provided permanent funding through SB260. The Revitalizing Main Streets Program provides grants to communities as they find innovative

ways to reuse public space, improve multimodal safety, and create vitality in downtowns across the state. As of November 2021 the program has awarded 154 projects in 107 communities, demonstrating the large impact that small-scale projects can have.

HB21-1271 and HB21-1117

In 2021, the passage of HB21-1271 and HB21-1117 began the process of creating incentives for local zoning and planning reform. HB21-1271 created a program at DOLA² that provides grants to local governments that adopt not less than three policy and regulatory tools from among a menu of options that create incentives to promote the development of affordable housing, while HB21-1117 enables and clarifies local governments' ability to enact inclusionary zoning laws that support the construction of new affordable housing.

Aviation: Colorado Aeronautical Board and Colorado Department of Transportation Division of Aeronautics

Under the direction of the Colorado Aeronautical Board (CAB), CDOT's Division of Aeronautics' mission is to support airports and aviation as part of Colorado's multi-modal transportation system, while also promoting aviation education and safety. The CAB and Division are vested in leveraging this leadership to make Colorado's aviation system as efficient, accessible, and environmentally responsible as possible. Though states do not have the legal authority to regulate or limit aircraft emissions, airport operations, aircraft fuels, and flight paths (as aviation and interstate commerce are federally preempted), the CAB and Division will still help support the state in meeting GHG reduction targets by partnering with the aviation industry and others to ensure that aviation infrastructure, funding mechanisms, and policies take full advantage of emerging information and technologies.

Alternatively Powered Aircraft Infrastructure Study

In August 2021, the CAB approved \$200,000 of funding for an alternatively powered aircraft infrastructure study, which will look at new aviation propulsive technologies and aircraft as well as the benefits these aircraft will provide for cleaner, more efficient, and more accessible aviation mobility statewide. The study will also explore how the Division can support the state's system of 66 publicly owned airports to be ready for these aircraft when they enter service in the next ten years. As of November 2021, the Division is in conversations with the National Renewable Energy Laboratory (NREL) and the National Aeronautics and Space Administration (NASA) about opportunities to collaborate on this study in Colorado.

Alternative Aircraft Fuels

² DOLA, Innovative Affordable Housing Strategies, <https://cdola.colorado.gov/1271>

Globally, the aviation industry is responsible for 2.5% of all CO₂ emissions. However, forecasted increases in aviation activity worldwide and demand for travel could cause that share to increase significantly absent action to address emissions. Recognizing aviation's forecasted growth, the aviation industry is taking steps towards reducing its impact globally. These actions include continued refinements to aircraft and power plant design; extensive progress on new propulsive technologies, including the development of sustainable aviation fuels (SAF; SAF is jet fuel manufactured from renewable biomass waste or synthetic processes); and new battery-electric, hybrid, and hydrogen fuel cell-powered aircraft, all of which have the potential to facilitate the aviation sector's growth while moving towards the industry's broadly stated goal of being carbon neutral by 2050.

Notably, as of November 2021, SAF is available at only two of Colorado's 57 public use airports where fuel is sold: Telluride Regional Airport and the Aspen/Pitkin County Airport. As SAF production increases and availability improves, the Division of Aeronautics will strategize on how to encourage SAF use at more airports in the future. However, battery-electric, hybrid, and hydrogen fuel cell aircraft power sources will eventually provide new opportunities to expand mobility in Colorado, with significantly reduced environmental impacts.

The Division of Aeronautics' aforementioned alternatively powered aircraft infrastructure study will evaluate the mobility, accessibility, and environmental need for such alternative aircraft fuels in Colorado. The Division will evaluate opportunities to meet those needs proactively so that when alternative fuel aircraft are ready to fly, they will be able to do so with the necessary infrastructure, policies, and funding sources in place.

Residential, Commercial and Industrial Fuel Use

Oil and Gas Fuel Combustion Equipment

Fuel combustion equipment at upstream and midstream oil and gas operations is included in the Industrial fuel use category. The Air Pollution Control Division has proposed regulations to the Air Commission, set for hearing in December 2021, that would ensure reductions from this equipment to meet the statutory requirements of HB21-1266. The Air Pollution Control Division's proposal for fuel combustion equipment at midstream operations (e.g. compressor stations and natural gas processing plants) will necessitate an additional rulemaking in 2024.

Building Electrification/Clean Heat

Senate Bill 21-264 requires investor-owned electric utilities to file plans with the PUC to provide rebates and incentives to help customers shift from fossil gas appliances to high efficiency electric appliances. Senate Bill 21-264 also requires that gas distribution utilities submit a comprehensive clean heat plan before the PUC. Each clean heat plan must outline the utility's proposal to reduce carbon dioxide and methane emission levels by 4% in 2025 and 22% in 2030 below 2015 levels. The Division believes that the oil and gas transmission and storage performance program adopted by the AQCC in 2019 and the clean heat plans required by SB 21-264 are going to achieve reductions of emissions necessary from these segments to achieve the goals of § 25-7-105(1)(e)(XII), C.R.S., from the Oil & Gas Sector as a whole.

