



Colorado's GHG Roadmap

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COLORADO
Energy Office

Major Components of Colorado's 2019 Climate Legislation

Reduce GHG emissions 26% by 2025, 50% by 2030, and 90% by 2050

Develop rules and policies to reduce GHG emissions

Creates regulatory path for electric utilities to meet 80% GHG reduction by 2030

Requires annual tracking and reporting through CDPHE



Largest GHG Emissions Sources

2020 CO GHG Emissions (MMT CO₂e, AR5 100-yr GWP)

2020 Largest Emissions Sources

1. Transportation
2. Electric power
3. Oil & Gas
4. Fuel use in buildings and industry



Colorado Sector Based Emissions Targets

Sector	Revised 2005 Baseline (MMT CO ₂ e)	2025 Target (MMT CO ₂ e)	2030 Target (MMT CO ₂ e)
Electricity	40.28	21	8
Oil and Gas	20.17	13	8
Transportation	30.71	23	18
Residential, Commercial, Industrial Energy Use	24.65	26	20
Other	23.42	19.9	15.6
Total	139.22	102.9	69.6
Percent Reduction	--	26%	50%



Near Term Action Highlights

Spring 2021

- Legislation: transportation, buildings, gas utilities, clean energy finance
- Xcel Clean Energy Plan & Electric Resource Plan
- Black Hills Transportation Electrification Plan
- CCUS task force convened

Fall 2021

- CDPHE emission reduction progress evaluation
- Natural and Working Lands Pathways analysis complete
- Electric Vehicle Equity Plan complete

Fall/Winter 2020

- Tri-State Electric Resource Plan
- Xcel Transportation Electrification Plan
- Regional Haze Rules/Ozone Plan
- CO Oil and Gas Commission Mission Change Rules finalized
- Just Transition Plan Completed
- Climate Equity Framework Completed

Summer 2021

- Xcel Renewable Energy Plan
- Black Hills Renewable Energy & Energy Efficiency Plan
- GHG standards for transportation plans
- Industrial emissions audit rules
- Clean trucking technical analysis complete
- Stakeholder process/study on how to incentivize improved land use decisions

Winter 2021

- Oil and gas emissions reduction rules
- AQCC structure and buildings rules
- Draft Natural and Working Lands Strategic Plan complete



Clean Energy Progress in Colorado

Xcel Energy

- Reduce GHG 80% by 2030 from 2005 levels
- Retire Hayden 1 by 2027 and Hayden 2 by 2028 without layoffs
- Filing a Clean Energy Plan

4 Holy Cross Energy

- 100% carbon free electricity by 2030
- Filing a Clean Energy Plan
- 100 MW new wind
- 35 MW new solar
- 25 Mw solar + storage
- 5 MW additional hydro

Black Hills Electric

- Reduce GHG 80% by 2030 from 2005 levels
- 70% emission reduction by 2023 with 200 MW solar project.
- Filing a Clean Energy Plan

5 Colorado Springs Utilities

- Reduce GHG 80% by 2030 from 2005 levels
- 32% renewable energy by 2030
- Close Drake coal plant by 2023 and close Ray Nixon coal plant by 2030.
- 200 MW new wind
- 175 MW new solar
- 167 MW battery storage.
- Filing a Clean Energy Plan

Platte River Power Authority

- Reduce GHG 90% by 2030 levels
- Close Rawhide coal plant by 2030
- Add 400 MW of renewable generation.
- Filing a Clean Energy Plan

Tri-State G&T

- Reduce GHG emissions associated with wholesale sales 80% by 2030 from 2005 levels; reduce in-state emissions 90% by 2030.
- Close all coal-fired power plants and coal mines in Colorado by 2030.
- Preferred plan adds 900 MW of wind, 900 MW of solar, 200 MW of battery storage

The 6 utilities that operate 99% of the fossil power plants in Colorado have committed to reduce emissions by at least 80% by 2030.

State will advocate for deepest reductions consistent with reliable, affordable power.



