HB 23-1272

Legislative Council Staff

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Final Greenhouse Gas Emissions Report

Drafting Number:	LLS 23-0972	**Date:**	September 14, 2023
Prime Sponsors:	Rep. Weissman; Joseph Sen. Fenberg; Cutter	**Analyst:**	Matt Bishop | 303-866-6289 matt.bishop@coleg.gov
Bill Topic:	**TAX POLICY THAT ADVANCES DECARBONIZATION**		
Sectors Impacted:	☒ Electric Power ☒ Transportation ☒ Industrial Processes ☐ Waste Management ☐ Agriculture		☒ Natural Gas and Oil Systems ☒ Residential / Commercial / Industrial Fuel Use ☐ Coal Mining and Abandoned Mines ☐ Land Use / Land Use Change / Forestry ☐ Other
Net Change:	☐ Increase ☒ Decrease ☐ Indeterminate ☐ Minimal		
Report Status:	The report reflects the enacted bill.		

Emissions Summary

This greenhouse gas (GHG) emissions report analyzes the potential impacts of House Bill 23-1272 on greenhouse gas emissions and sequestration within a 10-year period following enactment, based on available data. This analysis focuses on selected provisions contained in the bill that directly impact GHG emissions and may not address all provisions found in the bill.

The various tax provisions in HB 23-1272 are expected to decrease GHG emissions beginning in the current tax year 2023. Most provisions have the potential to decrease emission on net, with the actual reduction dependent on the uptake for the various tax credits and other elements of taxpayer behavior. Some provisions result in short-term emissions increases, but may be offset in future years by related activities that subsequently decrease emissions.

Key Provisions

The bill contains a variety of tax policy changes that incentivize GHG emissions reducing activities, as described below.

Innovative motor vehicle and innovative truck income tax credits and specific ownership tax. The bill extends two state income tax credits for purchases and leases of electric and plug-in hybrid electric passenger vehicles and trucks. As under current law, the bill allows the purchaser of a vehicle to assign the credit to the motor vehicle dealer or financer. If the purchaser does so, they must be compensated for the full value of the tax credit, excluding a service fee of up to $250. Beginning in 2024, the bill allows purchasers who are exempt from taxation to qualify for the credit, which may benefit them if they then assign the credit to a dealer or financer.

Innovative motor vehicle credit. The bill extends the innovative motor vehicle credit for electric and plug-in hybrid electric motor vehicles from 2025 to 2028. The bill also increases the size of the base credit, creates an additional $2,500 credit for passenger vehicles under $35,000 MSRP, and disqualifies passenger vehicles over $80,000 MSRP from being eligible for the credit. The base credit equals $5,000 starting on July 1, 2023, and decreases over time to $500 in 2028. For tax years 2024 and 2025, if the financer or dealer claims the credit on the purchaser's behalf, an additional $600 credit is allowed.

Innovative truck credit. The bill extends the innovative motor vehicle credit for electric and plug-in hybrid electric trucks from 2025 to 2032. Currently, the credit applies to trucks that run on electricity, natural gas, hydrogen, and other fuels. The bill only extends the credits for electric and plug-in hybrid electric trucks, so that the credits for other fuel types will phase out as scheduled under current law. The size of the credit depends on the weight of the truck, ranging between $5,000 and $12,000 in tax year 2024, and then decreasing over time.

Beginning in tax year 2026, the amounts of the tax credits are reduced by 50 percent if state revenue is not expected to exceed the state's constitutional spending limit (TABOR limit) by at least 4 percent, with any credit less than $500 reduced to $0.

Electric fleet truck taxable value reduction. The bill reduces the taxable value of fleet vehicles that are electric or plug-in hybrid electric trucks with respect to the specific ownership tax. For tax years 2024 through 2027, the taxable value of such vehicles is 50 percent of the manufacturers' suggested list price. For tax years 2028 through 2032, the taxable value of such vehicles is 60 percent of the manufacturers' suggested list price.

Industrial clean energy tax credit. The bill creates a new, refundable state income tax credit, for tax years 2024 through 2032 for 30 percent of qualifying expenditures by an owner of an industrial facility to undertake an industrial emissions study, or between 30 percent and 50 percent of qualifying expenditures to implement greenhouse gas emissions reduction improvements. The aggregate amount of the credit is limited to $16 million for tax years 2024 through 2028 and to $24 million for tax years 2029 through 2032.

Geothermal energy expenditure income tax credit. The bill creates a new, refundable state income tax credit for tax years 2024 through 2032 for 30 to 50 percent of qualifying expenditures made to evaluate and develop a geothermal energy resource for the purpose of electricity production. Credits for approved projects may not exceed an aggregate amount of $5 million per taxpayer, and may not exceed $35 million for all taxpayers in all years the credit is allowed.

Geothermal energy production income tax credit. The bill creates a new, refundable state income tax credit for income tax years 2024 through 2032 for the production of geothermal electricity. The credit equals 0.3¢ per kilowatt hour of geothermal electricity generated, up to a maximum of $1 million per qualified entity per tax year.