Regulated gas utilities will develop clean heat plans that will be subject to PUC approval, and may use enhanced demand side management, beneficial electrification of end uses, leak reduction, blending of green hydrogen, and the use of recovered methane to achieve these goals. Municipal utilities will

submit their plan to the AQCC. The bill directs the AQCC to propose rules concerning recovered methane protocols no later than September 1, 2022, and to adopt the rules no later than February 1, 2023. Based on the deadlines established in the bill, the AQCC will consider revisions to Regulation 22, establishing a recovered methane protocol and a GHG crediting and tracking system. This protocol will be used by the PUC in their approval of Clean Heat Plans submitted by gas distribution utilities.

Commercial Building Benchmarking and Performance Standards

Colorado is the second state in the country after Washington to adopt a statewide building performance standard and is participating in a national coalition led by the White House Council on Environmental Quality that aims to advance the implementation of performance standards. HB 21-1286 requires benchmarking of the energy use of large commercial buildings, and the development of performance standards that will achieve a sector-wide 7% emissions reduction by 2026 and 20% emissions reduction by 2030, below a 2021 baseline. CEO is developing a statewide benchmarking program that covers commercial, multifamily, and public buildings 50,000 square feet or more. Building owners report annually with the first reporting deadline on December 1, 2022. The goal of the benchmarking program is for building owners and tenants to better understand how their building's energy performance compares to similar buildings and identify opportunities to cut energy waste. CEO is coordinating with municipalities that already have benchmarking ordinances and those that want to enact new benchmarking requirements in order to streamline reporting and communications. The Building Performance Standards (BPS) Task Force members were selected and began meeting in late September. The Task Force will meet for 11 months to develop recommendations for BPS that achieve a sector-wide 7% reduction in GHG emissions by 2026 and a 20% reduction by 2030. The meetings are open to the public for listening and we will incorporate opportunities for stakeholder engagement and input. The BPS recommendations are due to the CEO Executive Director by October 1, 2022; the AQCC will conduct a rulemaking in the first half of 2023.

Gas Utility Demand Side Management

House Bill 21-1238 - Public Utilities Commission Modernize Gas Utility Demand Side Management Standards was signed in June 2021. It builds on a decade of success in gas demand-side management programs in Colorado, requiring the PUC to set energy reduction targets, updating the way the PUC reviews the cost-effectiveness of utility plans and requiring the PUC to use science-based costs for GHG emissions ("the social cost of carbon and of methane") as part of its cost-effectiveness evaluations.

In support of these gas utility regulatory efforts, the PUC opened Proceeding No. 21M-0395G to begin the rulemaking process by collecting comments from utilities and interested stakeholders regarding gas utility short- and long-term planning. The proceeding also requires "that Colorado gas utilities develop and submit in this Proceeding several projections related to system expenditures, rates, GHG emissions, and data gaps so that the Commission and participating stakeholders can more fully comprehend the potential impact of the Commission's rulemaking efforts."

Advanced Building Codes

In order to meet the state's goal of reducing GHG pollution 20% by 2030 in the buildings sector, CEO will support updating the 2019 building energy codes legislation to make the 2021 International Energy Conservation Code (IECC) the minimum code that jurisdictions can adopt, upon adopting any other building code. The proposed legislation will also require jurisdictions to adopt amendments to the 2021 IECC that require pre-wiring for solar, EV charging, and future appliance / equipment electrification

(space and water heating, stoves and ovens, clothes dryers) in new construction. According to analysis from Pacific Northwest National Laboratory, the 2021 IECC will produce "statewide energy savings of 8.6% across all climate zones in Colorado compared to the 2015 IECC, which equates to \$156 of annual utility bill savings for the average household. It will reduce statewide CO₂ emissions over 30 years by 20,301,000 metric tons." CEQ will develop a model net-zero carbon (or energy) code by 2030. This model code will be voluntary at first but mandatory by 2030. The legislation would allow jurisdictions to go above and beyond the minimum prior to 2030.

Industrial Energy and Emissions Audit Requirements

The Air Pollution Control Division developed a regulation for GHG Emissions and Energy Management for Manufacturers in Colorado (GEMM) under the authority of HB19-1261 and HB21-1266. The rule requires that energy-intensive trade-exposed facilities utilize a third party to conduct an audit every five years (starting in 2022) to ensure that the best technology to save energy and control GHG emissions is in use. All facilities subject to the rule are required to reduce their GHG emissions by 5% in addition to any reductions achieved by employment of best available emissions control technology and energy best management practices at the facility. HB 21-1266, which set the GHG roadmap sectoral target for the industrial sector into statute, requires that the AQCC adopt rules that will achieve a 20% reduction across the industrial sector as a whole by 2030. In order to achieve this, other industrial and manufacturing facilities will be subject to additional reduction requirements in a second phase of GEMM rulemaking, which will be developed in 2022 and 2023.

Oil and Gas

Implementation of SB19-181 & Minimizing Sector Emissions and COGCC Flaring Restrictions

In 2020 the Colorado Oil and Gas Conservation Commission (COGCC) completed rulemakings directed by SB19-181, several of which will reduce GHG emissions. The completed rulemaking hearings addressed Mission Change, Alternative Location Analysis, Cumulative Impacts, and Compensatory Mitigation for Wildlife, as required by SB 19-181. The rulemakings were required to implement the change to the COGCC's mission from "fostering" to "regulating" oil and gas development in a manner that protects public health, safety, welfare, the environment and wildlife resources. The rulemaking established a cumulative impacts data collection program in collaboration with the CDPHE, which includes collection of GHG data, incentivized underground injection of waste fluids as a best practice for managing exploration and production waste and associated emissions, and enacted a prohibition on routine flaring or venting. The resulting reductions in emissions from these regulations are expected to be reflected in data collected by CDPHE.