Slide 6

5 I reached out to Dan Hodges to get this update. Again, confirming inclusion.
Keith Hay - CEO, 1/8/2021

3 @will.toor@state.co.us

I reached out to Bryan and he shared these numbers with me. They may not be in a CEP, but are part of the over approach to the goal. Confirming that we should include them.

Reassigned to Will Toor - CEO

Keith Hay - CEO, 1/8/2021

4 I have confirmation from Bryan to include the the additional renewables on the slide.
Keith Hay - CEO, 1/8/2021

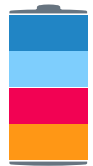
2021: a historic session

2021 Climate and Clean Energy Legislation

- SB 260 – transportation funding and planning
- HB 1266 – broad environmental justice/climate bill
- HB 1290 – funding for just transition
- Buildings package
 - SB 264 – clean heat plans, setting carbon goals for gas sector
 - SB 246 – beneficial electrification
 - SB 230 - capitalize green bank, expand building energy financing
 - HB 1105– funding for low income energy efficiency
 - HB 1238 – gas utility demand side management
 - HB 1286 – large building benchmarking / energy performance requirements
 - HB 1303 – GHG impacts of construction materials



SB 260: Transportation Electrification Funding



\$735 million of new fee revenue supports 3 new electrification and charging infrastructure Enterprises:

Charging Infrastructure & Electric Vehicle Equity

- ◆ New 'Community Access' Enterprise in Colorado Energy Office (CEO).
- ◆ Build charging infrastructure in communities across the State, link communities throughout the State with alternative transportation options (e-bikes), and support electric vehicle adoption in low and moderate income communities.



Fleet Electrification Incentives

- ◆ New 'Clean Fleet' Enterprise in CO Department of Public Health and Environment (CDPHE)
- ◆ Support fleet replacement (delivery trucks, TNCs, school buses, and other light/medium/heavy duty vehicles) with incentives to meet climate and air quality goals
- ◆ Support CDPHE's Mobile Source Program to complement vehicle investment.
- ◆ **\$290 million** investment

Public Transit Electrification

- ◆ New enterprise in Colorado Department of Transportation (CDOT).
- ◆ Support electrification of public transit through electrification planning efforts, fleet replacement and associated charging infrastructure.
- ◆ **\$135million** investment

HB 1266: Environmental Justice / Climate

- AQCC rulemaking to achieve 20% reductions in pollution from industrial sector by 2030
- AQCC rulemaking to achieve 60% reduction in pollution from oil/gas sector by 2030
May create opportunities in methane reduction technologies, emissions monitoring, reuse of old wells for geothermal
- Expanded focus on emissions reductions/monitoring in EJ communities
- Dates certain for utility clean energy plans
- Industrial and oil/gas rules likely lead to increased electrification

SB21-230 \$40 Million Stimulus



- \$40 million to CEO to support investing in clean energy and efficiency.
- \$30 million to the Colorado Clean Energy Fund.
- \$3 million to the New Energy Improvement District.
- \$2 million to the Residential Energy Upgrade loan program.
- \$5 million to Charge Ahead Colorado.
- Intent is to leverage 5-10X the amount of private capital.

HB21-1105 Low Income Utility Bill Assistance

- Creates a revenue source, in part for CEO's WAP.
- Will bring in about \$7 million in the first year and \$11 million in the second for energy efficiency.
- Also funds utility bill assistance program at similar level.