Heat pump technology and thermal energy network income tax credit and sales and use tax exemption. The bill creates a new, refundable state income tax credit for the installation of heat pump technology or the development of a thermal energy network. The tax credit is available for tax years 2024 through 2032 and varies depending on the year and type of technology, from $250 to $3,000.

Eligible taxpayers must provide a discount for installation in the amount of the tax credit minus a percentage that may be retained.

Beginning in tax year 2026, the amount of the tax credits is reduced by 50 percent if state revenue is not expected to exceed the state's constitutional spending limit (TABOR limit) by at least 4 percent, with any credit less than $250 reduced to $0.

A different state income tax credit for the purchase of heat pump systems or heat pump water heaters was scheduled to expire after tax year 2024 under current law. The bill ends that credit after tax year 2023, so that only the new credit created in the bill is available for tax year 2024. The bill also repeals an existing sales and use tax exemption for heat pump systems and heat pump water heaters starting January 1, 2024.

Electric bicycle tax credit. The bill creates a new, refundable income tax credit for tax years 2024 through 2032 for the sale of new, qualifying electric bicycles. The credit is $500, and is allowed to a qualified retailer who sells an electric bicycle to a resident of the state and offers a discount equal to the lesser of $450 or the purchase price.

For tax years 2026 through 2032, the amount of the tax credits is reduced by 50 percent if that state is revenue is not expected to exceed the state's constitutional spending limit (TABOR limit) by at least 4 percent.

Sustainable aviation fuel production facility tax credit. The bill creates a new, refundable income tax credit for tax years 2024 through 2032 for costs incurred to construct a sustainable aviation fuel production facility. For tax years 2024 through 2027, the credit is equal to 30 percent of the total cost of construction, and decreases in later years. The maximum amount of total credits issued is capped at $1 million in 2024, $2 million in 2025 and 2026, and $3 million in 2027 through 2032. In the five years following receipt of the credit, sustainable aviation fuel must make up at least 60 percent of total fuel production at the facility.

Severance tax ad valorem credit. The bill modifies the ad valorem (AV) credit allowed under the state's severance tax on oil and gas. Under current law, taxpayers are able to claim a tax credit equal to 87.5 percent of the ad valorem (real property) taxes assessed or paid to a local government on oil and gas production. Starting in tax year 2025 under current law, the AV credit will be calculated on a per-well basis by applying the prior year's mill levy to the current year's gross income multiplied by the statewide oil and gas assessment rate of 87.5 percent, and then taking 87.5 percent of that amount, or about 76.6 percent of each well's current year gross income multiplied by the previous year's mill levy.

Under the bill, the AV credit will be reduced from 87.5 percent to 75.0 percent of the ad valorem taxes assessed or paid to a local government on oil and gas production in tax years 2024 and 2025. Starting in tax year 2026, the AV credit will be calculated as about 65.6 percent (75 percent of the assessment rate of 87.5 percent) of each well's current year gross income multiplied by the previous year's mill levy.

Emissions Assessment

Beginning in tax year 2023, the bill is expected to decrease GHG emissions from the various tax provisions in the bill. Each provision has the potential to decrease emission on net, with the actual reduction dependent on the uptake for the various tax credits and other elements of taxpayer behavior. The report describes some assumptions and limitations of this analysis below, followed by qualitative discussions of each provision.

Assumptions and limitations. This report assumes, commensurate with the bill's fiscal note, that tax credits that are capped in statute will be fully claimed by taxpayers each year. This has an indeterminate impact on the emissions assessment. If some credits are not fully claimed, any emissions decrease will be reduced. Alternatively, if some credits are fully claimed, that may suggest that taxpayers, in the aggregate, were induced to perform emissions-reducing activities beyond the scale of available credits, further reducing emissions.

The emissions impact of a tax credit depends on the extent to which it induces taxpayer behavior. For example, a taxpayer purchasing an electric vehicle instead of a gasoline-powered vehicle because of the tax credit decreases emissions over the lifetime of the vehicle. But a taxpayer who was already going to purchase an electric vehicle may still claim the tax credit, with no impact on emissions. Because the emissions impacts attributable to the bill rely on taxpayer behavior, the impacts have not been quantified.

Some of the credits contain a provision that reduces or eliminates them depending on the state's revenue situation with respect to the TABOR limit. The report describes the impact on behavior induced by the tax benefits; if some benefits diminish based on future economic conditions, some emissions benefits will reduce correspondingly.