AQCC 2021 Oil and Gas Rulemaking Hearing

In October 2020, the Air Quality Control Commission (AQCC) adopted a resolution establishing a target for the oil and gas of a 36% reduction from the 2005 baseline by 2025 and a 60% reduction from the 2005 baseline by 2030 (down to an estimated 13 million metric tons (MMT) CO₂e by 2025 and 8 MMT CO₂e by 2030). The AQCC's Resolution was based on a 2005 baseline of 20,166,496 metric tons (mt) CO₂e for the oil and gas sector. Of that figure, the Air Pollution Control Division estimated 17,863,939 mtCO₂e from CO₂ and methane emissions from upstream and midstream operations and 2,302,468 mtCO₂e from methane emissions from leaks from downstream operations.

HB21-1266, which the Division refers to as the "Environmental Justice Act," signed into law on July 2, 2021, memorializes in statute the AQCC's October 2020 sector-specific percentage reductions, and

provides additional requirements for the rulemakings to achieve these goals. Pursuant to the Environmental Justice Act, the AQCC must, by January 1, 2022, adopt regulations to ensure that the state meets its GHG reduction targets for the oil and gas sector, and must also ensure that Industrial Sector emissions (including those from oil and gas fuel combustion equipment) are reduced. These regulations must prioritize near-term reductions and include additional protections for disproportionately impacted communities.

In September 2021, the Division proposed revisions to Regulations Number 7 and 22 to achieve the necessary statewide GHG emission reductions to implement Colorado's Greenhouse Gas Pollution Reduction Roadmap. The Division's rule proposal also prioritizes reductions of GHGs and co-pollutants in disproportionately impacted communities in a comprehensive and far-reaching manner, consistent with the Environmental Justice Act. The Division did not propose additional regulations applicable to the transmission and storage segment or the distribution segment. The AQCC adopted a comprehensive transmission and storage performance program in 2019.

Natural and Working Lands

Natural and Working Lands Greenhouse Gas Inventory and Strategic Plan

In 2020, the Department of Natural Resources and Department of Agriculture established a Natural and Working Lands interagency Task Force to promote emissions reductions and protect, stabilize, and enhance carbon sequestration within natural and agricultural areas, covering both rural and urban areas. Task Force members updated the state's GHG Inventory for forest carbon flux with the latest data from the U.S. Forest Service, which indicates that Colorado's forests are now a net source of GHG pollution, due to ongoing drought, disease, wildfire and insect impacts on forest health. The Task Force is currently conducting a study with The Nature Conservancy to identify policy priorities and drafting a Natural and Working Lands Strategic Plan with stakeholder input, which will be completed in 2022.

Soil Health Program

The Colorado Department of Agriculture's (CDA's) soil health work assists agricultural producers in improving the productivity and resilience of their land. In partnership with the USDA Natural Resources Conservation Service (NRCS), state Conservation Districts, Colorado State Conservation Board, and others, we are awarding new healthy soils matching grants to Colorado ag producers. Soil Specialists are helping foster farmer to farmer learning, host workshops, and help producers connect with new market opportunities. \$2 million from SB 235 is enabling CDA to expand on the work we have been doing, primarily with federal and grant funding.

Because many conservation districts are eager to offer more soil health solutions to help their landowners improve their soil function and resilience, CDA is using stimulus funds to leverage federal funding to broaden local engagement in soil health work across the state. Through the assistance of 17 conservation districts and producer organizations, 140 producers will receive technical assistance and incentives to try new practices for 3 or more years. Additionally, stimulus funds are helping conservation districts build their local capacity to play a stronger role in delivering soil health planning and implementation. With new market opportunities emerging for ecosystem services (like soil health improvements), CDA wants to assist conservation districts in preparing producers to be able to profit from new market platforms that reward conservation activities.

Agricultural Drought and Climate Resilience Office

HB21-1242 created the Agricultural Drought and Climate Resilience Office within CDA. Commissioner Greenberg appointed an interim director in September. A Drought and Climate Specialist has been hired to work for the office and is anticipated to begin in mid-December. Initially the office will be focused on policy and interagency collaboration. The office will create a plan to seek federal funding for technical assistance and incentive based programing authorized by statute but not funded.

ACRE3

The Advancing Colorado’s Renewable Energy and Energy Efficiency Program, or ACRE3 for short, provides funding and technical assistance to producers and agricultural businesses to implement renewable energy and increase efficiency in their agricultural operations. The program helps producers reduce energy costs, install better and cleaner equipment, and become more resilient and profitable.