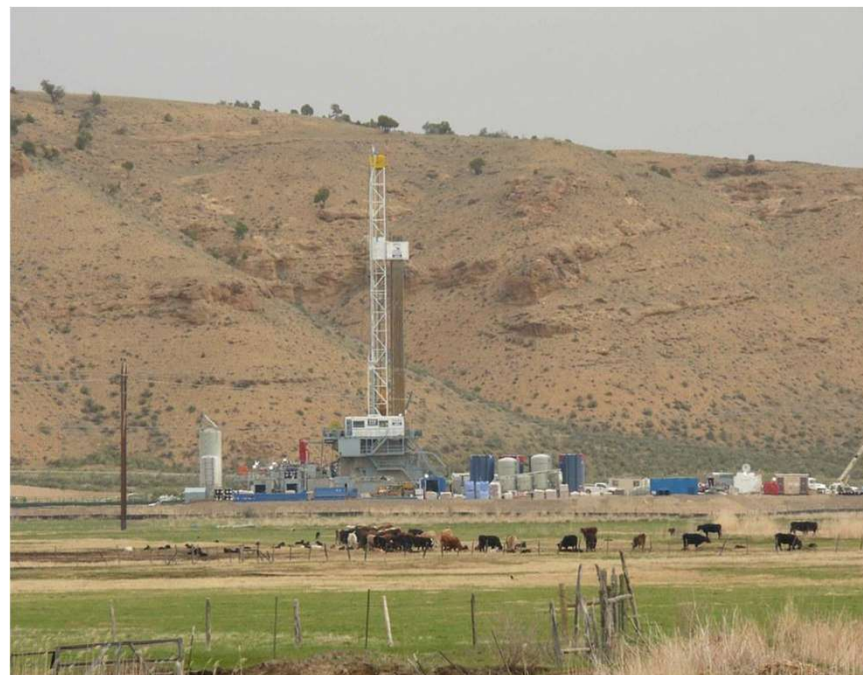
HB21-1286 Commercial Building Benchmarking/Performance Standards

- Requires energy benchmarking.
- Creates a task force within CEO to recommend performance standards to the AQCC.
- AQCC adopts performance standards to reduce GHG at least 20% by 2030.
- Utility data systems important to benchmarking



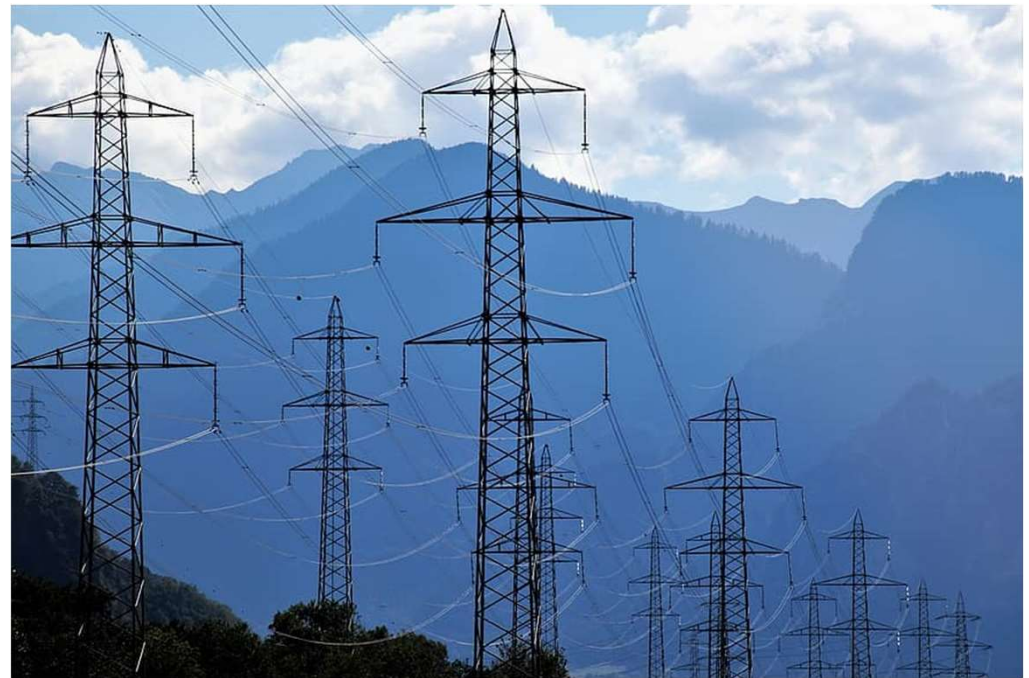
HB21-1238 Gas DSM

- Builds on successes in gas demand-side management programs in Colorado.
- Requires the PUC to set energy reduction targets.
- Updates cost-effectiveness of utility plans with science-based social cost of carbon and methane.
- Likely to drive significantly larger DSM programs

