



## 2014 Greenhouse Gas Emissions Inventory Report

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### **Executive Summary**

The Auraria Campus in downtown Denver is home to the Community College of Denver (CCD), Metropolitan State University of Denver (MSU Denver) and the University of Colorado Denver (CU Denver). The Auraria Higher Education Center (AHEC), an agency of the State of Colorado, operates and maintains the campus on behalf of the three institutions. The AHEC Sustainability Officer has conducted this Greenhouse Gas Inventory to fulfill requirements under the American College and University President's Climate Commitment (ACUPCC), which was signed by the executives of all three institutions on campus in 2007. This agreement requires that each signatory complete a Greenhouse Gas Inventory each year to chart progress against the institutional Climate Action Plan and associated climate commitments.

### **Methodology**

This inventory covers fiscal year 2014 (July 2013 – June 2014) and associated greenhouse gas emissions represented as metric tons of carbon dioxide-equivalents (MTCO<sub>2e</sub>). This report includes three "Scopes" of greenhouse gas (GHG) emissions.

Scope 1 GHG emissions are those directly occurring from sources owned or controlled by the campus, including on-campus stationary combustion of fossil fuels to heat, cool and light our buildings and the mobile combustion of fossil fuels by fleet vehicles. This includes the use of natural gas. Scope 2 GHG emissions are indirect emissions generated in the production of electricity and heat by energy companies which are purchased and consumed by the campus. These emissions also include steam use on campus. Scope 1 and 2 are the emissions of primary concern for the ACUPCC GHG report.

Scope 3 GHG emissions are all the other indirect emissions that are "a consequence of the activities of the institution, but occur from sources not owned or controlled by the institution" such as emissions from those that commute to the Auraria Campus, waste disposal, water, transportation, etc. For the purposes of this inventory, only commuter data was included and reported as Scope 3 emissions. Water use and waste management will be analyzed and tracked through other forms of sustainability reporting.

## **Findings**

In 2014 Greenhouse Gas Emissions for the Auraria Campus totaled 71,020 metric tons CO<sub>2</sub>e. This represents an increase in emissions of 3% or 2,330 metric tons CO<sub>2</sub>e relative to the previous year, 2013. The following pages outline key components of these findings.

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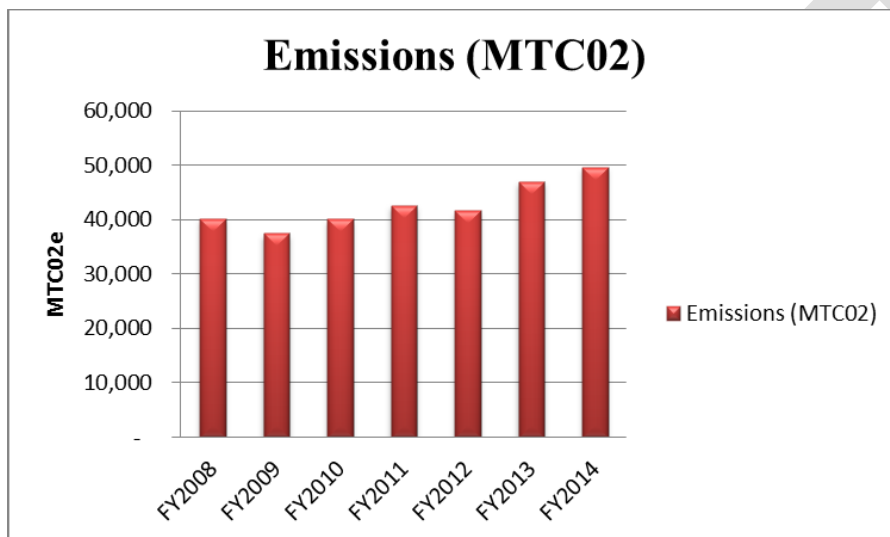
### Scope 1 & 2 Emissions Breakdown

The chart below outlines detailed use over the past seven years for scope 1 & 2 emission sources: Natural Gas, Electricity, Gasoline and Diesel use for fleet vehicles, and Steam.