From 2015 through 2021, the ACRE3 program has provided assistance for 133 projects in 24 counties, representing total project costs of \$5 million. In 2022, \$3 million from SB21-235 is allowing the ACRE3 program to provide cost share for more than 60 new projects this year and expand its scope to include larger projects and new project types. Stimulus funds allow the ACRE3 program to increase its funding cap from \$50,000 per producer up to \$500,000 for very large projects. For the first time, stimulus funds are enabling the ACRE3 program to evaluate demonstration projects for agrivoltaics on farms and ranches, solar hot water in dairies and greenhouses, transpired solar at poultry houses, and manure management systems at dairies to support more efficient production of renewable natural gas at several new biodigesters. The stimulus funds are also allowing ACRE3 to fund a larger number of projects in energy efficiency, energy-recovery hydropower in irrigation systems, and conventional solar projects in agricultural operations.

Other Sectors

GHG Reporting and Emission Reduction Requirements

In May 2020 the AQCC adopted Regulation Number 22, Colorado GHG Reporting and Emission Reduction Requirements. Part A of the regulation establishes an economy-wide GHG reporting rule for Colorado. Part B contains GHG mitigation measures, such as phase-out dates for hydrofluorocarbon (HFCs); and also includes subsequently adopted mitigation requirements such as the GEMM rule discussed previously in this report. The Part A reporting rule fills gaps in the current federal GHG reporting rule and provides the state with better data for its GHG inventory. Higher-quality data will improve the state’s climate projections and inform policy recommendations for reducing emissions. The rule will also make more granular data available to assist local communities with climate action planning and implementation. Under Colorado’s rule, any Colorado facility or fuel supplier that is required to report its GHGs to the U.S. EPA must also report its GHGs directly to the State of Colorado. Additionally, certain categories of emitters – including electric utilities, natural gas distribution companies, industrial waste landfills, industrial wastewater treatment operations, and underground coal mines – are required to report their GHGs directly to the state regardless of the amount emitted and even if they are not required to report their GHGs to EPA.

Colorado’s adoption of the HFC phase-out rules in Regulation Number 22 made it the first member of the U.S. Climate Alliance to adopt the model framework developed by these states for the phasing out of HFCs. While HFC emissions currently do not make up a significant portion of Colorado’s overall GHG emissions, HFCs are the world’s fastest growing source of GHGs and the AQCC’s action prevents significant future emissions of these chemical compounds often called “super pollutants” due to their

high global warming potential (GWP). The rule will phase out their use in aerosol propellants, chillers, foams and stationary refrigerants. Phasing out HFCs will result in a cumulative reduction of 6.3 million metric tons of carbon dioxide equivalent by 2030.

Carbon Capture, Use and Sequestration

As part of the near-term actions in the GHG Pollution Reduction Roadmap, Colorado convened a Task Force to explore the role carbon capture, utilization, and storage (CCUS) can play in meeting the state’s emissions targets. The evaluation will include an inventory of existing initiatives and recent publications that analyze CCUS opportunities in Colorado. The task force convened in March 2021 and is on track to publish a final report and recommendations to the Governor in early 2022. Members of the task force represent government, industry, academic and nonprofit groups in Colorado.

Hydrogen

In 2021 the Colorado Energy Office worked with Energy and Environmental Economics (E3) to develop an initial Hydrogen Roadmap for the state. The recommendations include supporting neartrem pilot projects in the power sector, and infrastructure investment for hydrogen use by heavy duty trucks. At the same time, multiple utilities have expressed interest in hydrogen, and Tri-State has begun work to plan a hydrogen center in Craig. As discussed below in the section on federal infrastructure funding, this work has set the stage for applying for federal funds for regional hydrogen hubs.

Meeting Colorado’s Emission Reduction Goals

As part of the 2019 legislative session’s suite of requirements on GHGs, the Air Pollution Control Division of CDPHE is required to undertake a statewide GHG inventory no less frequently than every two years.³ The inventory is also to include a forecast of GHG emissions for the state in the years 2025, 2030, 2035, 2040, and 2045, along with, in the initial inventory, a recalculation of the 2005 baseline emissions. The final 2021 Colorado GHG Inventory including projections to 2050 was published in September 2021 and is available on the Division’s [Colorado GHG Inventory website](#).

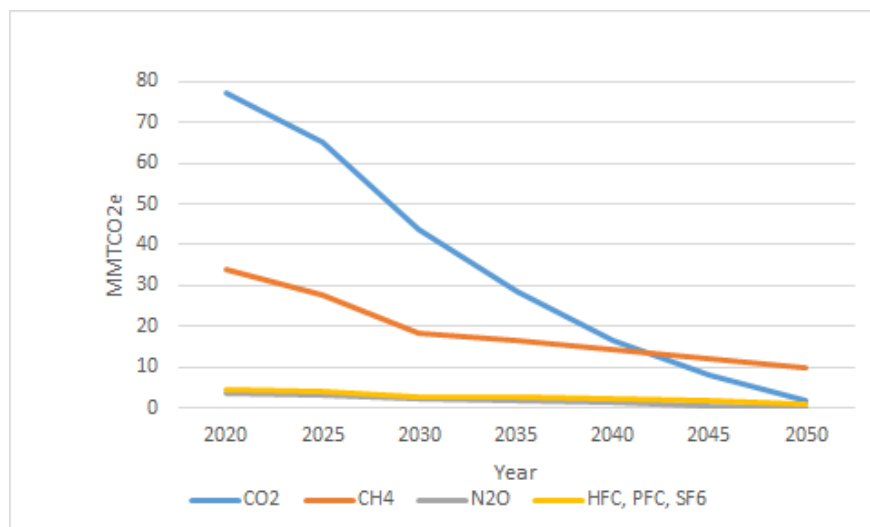


Figure 5. Colorado GHG Emissions by Gas Projected to Occur Based on Past and Scheduled Regulatory Action