Innovative motor vehicle and innovative truck income tax credits and specific ownership tax. Generally speaking, electric vehicles produce fewer GHG emissions than internal combustion engine vehicles. Reducing the costs to purchase these vehicles and lowering the specific ownership tax on electric fleet vehicles partially offsets their typically higher costs, which is expected to result in additional vehicle sales. Similar to electric vehicles' higher upfront costs, their production is more emissions-intensive than other vehicles due to the impacts of mining metals such as lithium for batteries. Over time, the lower emissions impact of electricity generation compared to gasoline favors electric vehicles. How long it takes to generate a net decrease in emission depends on the model of electric vehicle, the emissions intensity of the electric grid, and the taxpayers driving habits. While this indicates a short-term emissions increase, these provisions result in a net emissions decrease over the ten-year timeframe considered by the report.

Industrial clean energy tax credit. The industrial clean energy tax credit applies to qualifying expenditures for a study, such as an energy and emission audit or a feasibility study, and to a variety of industrial activities. Conducting studies has no direct impact on GHG emissions, although there may be downstream emissions reduction benefits to the extent that the taxpayer pursues emissions-reducing upgrades based on a study's results. The industrial activities are expected to decrease emissions in the long term, though the amount of emissions mitigated depends on the specific activities undergone and the types of industrial processes they support. These activities include, but are not limited to:

- replacing fossil-fuel-powered, off-road equipment such as forklifts and construction equipment with electric equipment;
- replacing fossil-fuel-fired equipment for space or water heating or industrial process heating with high-efficiency electric equipment;
- replacing fossil-fuel-fired or compressed-air-driven industrial process equipment with high-efficiency electric equipment;
- replacing fossil-fuel-fired equipment with hydrogen-fueled equipment;
- employing advanced refrigeration systems that reduce GHG emissions;
- installing electric vehicle charging infrastructure or hydrogen fueling stations for fuel cell vehicles at an industrial facility;
- upgrading or implementing energy monitoring systems;
- installing high-efficiency electric pumps, motors, compressors, and lighting;
- installing variable volume or load efficiency equipment, certain carbon capture equipment, or equipment used for collection of biomethane;
- installing onsite energy storage; and
- employing carbon management systems including direct air capture and other forms of carbon dioxide removal.

Geothermal energy expenditures and production. Both geothermal income tax credits promote the implementation for geothermal energy, either for developing geothermal electricity production facilities or directly for the production of electricity. While the GHG emissions impact of geothermal energy production depends on type of facility and its infrastructure needs, its life-cycle emissions impact is lower than using natural gas or coal for electricity generation. Developing new infrastructure may include including drilling wells, which is an energy-intensive activity that increases GHG emissions. However, this increase may be offset to the extent that the infrastructure is put to use for electricity generation as intended. This electricity, and other electricity generation that is eligible for the production tax credit, is expected to decrease emissions by reducing the demand for the more carbon-intensive energy mix in use in Colorado.

Heat pump technology and thermal energy network income tax credit and sales and use tax exemption. For the heat pump technology income tax credit, the bill specifies heat pump technology that is rated as energy efficient, according to federal standards. This report assumes that heat pump and thermal energy network infrastructure is more energy efficient than the alternative equipment it replaces, resulting in a net decrease in GHG emissions. This decrease is partially offset by ending early the existing sales and use tax exemption for heat pumps. However, because the tax benefit of the income tax credit exceeds that of the sales and use tax exemption, the bill is expected to create additional incentives for using this technology, resulting in a net decrease in GHG emissions.

Electric bicycle tax credit. Electric bicycles, or e-bikes, generally reduce GHG emissions, though the scale of the impact depends on what rides they replace. Using an e-bike instead of a car or bus (e.g. to commute or run errands) results in a substantial reduction in emissions. E-bikes are much lighter than other powered vehicles, making them a more energy efficient mode of transportation. Using an e-bike instead of walking, running, or using a traditional bicycle (e.g., for recreation) has a minimal impact on emissions. The overall emissions impact also depends on the class of e-bike, the amount of pedal assistance employed, and the emissions intensity of the electric grid.

Sustainable aviation fuel production facility tax credit. As with geothermal energy infrastructure, constructing new sustainable aviation fuel production facilities results in an increase in GHG emissions that may be offset in future years by the production of sustainable aviation fuel. These fuels, typically produced from biomass, are defined in federal law and result in lower GHG emissions than traditional aviation fuels. The bill requires that at least 60 percent of the facility's total fuel production in the first three years after claiming the tax credit be sustainable aviation fuel. The emissions impact depends on the actual proportion of sustainable aviation fuel produced over the lifetime of the facility.

Severance tax ad valorem credit. The bill decreases the benefit available for the ad valorem tax credit for oil and gas production. In principle, decreasing the benefit reduces the incentive to produce oil and gas resources, which in turn reduces GHG emissions from energy production. However, the actual impact is challenging to estimate. Severance tax revenue is very volatile year-over-year and oil and gas production are sensitive to global market conditions. Similar sensitivity to the ad valorem credit's impact on costs may reduce production. But the report's ability to isolate the impact of the change in effective tax rate is limited.

Data Sources and Agencies Contacted

Argonne National Laboratory
Colorado Energy Office
Edelman Global Advisory
Intergovernmental Panel on Climate Change
U.S. Energy Information Administration