



WORK SESSION OF THE CITY COUNCIL
448 E. 1st Street, Room 190
Salida, Colorado 81201
August 3, 2020 – 6:00pm

AGENDA

Please register for Work Session Meeting

<https://attendee.gotowebinar.com/register/3339757082352927504>

After registering, you will receive a confirmation email containing information about joining the webinar.

1. Salida Public Schools Update
2. Greenhouse Gas Inventory Presentation

Individuals with disabilities needing auxiliary aid(s) may request assistance by contacting the City Clerk at 448 E. 1st Street, Ste. 112, Salida, CO 81201, Ph. 719-530-2630 at least 48 hours in advance.

City of Salida: 2018 Greenhouse Gas Inventory Report
Prepared by: Erica Wohldmann-Gift, Ph.D.

Executive Summary

This report summarizes the findings of the City of Salida's first Greenhouse Gas (GHG) Emissions Inventory conducted for 2018, which is the first step toward developing a plan to reduce emissions. In addition to describing the methodological details and results of the GHG Emissions Inventory, some recommendations for improving the accuracy of future inventories and for reducing emissions are made.

This report addresses greenhouse gas (aka "carbon") emissions generated from residential and commercial energy consumption (including that required for water treatment, distribution, and wastewater treatment), and transportation in the City of Salida ("Scope 1 and 2" emissions), as well as from activities not directly controlled by those who reside in the city, such as solid waste disposal and some transportation emissions ("Scope 3" emissions). Because it is difficult to track emissions related to tourism, freight, and some other sectors given the current data available, some of the Scope 1 and 2 emissions likely belong in Scope 3. These issues and others are discussed in the Recommendations for Future Inventories section below.

Senate Bill 19-096, addressing GHG emission data collection, and House Bill 19-1261, addressing statewide GHG reduction goals, were passed during the 2019 legislative session and signed into law on May 30, 2019. As data required by those bills becomes available, and as the City of Salida develops better ways of sharing data, it is expected that future inventories will reflect more detailed and accurate data and estimation calculations and better inform progress towards the city's emission goals.

Partnering with Local Governments for Sustainability (ICLEI)

In 2020, the City of Salida joined a cohort of 23 mountain towns committed to assessing and, ultimately, reducing their GHG emissions. The cohort was provided with mentorship, technical assistance, training, and emissions calculation resources from ICLEI, an international organization of 1,750 local and regional governments in 84 countries that have made a commitment to sustainable development. In addition to Salida, the cohort participants included: Bellevue, ID; Big Sky, MT; Blaine County, ID; Bozeman, MT; Carey, ID; Gunnison, CO; Golden, CO; Grand County, UT; Hailey, ID; Ketchum, ID; Laramie, WY; McCall, ID; Moab, UT; Mountain Village, CO; Mount Crested Butte, CO; Park City, UT; Salt Lake County, UT; Summit County, UT; Sun Valley, ID; and Vail, CO.

Under the guidance of Drew Nelson's office and with the support of several city employees, residents, and organizations such as GARNA, Dr. Erica Wohldmann-Gift (resident of Buena Vista and environmental consultant) collected and entered data for this GHG inventory, and wrote this report.

Background: Greenhouse Gases

Greenhouse gases are commonly measured in three different categories, or scopes, and each scope includes emissions from different sources.

Scope 1: Direct emissions from sources that are owned or controlled by residents, businesses, and the city. These include: natural gas, propane, and fuel oil usage for heating and hot water; fleet fuels (gasoline, diesel, gasohol, alternative fuels) for vehicles and equipment; and unintentional (i.e., fugitive) emissions from refrigerant systems and natural gas distribution.

Scope 2: Indirect emissions resulting from the consumption of purchased electricity, steam, hot water or other uses of energy (e.g. chilled water) purchased by residents, businesses, and the city.

Scope 3: Emissions from sources not owned or directly controlled by residents, businesses, or the city, but are a consequence of operations that support the city. This includes: transportation emissions related to tourism, city-funded business travel, and freight; emissions associated with contracted solid waste disposal and wastewater treatment; distribution losses associated with purchased electricity; emissions from the production of purchased goods and use of sold products; and several more.

Methodology: Data Collection and Sources

Electricity Usage. Xcel Energy makes Electricity Usage Reports available online. The file included residential and commercial energy usage for households and businesses within the city limits only, and the most recent report was for 2018. Therefore, any homes or businesses outside of the city limits were not included in the GHG Inventory with two exceptions. Specifically, because ICLEI requires data to be entered for water treatment and wastewater treatment, 2019 Xcel energy bills for the City of Salida Water Treatment Plant and the Wastewater Treatment Plant were obtained from Judith Brown. For the Water Treatment Plant, sites included: 8651 W US WAY 50 (Galleries and Bulk Water Station); 900 Poncha Blvd. (Pump Station); 8754 CR 175 (Pasquales Res); 8475 CR 120 (WTP); 8215 CR120 (WTP); and 9051 CR 140 (High Zone Tank). For the Wastewater Treatment Plant, which has been annexed into city limits but was not included in the Xcel Electricity Usage Report, the site assessed was 6608 CR102 Unit 2. All files used to calculate electricity usage can be made available upon request.