³ SB19-096; CRS 25-7-140(2)(a)(II)

Figure 5 shows projected emissions trends by gas from 2020 to 2050. Carbon Dioxide (CO₂) is the largest contributor, constituting 70% of Colorado GHG emissions historically and remains the largest quantity in million metric tons of carbon dioxide equivalent (MMTCO₂e) through 2040. Emissions of CO₂ from fossil fuel combustion in Colorado began decreasing around 2010 and are projected to continue to decrease through 2050. The projections included in the GHG Inventory showcase the new approach adopted by Colorado for creating forward looking emissions estimates to guide legislative, regulatory, and policy conversations and planning. These projections describe a general trajectory necessary to achieve compliance with the economy-wide emission reduction goals established by HB19-1261. As described in this report, Colorado is moving forward with a comprehensive, economy-wide set of strategies to achieve the statutory requirements.

It is important to note that four of the five largest sources of emissions now have statutory requirements for emissions reductions that are aligned with the sectoral targets in the GHG Roadmap. Electric utilities are required to submit plans to the Public Utilities Commission to achieve at least an 80% reduction below 2005 levels by 2030; if they do not, they are then subject to AQCC regulation requiring these reductions. The AQCC is required to adopt regulations that will achieve at least a 60% reduction in emissions from the oil and gas industry and 20% from other industries. And gas distribution utilities are required to submit Clean Heat Plans, submitted to the Public Utilities Commission, that will achieve at least a 22% reduction below 2015 levels by 2030. The other major sector, transportation, is being addressed by programmatic and regulatory strategies in multiple agencies.

Environmental Justice Act

On July 2, 2021, Governor Polis signed the Environmental Justice Act (HB21-1266) into law. The Environmental Justice Act commits to strengthening environmental justice and prioritizes reducing environmental health disparities in disproportionately impacted communities. It also includes climate-related provisions that are discussed elsewhere in this document. CDPHE has created a new Environmental Justice Unit to support implementation of the Environmental Justice Act. As of November 15, 2021, it consists of four full-time employees, including a full-time Environmental Justice Air Quality Liaison, and will continue to expand over the coming months.

Specific components of the Environmental Justice Act that CDPHE is now implementing include:

- **Identifying and Mapping Disproportionately Impacted Communities.**
 - The Environmental Justice Act defines Disproportionately Impacted Communities to include:
 - Census Block Groups with one of 3 demographic factors:
 - More than 40% low income households;
 - More than 40% people of color households;
 - More than 40% housing cost-burdened households;
 - Communities with a history of environmental racism perpetuated through exclusionary laws, including redlining, anti-hispanic, anti-black, anti-indigenous, and anti-immigrant laws; and
 - Communities where multiple factors (i.e. socioeconomic stressors, disproportionate environmental burdens & lack of public participation) cumulatively contribute to persistent public health & environmental

disparities

- CDPHE has created a [Data Viewer for Disproportionately Impacted Communities](#), which shows census block groups that meet the demographic components of the definition. There is also a clickable layer in the [Climate Equity Data Viewer](#) that similarly shows census block groups that meet the demographic components of the definition.
- CDPHE is working on a new interactive mapping tool, Colorado EnviroScreen, that will identify communities meeting all three components of the definition. [Colorado EnviroScreen](#) will be open for beta testing during early 2022, and will be finalized by June 2022.
- **Enhanced Outreach for Disproportionately Impacted Communities.** The Environmental Justice Act requires the Air Quality Control Commission to conduct enhanced outreach to Disproportionately Impacted Communities before taking specific actions, including rulemakings, holding public hearings on permits, and certain adjudicatory actions.
 - The Environmental Justice Unit is working with Commission and Division staff to host community sessions prior to each rulemaking, including one meeting on a weekend, one during the business day on a weekday, and one on a weekday evening.
 - All materials for enhanced outreach sessions are provided in English and Spanish, and Spanish interpretation is provided at the community meetings.
 - Plain language fact sheets are available in both English and Spanish for each of the community meetings, providing simple, easy-to-understand information about the complex rulemaking processes.
 - Communities are invited to share their ideas and ask questions directly of subject matter experts during the enhanced outreach sessions.
 - Notice of all meetings is provided at least 30 days in advance. CDPHE is using innovative techniques to spread the word about the community meetings, including social media ads in both English and Spanish geotargeted to people living in disproportionately impacted communities across the state.
- **Environmental Justice Advisory Board**
 - Governor Polis and CDPHE Executive Director Jill Hunsaker Ryan appointed 11 talented, diverse, and qualified Coloradans to serve on the Environmental Justice Advisory Board in early November 2021.
 - The Environmental Justice Advisory Board will meet quarterly starting in early 2022.
 - The Advisory Board will:
 - Advise the Environmental Justice Ombudsperson, and work with the Ombudsperson to facilitate public meetings and develop a complaint process.
 - Respond to environmental justice policy questions referred by the Governor’s Office or CDPHE.
 - Advise CDPHE on best practices for engagement with disproportionately impacted communities.
 - Implement a new environmental justice grants program to fund projects to avoid, minimize, or mitigate adverse environmental impacts in disproportionately impacted communities, including projects that reduce environmental health disparities, reduce environmental impacts, and promote participation in agency actions by disproportionately impacted

community members.

