CC4CA GHG Inventory Working Group Final Report April 23, 2020

Introduction

Working Group's Purpose:

To provide guidance to the CC4CA Policy Committee and staff as the Colorado Air Quality Control Commission goes through its inventory rulemaking. In crafting this guidance, the working group will consider the guidance developed by the previous GHG inventory working group during the legislative process, CDPHE's initial work for the upcoming rulemaking, and key documents during the rulemaking process.

Working Group Members:

Chair: Matt Scherr (Eagle County)

Vice Chair: Lynn Padgett (San Miguel County)

Members: Kristen Bertuglia (Vail), Heidi Henkel (Broomfield), Kelly McNicholas Kury (Pitkin County), Chris Menges (Aspen), Molly Saylor (Fort Collins).

Advisors: Catherine Drumheller (Broomfield Environmental Sustainability Task Force), Kim Wheels (Eco-Action Partners)

Staff: Tom Easley, Jacob Smith

Deliverable/Work Product:

A report or memo to the CC4CA Policy Committee that includes the following:

- Guidance on what should be CC4CA's top priorities and concerns in each of the three main elements of the GHG inventory process update: the AQCC emissions reporting system rulemaking, development of the inventory framework, and development of the emissions forecast component.
- Any other guidance or recommendations on CC4CA's development and implementation of a strategy to ensure that the end product of these Colorado Department of Public Health and Environment (CDPHE) processes is a robust, reliable, and accurate inventory system.

Background:

- Prior CDPHE inventories shortcomings: When CDPHE undertook inventories in 2014 and 2019, CC4CA members engaged in discussions and input to CDPHE staff, asking for improvements to the use of the Environmental Protection Agency's State Implement Tool (SIT) methodology. CDPHE's limited resources prevented it from responding to the CC4CA request to incorporate more actionable, policy-relevant state-level data, even though state staff acknowledged the limitations of the SIT tool and the advantages of a more robust inventory and forecast system.
- Passage of <u>SB19-096</u>, Collect Long-term Climate Change Data: CC4CA was the primary proponent of this 2019 legislation, and worked with bill sponsor Sen. Kerry Donovan to include provisions giving guidance on the reporting, inventory, and forecasting frameworks, as well as for funding for staff to do the work to develop them.
- CC4CA's overall position: During and following the SB19-096 adoption process, CC4CA has advocated the development of a statewide GHG emissions inventory and forecasting process

and product that would: (1) produce policy-relevant insights to inform data driven decisionmaking at the state and local government levels; and (2) augment local government efforts by creating or unlocking previously inaccessible but needed data.

Section 1. Emissions reporting system

Achieving state and local climate goals relies on coordinated and complementary climate action at all levels of government. Acquiring and analyzing data that is policy-relevant at both the state and local levels will help enable maximum emissions reductions at all levels.

SB 96 Provisions:

- Timeline: Adopt GHG reporting rules by June 1, 2020.
- From the legislative intent "The General Assembly declares that it is in the state's interest to leverage data collected and analyses conducted for its greenhouse gas emissions inventories and forecasts and make data sets available to local government."
- CDPHE shall consider what information is already publicly available from the EPA, and tailor new reporting requirements to fill gaps.
- The rules must include requirements for retail or wholesale electricity providers to track and report emissions sources for power consumed in Colorado.

CC4CA Issues and Concerns:

- In order to ensure the inventory is policy-relevant and is viewed as legitimate by the public, CDPHE should ensure that the data it collects in the future from the reporting activities covered by the proposed rule are made accessible in a useable format to local governments and all other interested stakeholders.
- The data should be capable of augmenting local governments' efforts by providing data previously inaccessible, but of high value to local government policy-making. The data should be adequately granular to see underlying trends and responsive to change over time.
- Particularly important is the ability to inform strategies around meeting the state's goal for emissions reductions by 2026, 2030, and 2050, compared to a 2005 baseline, as well as local government goals.
- The reporting system chosen should take into account what data should be collected to recalculate the 2005 baseline.
- CDPHE should develop the capability to address items not well covered in the draft reporting rules. (See Section 2 and the Appendix for CC4CA's priorities.) CC4CA acknowledges that establishing the data collection systems for these priorities will take time to build and supports an iterative approach to improving them over time, engaging stakeholders to do so. The reporting rule should specifically include provisions to direct the adoption of this iterative approach.