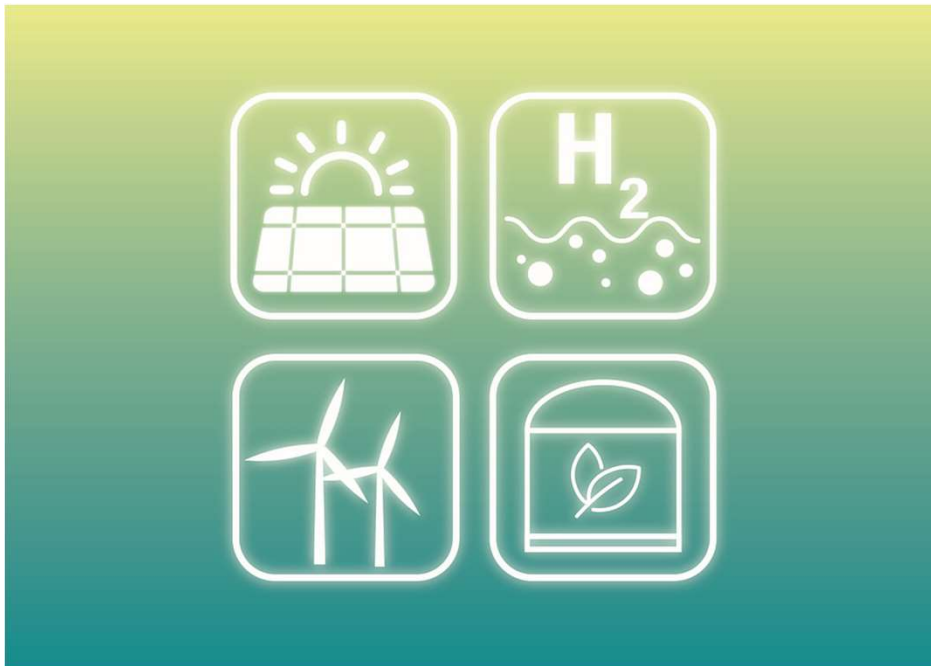


SB21-246 Beneficial Electrification

- Guides the PUC on how to implement cost-effective programs that provide incentives to customers.
- Incentives for energy-efficient electric systems for res, commercial, industrial
- Applies to IOUs - how do we best work with rural utilities?



SB21-264 Clean Heat Standards and Plans



- Requires gas utilities to reduce GHG pollution 22 percent by 2030.
- Using technology-neutral, outcome-based approach: gas DSM, beneficial electrification, Hydrogen, recovered methane.
- Since most gas utilities are IOUs, will drive action in rural areas, electric utilities should coordinate with gas providers

HB 1303 - Embodied carbon in public projects

- Requires the state architect to start setting standards for building construction projects
- Requires CDOT to start collecting information to allow the development of future standards
- Opportunities for innovation and investment in low carbon building and transportation materials

Near Term Actions: Oil & Gas

Reduces pollution by ~12 million tons by 2030

Policies:

- Broad O&G rulemaking on the AQCC long-term calendar for December 2021; stakeholder process has begun
- Emission limits based on reducing leak rates and other regulatory measures to achieve a 33% reduction in emissions for the sector by 2025 and over 50% (12 million tons) by 2030
- Emissions data/metric tracking to assure the sector remains on track
- COGCC implementation of new rules that eliminate routine flaring, requiring minimizing emissions, and track pre-production and production air emissions



Near Term Actions: Transportation

Reduce pollution ~12.7 million tons (MMT) by 2030

**6 MMT
reduction**

Low and Zero Emission Vehicle rules

**2 MMT
reduction**

Utility and public investment in fleet turnover and infrastructure for light-duty zero emission vehicles (SB19-077, electrification investments from SB21-260)