- **Environmental Justice Action Task Force**
 - Governor Polis, the General Assembly Leadership, the Southern Ute Indian Tribe, and Ute Mountain Ute Tribe are charged with appointing 27 Coloradans with a diverse range of experiences and backgrounds to the Task Force.
 - The first Task Force meeting will be held in late 2021. The Task Force will hold six public meetings prior to November 2022.
 - By November 14, 2022, the Task Force will create a statewide environmental justice plan and implementation strategy that addresses many topics, including:
 - Whether to incorporate equity analyses into certain types of state agency environmental decisions, which may include identifying cumulative impacts in disproportionately impacted communities, and requiring permits in disproportionately impacted communities to include measures to avoid, minimize, or mitigate adverse impacts.
 - Setting measurable goals to reduce environmental health disparities.
 - Addressing data gaps and lack of data sharing on environmental justice topics.
 - Best practices for community engagement in disproportionately impacted communities.
 - Potential revisions to the definition of disproportionately impacted communities, and recommending whether the same definition should apply to other agencies besides the Air Quality Control Commission.
- **Environmental Justice Ombudsperson:**
 - The Governor's Office [has launched the recruitment process](#) for the Environmental Justice Ombudsperson.
 - The Governor will appoint the Ombudsperson. The Ombudsperson will report directly to the Executive Director of CDPHE and receive administrative support from the Environmental Justice Unit, but is otherwise independent.
 - The Environmental Justice Ombudsperson will:
 - Serve as an advocate for and liaison to disproportionately impacted communities;
 - Advocate for improved relationships with disproportionately impacted communities;
 - Oversee response to complaints and inquiries about environmental justice matters; and
 - Coordinate environmental justice work across state government.

Governor's FY 2021-22 Budget

In November 2021, Governor Polis [proposed over half a billion dollars of one time investments in air quality and climate action](#), including \$250 million for clean transportation, \$128 million in investments to support infill affordable housing and encourage cities to reform zoning rules, \$52 million to improve air quality regulation and enforcement, \$50 million for grants to help reduce industrial pollution, \$50 million for net zero buildings and energy improvements in affordable housing, and \$4.5 million to reduce energy use in the cannabis industry. These are transformational investments that build on the robust action the state has taken over the last three years to move forward on multiple fronts to act

on air quality and GHG pollution.

Transportation

The large investment in transportation reflects the fact that vehicles are the largest source of nitrogen oxides in the Front Range (a key contributor to ozone pollution) and the largest single source of GHG pollution in the state. The proposed investments are:

- \$150 million for electric school buses: This would be spent over six years to get halfway to an all-electric school bus fleet. For many children, their highest exposure to pollution comes on and around dirty diesel buses; switching to electric completely eliminates this exposure. Added to this, electric buses will save school districts on fuel and maintenance costs.
- \$28 million to partner with transit agencies in the Front Range to offer free transit service during the high ozone season: Because ozone is produced by photochemical reactions between volatile organic compounds (primarily from the oil and gas industry) and nitrogen oxides (mainly from vehicles), hot sunny summer days are when we get spikes in ozone pollution in the Denver area and northern Front Range. Free fares throughout the season will encourage more people to ditch their cars and switch to public transit.
- \$15 million for cleaner trucks: While the state is largely focused on moving to zero-emissions trucks, in particular those fueled by electric batteries or hydrogen fuel cells, the dirtiest trucks on the road today are decades old diesel trucks built before current EPA standards. This money will be used to help get 500 of the dirtiest trucks off the highways and replaced with vehicles that meet current pollution standards.
- \$12 million for electric bicycle rebates and programs: eBikes are a great option for getting to work, taking the kids to school, doing the grocery shopping—for many people they can replace almost all car trips. This program will help get 12,000 more eBikes on our roads and paths—eliminating millions of unnecessary car trips and the associated pollution.
- \$40 million for multimodal streets and transit: CDOT's [Safer Main Streets](#) and [Revitalizing Main Streets](#) programs have revolutionized the department's partnerships with cities and towns across Colorado with respect to the use of urban roadway space for active transportation, economic activity, community and recreation. This funding will build on the success of the Main Street programs to jumpstart a comprehensive focus on establishing better multimodal access along state highways in urban areas and will aim to augment transit service as quickly as practicable. The idea is to have a near term impact rather than the typically very long timelines it can take to expand service.

The budget also includes \$128 million for investing in a strong communities program. This will be a competitive grant program for infrastructure investment to support infill development, particularly affordable housing. The grant criteria will include the extent to which local governments reform zoning and planning rules in order to allow and encourage more housing within communities, near jobs and schools. Not only will this catalyze more housing, it will have multiple benefits—less time spent commuting, lower GHG pollution from driving and cost savings for residents (many low income Coloradans spend 10% or more of their income on transportation expenses).