Section 2. Inventory system

The inventory should be best practice and science-based but oriented to informing policy, strategy, and decision-making, at both the state and local government levels. To do so, CDPHE should build on the EPA reporting system for major sources by incorporating additional emissions sources using data currently available at the state level, and also by developing methods to quantify sources from sectors for which data is not available.

SB 96 Provisions:

- Timeline: Must be updated every 2 years; no initial year specified.
- CDPHE must maintain and update robust and comprehensive inventories.
- Will enable tracking of progress in reduction of emissions over time.
- Must include recalculation of the 2005 baseline us
- CDPHE must publish inventory findings on agency website

CC4CA Issues and Concerns:

- The State must inventory at least all sectors for which Colorado may develop mitigation strategies and ideally would represent all significant sources. The State should establish a "deminimis" threshold and use that to evaluate exclusion decisions.
- In addition to the issues and concerns outlined in Section 1 above, CDPHE must develop the capability to build a comprehensive system that accounts for emissions from sectors that in the past have not been adequately quantified (*see Appendix that follows*). Priorities include transportation (using a VMT [vehicle miles traveled] basis), energy data made available at the regional and community level, inactive and abandoned coal mines, and aviation fuels. Additional categories are identified in the Appendix. The most important thing here is to develop the capability to have source (e.g., consumption) data available.
- The State should apply consistent methods and data sources for each year and commit to recalculating the baseline with any significant updates.
- Protocols must be developed for calculating global warming potentials (GWPs). This is
 particularly true for methane Its 20-year GWP has a much higher value than the 100-year GWP
 used in past inventories. There are good reasons to enable calculations of both timeframes. The
 100-year timeframe is cleaner for benchmarking to other cities and past state inventories. The
 state should also publish the 20-year time horizon as a supplemental view of emissions in order
 to shine a light on the opportunity to reduce methane. Again, the most important thing here is
 having source (e.g. consumption) data available. This allows various interested parties to make
 calculations with different GWP's.

Section 3. Emissions Forecast System

One of the most important functions of a robust inventory system is to enable forecasts of future emissions, both as an aggregated total and for each of the major emission sectors. This capability is essential for tracking progress towards meeting the state's 2026, 2030, and 2050 emissions reduction goals, but also for evaluating the effectiveness of various individual emissions reduction strategies. The underlying data supporting the state forecasts should be formatted so that it can be disaggregated for use in local government emissions forecasts.

SB 96 Provisions:

- Timeline: to be performed concurrent with inventory reporting (every two years).
- Forecasts must be made for the milestone year of 2025, then 2030, 2035, 2040, 2045.

CC4CA Issues and Concerns:

• The components of the forecasts must be aligned with the sectors used in the inventory.

- The forecasts should include future emissions scenarios that enable comparisons of emissions reduction outputs of policies. The GHG Emissions Reduction Roadmap that the Polis administration has under development and expects to complete by September 2020 will use various scenarios. It is essential to develop an aggressive emissions reduction scenario, along with associated policies and strategies, that would enable meeting the state's 2026, 2030, and 2050 emissions reduction goals.
- The State should make the background assumptions and correlation forecasts available to the public in as much detail as possible. The format should be structured in ways that enable local governments to do their own forecasting.

Appendix: Filling Local Government Inventory Gaps

This appendix highlights information gaps that CC4CA's GHG Inventory Working Group identifies as the components needed to make both the state and their own local inventories more comprehensive, robust, and adept at surfacing data that can be used to inform policy-setting.

1. General Data Collection

- In-house calculations. In many cases the best approach to compiling data may not be through reporting of emissions but rather the reporting or collection of activity data. In many cases it is likely easier for local governments to report activity data than to report emissions data. It may be necessary for CDPHE to create systems to collect such data in order to close important gaps.
- *Establishing the data collection systems for these priorities*. It will take time to construct and then perfect data collection systems to fill these identified gaps. CDPHE should employ a stakeholder-assisted, iterative approach to improving these systems over time.
- *Emissions reporting thresholds.* Ideally, CDPHE's GHG reporting rules would include a rationale for how reporting thresholds are established. An initial scan should be done to identify cases in which many point sources lower than the threshold create a large overall source when aggregated.

2. Reporting Sector Data

High priority: Transportation data

The state's draft reporting rules uses as the reporting basis for this sector the volume of fuels handled by fuel suppliers and distributors. This approach may be policy-relevant at the state level, but for local governments a more policy-relevant methodology to calculate transportation emissions would be to use a *vehicle miles traveled x vehicle type (distribution) x fuel efficiency* approach. This would enable better insights into what is driving change, to leverage data already available through the Departments of Revenue and Transportation, and to provide local governments much needed data. To fully capture transportation emissions, this approach would need to be supplemented by data for off-road mileage of off-highway vehicles and dirt-bikes, which can be a significant source of emissions in CC4CA's rural counties.