Fuel Consumption for Heating (Natural Gas, Propane, Fuel Oil). The US Energy Information Administration (EIA) publishes annual reports for each state for residential sector energy consumption of coal, natural gas, distillate fuel oil, and petroleum (HGL and Kerosene). The most recent report available was from 2017. To determine the amount of each fuel used by Salida residents, the population of Salida was divided by the population of Colorado, and that number was multiplied by the amount of each fuel type consumed in the state. Importantly, this assumes that the average consumption for Salida residents and Colorado residents is the

same. Because Atmos Energy does not make consumption records available, this method the approach recommended by ICLEI. That said, Atmos Energy Colorado is required to report statewide emissions and, in 2018, reported serving approximately 120,000 customers in 14 counties. Based on the population for each of those counties, Chaffee County represents approximately 4% of their total customer base, or approximately 4,783 customers. Salida residents make up approximately 31% of Chaffee County's residents, or 1,483 customers. This number was used as a second way of estimating the percentage of statewide emissions attributed to Atmos Energy customers in Salida.

The EIA data was fairly similar to, although lower than, the estimates made using Atmos Energy statewide reports. However, as stated above, ICLEI suggests using EIA data when actual consumption records are not available, so the figures included in this report are from EIA data.

Wastewater Treatment Plant (WWTP). As explained above, to determine the amount of electricity consumed in the process of treating wastewater, all 2019 Xcel Energy utility bills were obtained from Judith Brown. Natural gas consumption should have been included in the EIA data, so no Atmos utility bills were obtained. In addition to electricity consumption, other sources of emissions include: gas flaring emissions; N₂O emissions; and emissions from the combustion of the gas at the digester (used for heating the digester). Information used to calculate these WWTP emissions was obtained from Dan Poole.

Potable Water Treatment and Distribution. As explained above, all 2019 Xcel Energy utility bills were obtained from Judith Brown in order to determine the amount of electricity consumed in the process of treating and distributing water. According to Judith, the Water Treatment Plant does not use natural gas.

Transportation (Gasoline, Diesel, Gasohol, Alternative Fuels). The best practice for determining emissions from transportation is to use data from a Vehicle Miles Traveled (VMT) study. However, according to Kate Garwood with the Chaffee County Transportation Advisory Board, Chaffee County has not conducted a VMT study. Therefore, the second best practice is to use fuel sales.

The Colorado Department of Revenue publishes monthly fuel sales for the entire state, which includes the volume of fuel used for: gasoline; gasohol (a blend of ethanol of 10% and greater, and gasoline in varying percentages. Gasohol includes, but is not limited to, E10 and E85); highway diesel; and highway alternative fuels (compressed natural gas, liquefied natural gas, and liquefied petroleum gas). This inventory used 2019 records since they were available. Because this information is not available by city and/or county, it was necessary to determine what percentage of these sales should be attributed to Salida. According to ICLEI, the best approach was to 1) obtain Salida's annual retail sales from the Colorado Department of Revenue, 2) determine what percentage of statewide retail sales were based in Salida, and 3) use that percentage to calculate the percentage of fuel sales in Salida. The spreadsheets and calculations for this inventory can be made available upon request.

Unfortunately, the fuel sales approach to determining transportation emissions does not facilitate calculation of CH₄ and N₂O, but given the relative ease of this approach, is quickly becoming the standard for assessing transportation emissions. Importantly, this method is not ideal for towns that are adjacent to a major freeway (e.g., Vail and other mountain towns next to Hwy 70), which is not the case for Salida. Also important to note is the fact that tourist towns, such as Salida, have more emissions from transportation than similarly sized non-tourist towns. Visitors bring many social and economic benefits to our region, and they consume gas, produce waste, and use other resources that contribute to CO₂ emissions (e.g., electricity, gas, water, food, etc.).

Solid Waste Disposal (Landfill). Disposal records from 2018 and 2019 from the Chaffee County landfill were obtained for a project I completed for the Greater Arkansas River and Nature Association (GARNA). More specifically, I conducted a county-wide waste audit for 2018 and 2019, which included data from all waste haulers, landfill data, and recycling data. This information, along with a Regional Waste Study conducted by Beth Lenz (Upper Arkansas Area Council of Governments) in 2016-17. To determine the amount of solid waste associated with Salida, which makes up 31% of the population of Chaffee County, Chaffee County’s total solid waste total was multiplied by 31%. Data used to calculate emissions associated with solid waste disposal can be made available upon request.

Food and Other Consumption. According to the USDA, the average American consumes: 207 produce calories; 581 grain calories; 525 meat calories; 234 dairy calories; and 931 other calories per day. <https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system/> These numbers were used to determine how the population of Salida contributes to emissions associated with food consumption. Other consumable goods used in a GHG Inventory include: construction materials; clothing and other material goods; and services. Because of the difficulty in obtaining this information, emissions from other goods were not included.

Results

The City of Salida produces approximately 109,326 metric tons of CO₂e. Table 1 shows a breakdown of each source by scope.