Collectively, the other strategies will target remaining 4.7 million tons

**~4.7 MMT
reduction**

GHG Pollution Standards for transportation plans	In progress - CDOT TC Rulemaking - Summer 2021
Incentivize land use to increase housing near jobs and reduce VMT and pollution	Under evaluation
Clean trucking strategy - infrastructure, fleet incentives, consider regulatory tools such as advanced clean trucks and fleet rules	In progress - Study to be Completed - Summer 2021 Stakeholder Engagement - Summer/Fall 2021; plus fleet investments from SB21-260
Participate in developing post 2025 vehicle standards (state and federal)	Federal and CARB processes
AQCC evaluation of indirect source rules	Pending - AQCC Rulemaking
Expansion of public transit, including setting the stage for Front Range Rail	In progress - SB21-238, on-going multimodal emphasis



SB19-077- Utility Legislation

- Legislation to allow rate-basing of EV infrastructure and require every investor owned utility to file EV plans supporting widespread electrification every 3 years
- Plans can include utility or customer owned charging, make ready infrastructure, customer rebates, education and promotion
- First plan approved in January -
\$105 million investment over 3 years by Xcel
- Strong focus on equity
- Important role for all utilities



Target: 1 million light duty EVs by 2030

- Supported by existing policies + recent utility and public investment plans
- Key factor: federal infrastructure and budget reconciliation packages addressing EV tax credits, technology development, charging investments
- Achieving goal is now aligned with strategies of major automakers such as General Motors
- Biden admin has set target of 50% market share by 2030, setting stage for future rulemaking
- \$15 billion for EVs in infrastructure package; likely much more in reconciliation
- Achieving goal will reduce GHG approximately 2 million tons in 2030 beyond meeting existing LEV/ZEV standards



Post MY 2025 car standards



- Federal government (US EPA/US DOT) will develop new light duty vehicle GHG and CAFÉ standards
- Clean Air Act (CAA) also allows CA to adopt standards; other states can stick with federal standard or opt in to CA standard using Section 177 of CAA; CARB developing proposal for 100% ZEV new vehicles by 2035
- State will provide input to both federal and CA processes, to maximize likelihood that one or the other will meet Colorado's needs



Clean Trucking Strategy



In July 2020, CDOT, CDPHE, and CEO announced plans to develop an all-of-the-above strategy to reduce pollution from medium- and heavy-duty transportation. The draft strategy includes a suite of ideas that will be evaluated comprehensively to determine the most impactful and reasonable actions:

- Accelerating fleet turnover in the conventional truck fleet
- Incorporating clean technology and developing ZEV infrastructure, especially for critical freight corridors
- Encouraging participation in programs like SmartWay
- Exploring adoption of Advanced Clean Truck standard
- Supporting workforce development
- Leading by example through green procurement

Technical analysis by MJ Bradley nearing completion; Public Input meetings to be planned for early fall 2021



GHG Pollution Standards for Transportation Plans

- Rulemaking being undertaken by CDOT and the Transportation Commission. The Air Quality Control Commission is expected to focus on verification and monitoring
- Plan is to amend current state rules on transportation planning to incorporate a GHG standard on transportation plans. Certain aspects (mitigation measures) also will require subsequent CDOT policy directives
- Draft rule scheduled to be released on August 13 followed by 5 public hearings around the state. Rule development process has included dozens of stakeholder and public meetings
- CDOT has developed a policy paper that describes the major policy issues inherent in the rule, including:
 - How Pollution Reduction Levels Will Be Determined
 - Magnitude of the Reductions
 - Role of Mitigation Measures
 - Enforcement
- <https://www.codot.gov/programs/environmental/greenhouse-gas>
- Rule is not intended to achieve remaining 4.7 million tons by itself, but is a crucial element



Innovation and new opportunities

- CCUS taskforce
- Hydrogen roadmap study
- Firm zero carbon generation
- Bipartisan infrastructure package- hydrogen, CCUS, transmission, energy codes, weatherization, EV funding

Land Use Planning and Incentives



State agencies must work with local governments and MPOs to develop strategies to promote more sustainable land use, and should develop criteria to use state investment to incentivize smart land use decisions.

Land use planning strategies can have a beneficial multiplier effect on other transportation policies.



COLORADO'S ROADMAP TO GREENHOUSE GAS POLLUTION REDUCTION

Questions ?

Thank You

<https://energyoffice.colorado.gov/>

- > Climate and Energy
- > GHG Pollution Reduction Roadmap