• <u>Example:</u> Aspen did a study in 2014 (at significant cost) to figure this data out for their community. Other local governments have leveraged that study for their inventories as well.

Community-specific data and regularly updated data would be incredibly helpful for any community performing a GHG inventory.

• <u>Example:</u> Fort Collins accessed motor vehicle records from 2005-2018 to get a granular vehicle distribution, which can be paired with EPA fuel efficiency data to get emissions down to the vehicle model level. This approach provides the basis for pulling electric vehicles' electricity use out from the overall category.

High priority: Energy data

Many Colorado local governments struggle to get consistent energy data. Ideally, CDPHE could provide regional energy data or more detailed city-scale information to communities. Similarly, CDPHE should create a repository for emissions factors that could help local governments close crucial gaps. This may require CDPHE to request more granular utility energy sales data.

• <u>Example</u>: In San Miguel County, propane data is not available from private companies. Not only does the county not have data from which to calculate emissions, but it also doesn't have a way of determining how much of the increase it is seeing in natural gas use is from new construction and economic growth *vs.* properties converting from propane to natural gas.

High priority: Data from all underground coal mines

Over the last several years, many West Slope communities and stakeholders have been exploring pathways to eliminate or repurpose fugitive methane from coalmines as an economic development opportunity. Although federal regulations and other barriers have prevented access to or exploitation of fugitive methane emissions in many cases, a better comprehension of the methane emissions—and hence, their development potential—could play a part in overcoming barriers to coal mine methane energy development opportunities.

CDPHE's draft reporting rules require "active" underground coal mines to report their emissions to CDPHE, regardless of emissions thresholds, in addition to any coal mine that must report under the federal GHG reporting rule (Subpart FF of 40 CFR, Part 98). Some may interpret the "active" coal mine designation as being limited to only those underground mines that are presently producing coal. Such an interpretation would overlook additional mines in Colorado where onsite activity continues to influence the amount of methane emissions, even in the absence of coal production. The Division should ensure that the "active" underground coal mines subject to state reporting include not only mines that have produced coal in the relevant year, but also those mines where venting, pre-mining degasification or development, or other on-site activity may influence the amount of methane emitted into the atmosphere. In particular, CDPHE should make certain that any underground coal mine that falls within the scope of the federal reporting rule (Part FF, source category as defined in 40 CFR § 98.320) must also report emissions data to CDPHE.

In addition, CDPHE should ensure that its GHG inventory efforts take full account of *all* underground coal mines in Colorado, including those that have long been inactive or abandoned. According to a 2016 CEO report (*Coal Mine Methane in Colorado: Market Research Report*), inactive coal mines release methane, at a declining rate, for an extended period of up to 50 years. The report estimates that abandoned coal mines in Colorado accounted for a full 25% of the state's total methane emissions in 2013. While it would be infeasible to require annual emissions reporting associated with abandoned mines, CDPHE should make separate efforts to ensure that it fully understands and accounts for the emissions from

this sector. This will likely involve close coordination with the CEO, the Colorado Division of Reclamation Mining and Safety at the Department of Natural Resources, federal surface land owners (including the U.S. Forest Service and the Bureau of Land Management), and various West Slope communities and stakeholders.

• <u>Example</u>: The proposed federal Colorado Outdoor Recreation and Economy("CORE") Act (*H.R.823,* introduced by Representative Neguse in 2019) describes a "Coal Mine Methane Use Pilot Program" for Colorado's Thompson Divide area. The pilot program would require inventorying fugitive coalmine methane with the purpose of "promot[ing] the capture, beneficial use, mitigation, and sequestration of fugitive methane emissions to reduce methane emissions; promote economic development; produce bid and royalty revenues; improve air quality; and improve public safety." The proposed legislation identifies the State of Colorado as a likely key partner in developing said inventory.

High priority: Aviation fuel data

CDPHE's draft reporting rules will provide an accurate inventory of the total aviation fuel delivered to aircraft at Colorado airports. However, a method to allocate the emissions from aviation fuel use to Colorado *vs.* outside the state is not addressed in the proposed rule. This is a key decision that CDPHE will have to make when finalizing the statewide inventory.