Scope	Source	CO ₂ e
Scope 1	Transportation and Mobile Sources	39737
Scope 1	Water & Wastewater	19
Scope 1	Commercial Electricity	2976
Scope 1	Residential Electricity	13655
Scope 2	Commercial Gas	14103
Scope 2	Residential Gas	10008
Scope 3	Solid Waste	12447
Scope 3	Water & Wastewater	125
Scope 3	Food Consumption	16256
Total		109326

As can be seen in the table above, transportation and mobile sources of emissions contribute most to the total GHG emissions, making up roughly 36% of all emissions. This is followed by residential energy (22%), commercial energy (16%), then solid waste disposal (11%). Water and wastewater treatment make a small contribution to the emissions, which is good given the fact that these processes are incredibly difficult to change.

In 2015, Colorado's CO₂e emissions were 126,967,000. The population of Salida is 0.001 of the state's population. However, the emissions from Salida are .0009 of the state's emissions. Therefore, per person, Salida residents contribute less to the state's emissions than residents in other parts of Colorado. That said, many of the activities (e.g., air travel, freight, consumption of goods, manufacturing, etc.) included in the state's report should be partially attributed to activities in Salida and by Salida residents, businesses, and visitors.

Recommendations for Future Inventories

1. Electricity consumption for any manufacturing and/or commercial facilities considered part of the City of Salida, but that are not technically within city limits, should be included in future inventories. Similarly, electricity consumption for residents and other businesses outside of city limits, but that are considered part of the City of Salida, should be included in future inventories. For small to medium-sized businesses and households, this could be done by calculating the average GHG contribution for homes and businesses within the city limits, separately, then multiplying that number by the number of homes and businesses outside of the city. For larger manufacturing and/or commercial facilities, obtaining Xcel energy bills would be most ideal.
2. Atmos Energy public utility records would be the most accurate way to assess natural gas consumption by Salida residents and businesses. In the future, it might be helpful for city officials to request this information, as Atmos may be willing to release the data to government employees. In addition, because this inventory only includes households within the city limits, it does not include propane consumption (which is not available through EIA). It seemed relatively safe to assume most (even all) propane users reside outside the city limits. However, future inventories should include propane sales, if available.
3. No data from the airport or public transportation was included in this inventory, in part, because of the difficulty of obtaining fuel usage reports from various businesses and also in determining the proportion of emissions attributed to Salida. Mileage information and gallons used for all trips that originate or end in Salida would be necessary. Future inventories should attempt to include partial emissions associated with airport fuel usage, the Bustang and Chaffee Shuttle, and any other public transit services that operate within Salida (e.g., Salida Ski Bus).

4. Emissions from consumed goods should be included in future inventories. Sales records needed would include: lumber, concrete and other construction materials (construction); clothing and appliances (goods); and healthcare, recreation, and education (services).

Recommendation for Reducing Emissions

1. Encourage residents and, when possible, businesses, to use less electricity. Outdoor lighting could be turned off at night when not in use. This not only helps reduce emissions, it also reduces light pollution, which radically alters the nighttime environment of nocturnal animals, thereby, interfering with reproduction and reducing populations. Similarly, encourage residents and businesses to use high efficiency lighting, such as LED lighting and, when possible, solar energy. A variety of behavioral changes can be made to reduce emissions, and education around the options is important. Community-Based Social Marketing is a very effective approach to changing social norms.

2. Solid waste disposal accounts for a relatively large percentage of emissions. Several recommendations were included in the report I wrote for GARNA, which I hope will be shared more broadly with county officials. However, very briefly, four recommendations were made based on the findings from the waste audit I conducted: explore ways to divert compostable materials from the landfill; consider the possibility of replicating [Eagle County's Drop N' Swap Program](#); increase participation in recycling programs by making curbside recycling mandatory (i.e., bins must be offered as part of regular trash service); and explore ways to keep recyclable materials flowing within the local economy. These recommendations apply to the county as a whole, not only Salida.

3. Transportation is the largest contributor to the total GHG emissions. This is not surprising given a) Salida is a tourist town and b) Salida is relatively far from any major city. However, a number of strategies to reduce transportation emissions could be considered, including, for example: more in-town bike lanes and sidewalks that make commuting by bike/foot more attractive; better public transit between municipalities; changes in public transit to Denver (e.g., more frequent Bustang busses during busy holidays, encouraging/promoting Bustang ridership, better marketing of current public transit options, etc.). Again, CBSM could be used to create educational campaigns, and partnering with local organizations (e.g., GARNA) could be highly effective.

2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	IV.2	1 Emissions from product use occurring within the city boundary														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	V	AGRICULTURE, FORESTRY and OTHER LAND USE (AFOLU)														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	V.1	1 Emissions from livestock														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	V.2	1 Emissions from land														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	V.3	1 Emissions from aggregate sources and non-CO2 emission sources on land														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	VI	OTHER SCOPE 3														
2018	5963	206075587	USD - US Dollar	IPCC 5th Assessment 100 Year Values	VI.1	3 Other Scope 3	NE	124.7	0.01		125.54	High	Medium	The 2019 Xcel bills came directly from Judith						