This staff report presents comparisons and methodologies used to analyze the change in greenhouse gas emissions (GHG) inventories toward Council’s goals:

Reduce GHG emissions from county government operations 80% below 2016 level by 2040;
Reduce GHG emissions countywide 80% below 2014 level by 2050.

PURPOSE OF WORK SESSION
Present initial findings to Council and explain changes in methodologies that skew direct comparisons of results with base years.

BACKGROUND
Staff conducts GHG emissions inventories periodically to monitor progress toward the reduction of greenhouse gas emissions: government operations are quantified annually; countywide emissions inventories, a much more complex analysis, is completed every 5 years (2014, 2015 and 2019).

SUMMARY
Despite changes in inventory systems that develop as climate science evolves, staff has applied the new methodology to current datasets to draw direct comparisons with previous inventories. See Attachment A for a detailed explanation of changes in methodology specific to the GHG emissions inventory for Government Operations; and Attachment B for changes in methodology to the Countywide GHG emissions inventory.

The bottom line is that GHG emissions have increased, although at a lower rate than would be observed had Summit County and residents not taken aggressive steps to actively decrease energy consumption. A significant reduction is expected when the transition to net 100% renewable energy for government operations occurs in 2023 and upon implementation of the Community Renewable Energy Program by 2030.

GHG inventories reveal critical information regarding what’s working and what doesn’t work so that actions can be amplified where the best results are realized. To explain the GHG inventories in detail, Darcy Glenn will present the results using the attached power point presentation.
NEXT STEPS

As Summit County and governments worldwide address the political realities of altering the course of a global society driving climate change, staff continues to use GHG inventories and data to identify, prioritize, and direct resources toward reducing greenhouse gas emissions associated with county government operations as well as emissions associated with households and businesses throughout the county. The two sectors require similar, but different strategies. The table below highlights the steps to be taken by staff toward Council’s goals to reduce greenhouse gas emissions countywide and from county government operations.

<table>
<thead>
<tr>
<th>COUNTY GOVERNMENT OPERATIONS</th>
<th>COUNTYWIDE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target landfill, transit and fleet emissions</td>
<td>Identify opportunities and partners</td>
</tr>
<tr>
<td>Research best practices and technologies</td>
<td>Engage stakeholders</td>
</tr>
<tr>
<td>Write new Strategic Plan w prioritized projects</td>
<td>Update Climate Action Plan</td>
</tr>
<tr>
<td>Budget resources required</td>
<td>Seek and obtain resources</td>
</tr>
<tr>
<td>Implement resources as funded</td>
<td>Coordinate &amp; utilize available resources to</td>
</tr>
<tr>
<td></td>
<td>implement updated Climate Action Plan</td>
</tr>
</tbody>
</table>

ATTACHMENTS

ATTACHMENT A - County Operations Methodology Changes

ATTACHMENT B - County Wide Major Methodology Changes
**County Operations Methodology Changes**

Darcy Glenn, 3/25/2020

**CNG**

CNG Fleet Emissions have increased due to a change in how the fuel is entered into ClearPath

Previously: CNG was entered into ClearPath in terms of gallons

**Result:** ClearPath’s Emissions factor for CNG requires the units to be in standard cubic feet (scf). No CO2 emissions were calculated, only CH4 and NO2.

2019: CNG gallons were converted to standard cubic feet by multiplying by 123.57 scf/gallons gasoline equiv. This method was recommended by ICLEI. CNG was entered into ClearPath in terms of standard cubic feet.

**Result:** CO2, CH4, and N2O were calculated. For purposes of comparisons 2016-2018’s CNG emissions were recalculated using standard cubic feet (scf).

**Landfill**

Landfill Emissions have increased due to the inclusion of additional historical data. The First Order Decay model used estimates the current year’s emissions the wasted added to the land fill from when it opened to present day.

Previously: Only had data available since 2005

**Result:** 12-19 years of waste data was missing, so the calculations were lower than expected.

2019: Worked with Tim Loveday to find 3 Mile was data from 1999-2004, and estimate previous year’s inputs.

**Results:** Emissions from landfill increased, because it takes a long time for organic matter to decompose in a landfill. For purposes of comparisons 2016-2018’s landfill emissions were recalculated.

**Employee Commute**

The Methodology for calculating vehicle miles traveled (VMT) by employees during their commute changed.