Future reduction strategies for aviation emissions would benefit from a standard allocation protocol to estimate aircraft emissions for all airports statewide. This approach would enable the state and local governments to understand the impact of aviation emissions compared to other sectors and implement consistent reduction strategies at a statewide level. In addition, as the state considers reduction strategies for aviation fuel it will need a uniform inventory of emissions at each airport to assess policy impact.

- <u>Example:</u> The Aspen Pitkin County Airport uses the Airport Cooperative Research Program's *Report 11: Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories*. Typically aircraft engine emissions represent the majority of the emissions from total airport operations, including all stationary sources (e.g., boilers) and ground operations. Since aircraft fuel use is such a significant portion of the emissions, it is important to understand how local governments inventory and allocate these emissions. The Aspen Pitkin County Airport breaks out the emissions from aircraft by Approach, Taxi/Idle/Delay, Takeoff, Climb out, and Residual/Cruise/APU.
- <u>Example</u>: In the regional inventory that EcoAction Partners performs for San Miguel and Ouray Counties, 100% of the Telluride airport emissions 65% of Montrose's airport emissions are assigned to the regional inventory. Other airports that serve the region are deemed to have a small enough impact to be negligible.

Waste data

CDPHE's draft reporting rule provides for reporting of total methane emissions from landfills. A more policy-relevant approach for local governments would be the methane commitment approach, counts waste disposed in the inventory year. (See the ICLEI <u>Global Protocol for Community-Scale Greenhouse</u> <u>Gas Emission Inventories</u>, at page 91.) This methodology multiplies annual tonnage x waste characterization x emissions factor by type of waste. This would provide insight into drivers of change

and, if the data is collected with local governments' needs in mind, could help close significant data gaps. Doing this may require CDPHE to collect additional data itself (*vs.* requesting it).

• <u>Example:</u> Fort Collins is one of the only Colorado cities to have all of this information without having to resort to use of generic data. Through a hauler licensing system that requires tonnage and destination to be reported and regular (but infrequent) waste audits, Fort Collins can estimate waste GHGs. The benefits include seeing that declining printed media dramatically reduced waste emissions since 2005.

For some rural counties without landfills, such as San Miguel county, landfill data will not be helpful for its inventory. All waste and recyclables are trucked to other counties, and there is inconsistent availability of volumes transported.

 <u>Example</u>: In San Miguel County, waste and recycling volumes are provided per jurisdiction by one local waste hauler (Bruin), however Waste Management has not been cooperative with providing data since the initial inventory in 2010. Even at that, the 2010 data provided was a total for the Western Slope region WM serves, forcing a very rough estimate estimated by % of county population. WM stated that the trucks they use in rural areas (versus in cities on the Front Range) do not have the capability of weighing / tracking waste collected per community, and their collection runs across county boundaries, so with these trucks, it's too difficult for them to provide the data needed.

Agriculture, forestry, and land use

With Colorado's abundance of forests and agricultural lands, state and local governments may pursue carbon sequestration strategies for reducing GHG emissions. To ensure that the voluntary reporting from agricultural operations provided for in CDPHE's draft reporting rules is policy-relevant for local governments, the data should be collected preserving geographic information. For this sector, it will also be important for local governments to determine how to track changes in land use, so reliable methodologies must be developed for calculating changes resulting from improved agricultural practices, planting trees, new construction and development. In 2019, ICLEI published a <u>new protocol</u> for incorporating these emissions.

• <u>Example</u>: San Miguel County has developed one such inventory (*Greenhouse Gas Inventory from Agriculture, Forestry and Other Land Uses for San Miguel County, Colorado*, 2019).

Food data

To improve upon food-related GHG emissions, regional food studies, similar to one performed in Denver, should be performed. Funding to perform this type of study in different regions around the state could be helpful toward calculating the overall statewide food-related emissions. The studies need to be based on data and methodology that can be updated to track increases in local food purchases and earth-friendly agricultural methods to quantify reductions in food emissions.

Cement data (materials)

To make cement/materials emissions data more policy-relevant, a methodology should be used that accounts for the amount of construction occurring in a local jurisdiction, and should include all construction-related materials (versus just cement).

Refrigerants, F-gases, HFCs

While the reduction of HFCs is addressed in the CDPHE rule, the larger industrial process and product use (IPPU) category is not clearly addressed in the emissions reporting section. Some Colorado communities have included IPPU emissions in local inventories. Having them included at all levels of government greenhouse gas inventories would provide an opportunity for alignment. CDPHE could collect this information and provide it to local governments, closing a current gap.