Industry

The budget includes four elements focused on reducing air pollution and GHG emissions from industry. Industrial emissions in general, and oil and gas emissions in particular, are each in the top five sources of GHG pollution in the state. The proposed investment builds on regulatory programs to achieve

deeper, faster cuts in pollution.

- \$50 million for clean air grants: These grants will focus on spurring near-term investment by industrial sources of pollution to make improvements that will reduce emissions of harmful air pollutants including air toxics, particulates, ozone precursors and GHGs. These will complement the new regulatory requirements for industry that were created by HB 21-1266 and spur early action and deeper emissions reductions. Funds will be available to cover a portion of the cost of energy efficiency, renewable energy, electrification, transportation electrification, hydrogen and carbon capture projects at industrial facilities as well as sustainable aviation fuel and methane capture projects.
- \$52.1 million for air quality transformation at CDPHE: This will be a large investment in expanding staffing to significantly increase capacity for regulation and enforcement by actions. This will also include funding for replacing polluting two stroke gasoline powered lawn and garden equipment with electric models.
- \$4.4 million for greening the cannabis industry: While the cannabis industry has been an economic boon to Colorado, indoor cannabis cultivation is very energy intensive. The proposed program would focus on carbon emission, energy and water reductions for the industry through a robust program of assessments, program support, tools and financing, providing eligible cannabis cultivation businesses with technical resource use and renewable energy assessments, resource management consulting and project implementation support, access to resource benchmarking tools and guidance on tool use, and access to project grant funding and financing.
- \$7 million for aerial and ground based monitoring of oil and gas pollution: leaks of volatile organic compounds (VOCs) from the oil and gas industry are the largest contributor of VOCs in the Ozone nonattainment area—and VOCs are one of the major precursors of ozone formation. In addition, oil and gas industry methane leaks are one of the five largest sources of GHG pollution in the state. New legislation requires at least 60% pollution reduction from the industry—and better monitoring data will be important for effectively achieving these pollution reductions.

Buildings

The onsite use of electricity and fossil fuels in buildings is the second largest source of GHG emissions, and the state's GHG Roadmap targets a 90% reduction in emissions from buildings by 2050. Achieving this goal will require a transformation to more energy efficient homes and commercial buildings. In addition, for many lower income Coloradans, building utility costs are a significant burden with 20% of households spending over 5% of their income on building energy costs. There are three proposals in the budget to address this.

- \$200,000 for moving forward on advanced energy codes: The legislature adopted a groundbreaking package of bills addressing building energy use last session, affecting almost every major building policy in the state GHG Roadmap. But one important policy area remains—making sure that energy codes across the state are aligned with our pollution reduction targets and maximize opportunities for energy cost savings and improved indoor air quality. As part of a proposal to move towards advanced energy codes across the state, this funding would go to support an inclusive task force process to develop the framework for future codes.
- \$25 million for energy improvements in affordable housing: As the state makes historic investments to expand affordable housing, it is critical that this housing is built to high energy standards that align with the need to reduce pollution, support healthy indoor air

quality and reduce long term costs for residential energy bills. This investment will support energy efficiency, efficient electric heat pumps, and renewable energy like rooftop solar for new and existing affordable housing.

- \$25 million for clean air equity building investments: This will be done through incentives for schools and local governments to incorporate heat pumps in energy performance contracts, and support for local government/utility partnerships for neighborhood scale electrification pilots. The idea is to develop the experience with incorporating high efficiency electric heat pumps into construction projects, and to develop the most cost effective approaches to building electrification.

Summary and Next Steps

The State of Colorado has made significant progress on the Near Term Actions identified in the 2021 Greenhouse Gas Pollution Reduction Roadmap, though there is much work left to do to achieve its overall goals. Taken together, the actions already underway and planned in the Roadmap put the State on the right path to meet its set targets. The State has tracked these actions on a quarterly basis, currently at 93% of Near Term Actions on track, and will continue to report progress as part of the Governor’s Bold Four goals which include setting Colorado on a path to 100% renewable energy for the grid by 2040 and positioning Colorado as a leader in the clean energy economy.

In the coming year, the State will continue to aggressively pursue reductions through actions identified in the Roadmap, including:

- Air Quality Control Commission rulemakings, including oil and gas emission reduction rules, building emission reduction rules, transportation emission rules (Advanced Clean Truck), and Greenhouse Gas Emissions and Energy Management for Manufacturing Rule II
- Oil and Gas Conservation Commission rulemakings on financial assurance, and mandatory SB 19-181 rulemakings
- Natural and Working lands strategic plans
- Administrative and legislative Action Items from the Land Use Study
- Recommendations from the Carbon Capture Use and Sequestration Taskforce

In addition, the Governor’s proposed budget includes over half a billion dollars of one-time investments in air quality and climate action, including significant investments in clean transportation, support for infill and better zoning and affordable housing, air quality regulation and enforcement, industrial pollution reduction, and more. The budget would build on the progress already made, and ensure the state prioritizes environmental justice and equity in its action, not only reducing GHGs but also improving local air quality, promoting economic growth and ensuring a just transition to clean energy.