Previously: An employee survey asked for their commute distance and the number of days they commuted per week.

\[
\text{Commute distance} \times \# \text{ of days they commuted per week} = \text{Distance per week} \\
\text{Distance per week} \times 48 = \text{Distance per year} \\
\text{Distance per year} \times \# \text{ of survey respondents/FTE} = \text{VMT for all County Employees}
\]

**Results:** VMT was 2,350,649 miles
2019: An employee survey asked for their workplace, the intersection closed to them, the number of days they commuted per week, and (if applicable) the number of people in their carpool.

Distance to work found using Google Maps

**Daily commute distance** = Distance to work * 2

\[(\text{Daily commute distance/ # in carpool}) * \# \text{ of days commuted per week} = \text{Distance per week}\]

Distance per week * 46 = Distance per year

Distance per year * # of survey respondents/FTE = VMT for all County Employees

46 comes from:

- \((96 \text{ hrs of vacation/year } + 52 \text{ hrs of sick time per year})/8 \text{ hrs per day}\)
- \((18.5 \text{ days vacation & sick time } + 11 \text{ holidays})/5 \text{ days per week}\)
- 5.9 work weeks off per year

52 - 6 = 46

Results: VMT for entire county calculated to be 2,435,446 miles. If 2019 was calculated based on previous years, then VMT's would have decreased if commute distance given was for 1 way (1,494,916 miles), and increased if commuted distance was for 2 ways (2,989,833 miles).
County Wide Major Methodology Changes

Solid Waste - 3 Mile

Solid Waste Emissions have increased due to a change in accounting methodology. This change is in line with ICLEI’s best practices. It allows emissions to be easily compare to emissions from the landfilling of improperly recycled materials outside of Summit County.


ICLEI 2019: Used ICLEI’s waste model that considers the lifetime emissions of all the waste added to landfills in 2019. These emissions will, in reality, be spread over decades. However, waste from past years do not contribute to 2019’s Countywide Emissions Inventory.

Residential Energy- Propane

Brendle 2016: Based on Utah’s statewide propane use. Percent allocation based on number of homes in Summit County using propane and total number of homes in Utah using propane. Number of homes from American Community Survey.

Brendle 2019: Same methodology as Brendle 2016

ICLEI 2019: Based on the MMBtu used in the average natural gas home. (Residential natural gas used/number of homes in Summit County using natural gas). Multiplied the MMBtu used to heat a home in Summit County by the number of homes in Summit County using propane. Number of homes from American Community Survey. This methodology recommended by ICLEI.

Wastewater Treatment- Coalville and Oakley

Wastewater Treatment emissions for Coalville and Oakley have decreased due to a change in methodology. In the past both towns waste water treatment plants have been entered as wastewater lagoon and not Wastewater Treatment Plants (WTP). Coalville has been a WTP since at least 2006. Oakley has been a WTP since at least 2003.

Brendle 2016: Coalville & Oakley were entered as wastewater lagoons.

Brendle 2019: Same methodology as Brendle 2016

ICLEI 2019: Coalville & Oakley were entered as Wastewater Treatment Plants (WTP).
AFOLU- Land Use
Brendle 2019: Same methodology as Brendle 2016
ICLEI 2019: Land used changes based on USA NLCD Land Cover data from 2013 and 2016 (most recent). Emissions factors still being determined. Summit County is a part of ICLEI’s Forestry Protocol GHG cohort.

AFOLU- Animals’ Enteric Fermentations
Brendle 2016: Used values from a 2009 study.
Brendle 2019: Same methodology as Brendle 2016

AFOLU- Animals’ Manure
Brendle 2016: Used values from a 2009 study.
Brendle 2019: Same methodology as Brendle 2016

AFOLU- Biomass Burning
Brendle 2016: Used values from a 2009 study.
Brendle 2019: Same methodology as Brendle 2016
ICLEI 2019: Not currently calculated

Sources of Emissions Newly Calculated Using ICLEI’s Methodology
Solid Waste- Henefer Landfill
Solid Waste- Improperly Recycled Material
Solid Waste- Compost
Wastewater- Septic tanks
Residential Energy- Wood for Heating (Biogentic CO2 only)
Residential Energy- Oil/Kerosene for Heating
Commercial- Blue Sky
Commercial- Subscriber Solar
Industrial- Blue Sky
Industrial - Subscriber Solar
Water Supply- From Jordanelle Special Service District
Fugitive Emissions- Dominion’s Fugitive Emissions, % Allocated to Summit County