Lastly, the State’s agencies will capitalize on the funding made available in the federal Infrastructure Investment and Jobs Act to make additional investments in key areas including public transportation, electric vehicle infrastructure, electric school buses, weatherization for low income households, and more. The State may also pursue numerous opportunities for competitive funding that are in line with its GHG reduction targets and programs. More information on the State’s plans to make use of the federal infrastructure package funds will be reported in the next biannual progress report.

Appendix I: Additional Funding from the Federal Infrastructure Package

On November 15, 2021 President Biden signed a roughly \$1 trillion infrastructure package that includes funding for many of Colorado’s priority areas to reduce GHG emissions. Funding is available both through formula grants directly to State agencies and through competitive grants which the State/agencies may decide to pursue. Estimates of funds available for climate work through formula include:

CDOT

- \$916 million - to improve public transportation options across the state
- \$98 million - PROTECT program: funds Resiliency in surface transportation
- Unknown - for programs that support EV charging infrastructure. The bill describes \$5 billion for a National Electric Vehicle Formula Program to allocate funding to states for deploying EV charging infrastructure.
- Unknown - for zero emission buses. The bill indicates \$2.5B nationally for this effort.

CEO

- \$7,996,518 - State Energy Program: flexible uses including technical assistance and funding for state initiatives to reduce energy use
- \$1,599,304 - Energy Efficiency Revolving Loan Fund Grant Program: flexible funds for energy efficiency projects.
- \$1,925,000 - Energy Efficiency and Conservation Block Grant Program (EECBG): funding to Colorado Energy Office for small community programs; larger population communities in Colorado will receive direct federal EECBG funding.
- \$65,936,859 - Weatherization Assistance Program: income qualified program for residential energy efficiency and weatherization
- Unknown - Grid Resilience and Reliability: The bill provides \$2.5 billion to “states” via “a formula” determined by the U.S. Secretary of Energy. These funds are part of a set of grid resilience investments (billions) to be directed by DOE to investor- and consumer-owned utilities.

DNR

- State Formula Grants for orphan well plugging and reclaiming orphan well sites to reduce methane emissions (Colorado estimate TBD).
- State Formula Grants for the Inactive Mine Reclamation Program, including coal mine reclamation projects (Colorado estimate TBD).

In addition to the funding available through formula, there are also many competitive funds available that State agencies may decide to pursue. For example, \$8 billion is available for the development of four regional clean hydrogen hubs to be located in different geographic regions across the U.S. This is one example of a specific funding opportunity that the State of Colorado, along with numerous partners, may be competitive for and pursue. Colorado may join with nearby states on a funding application for a regional hydrogen hub, with Colorado’s focus being green hydrogen production from renewable energy, and the use of hydrogen in a variety of end-use sectors.

Estimates for competitive programs which State agencies *may* pursue to advance the State’s climate and clean energy goals include:

CDOT

- \$2.5 billion - Charging and Refueling Grant Program to fund Alternative Fuel Corridors
- \$5 billion - Clean School Bus Program (directly to school districts)
- \$250 million - Electric or Low-Emitting Ferry Program
- \$5.25 billion - Low or No Emission Bus competitive grants.
- \$500 million - Strengthening Mobility and Revolutionizing Transportation Grant Program
- \$250 million - Congestion Relief Program: Provides competitive grants to states, local governments and metropolitan planning organizations (MPO), for projects in urbanized areas of over 1 million people to advance innovative and multimodal solutions to congestion relief
- \$500 million - Healthy Streets Program: to mitigate urban heat islands, improve air quality and reduce the extent of impervious surfaces, storm water runoff and flood risks and heat impacts to infrastructure and road users
- \$86 million - New Tribal Climate Resilience and Adaptation Program

CEO

- \$40 million - Energy Auditors Training Grant Program: Maximum of \$2 million per state
- \$3.5 billion - for 4 regional direct air capture carbon removal hubs
- \$50 million - grants for States to establish and operate their own Class VI permitting program to facilitate geologic sequestration
- \$300 million - other Carbon Capture and Utilization funds
- \$500 million- Grants for energy efficiency and renewable energy improvements at public school facilities (schools are eligible)
- \$225 million - Building Energy Codes Technical Assistance and Training
- \$2.5 billion - Grants for Charging and Fueling Infrastructure
- \$5 billion - Energy Infrastructure Federal Financial Assistance Program
- \$110 million - Battery Recycling Grants: Two competitive grant programs through U.S. DOE. \$60 million for battery recycling research, development, and demonstration programs (states eligible); \$50 million for state and local programs
- \$9.5 billion - clean hydrogen research and programs to be managed by the Secretary of Energy: \$8B for at least 4 regional clean hydrogen hubs; \$1B to reduce the cost of producing clean hydrogen by electrolysis; \$500M for a Clean Hydrogen Manufacturing Initiative

DNR

Wildfire Risk Mitigation:

- \$100M - Collaborative Forest Restoration Program (USDA)
- \$500M - At-risk community wildfire defense grants (cooperation with states). Grants to local governments, in cooperation with states. \$250K cap planning grants; \$10M cap for implementation.
- \$90M - Joint Chiefs Landscape Restoration partnership: NRCS and USFS partnership supporting wildfire risk reduction projects on all land ownership types; projects to be based on input from regional foresters and state conservationists.
- \$400M - Forest Byproduct Processing Facilities - Financial Assistance: Private commercial and non-profit entities.