<b>Natural Gas</b>	<b>Gas Usage (therms)</b>	<b>(MTCO<sub>2</sub>e)</b>
FY2008	583,030	3,265
FY2009	514,965	2,729
FY2010	573,746	3,041
FY2011	459,838	2,437
FY2012	434,019	2,300
FY2013	590,361	2,658
FY2014	445,777	2,365
<b>Electricity</b>	<b>Electricity Usage (kWh)</b>	<b>MTCO<sub>2</sub>e</b>
FY2008	40,433,156	32,347
FY2009	40,531,754	30,115
FY2010	43,955,138	31,516
FY2011	45,834,869	34,972
FY2012	46,942,925	34,456
FY2013	44,880,157	39,163
FY2014	48,852,093	42,030
<b>Steam</b>	<b>Steam Usage (lbs)</b>	<b>MTCO<sub>2</sub>e</b>
FY2008	54,218,000	4,554
FY2009	55,607,000	4,671
FY2010	66,934,000	5,577
FY2011	62,383,770	5,240
FY2012	57,917,675	4,865
FY2013	62,369,315	5,239
FY2014	62,415,000	5,243
<b>Year</b>	<b>Emissions (MTCO<sub>2</sub>)</b>	
FY2008	40,166	
FY2009	37,515	
FY2010	40,134	
FY2011	42,649	
FY2012	41,621	
FY2013	47,060	
FY2014	49,638	

### Yearly Comparison (Scopes 1 & 2)

Emissions have been steadily rising since the baseline year (2008). Emissions in 2014 are up 23% from the baseline year. This increase is largely due to the addition of new buildings and structures on campus and a steady increase in enrollment. The chart below outlines the overall trend of MTCO<sub>2</sub>e resulting from scope 1 & 2 activities, including electricity, natural gas, and steam use.



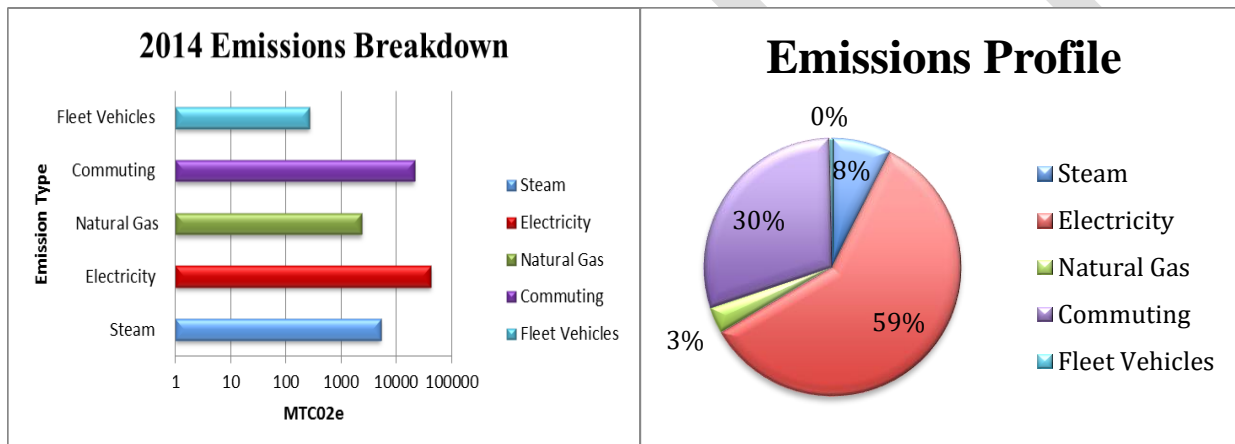
Consistent with other state colleges and universities and with the State of Colorado’s Climate Action Plan, the Auraria Campus Climate Action Plan calls for the following goals for campus Scope 1 & 2 GHG emissions reductions:

- By 2020 - 20% decrease from baseline
- By 2030 - 50% decrease from baseline
- By 2050 - 80% decrease from baseline
- By 2099 – 100% decrease from baseline (aka “climate neutrality” date)

In order to meet the Scope 1 & 2 emission reduction goals of the 2010 Auraria CAP, a focus should be kept on reducing building energy use including electricity, steam, and natural gas usage. A strong commitment to energy efficiency and a significant shift toward renewable energy are of utmost importance for reaching these targets.

### **2014 Emissions Profile (Scopes 1, 2 & 3)**

In 2014, fleet vehicle use (gasoline and diesel) accounted for 269 MTCO<sub>2</sub>e, less than 1% of the overall emissions profile. Natural gas used for heating campus buildings produced 2,365 MTCO<sub>2</sub>e which is roughly 3% of emissions. The steam used on campus for heating produced 5,243 MTCO<sub>2</sub>e and accounts for roughly 8% of the emissions profile. Emissions resulting from community transportation to and from campus account for 21,113 MTCO<sub>2</sub>e, 30% of total emissions. Purchased electricity to power our campus is by far the greatest source of emissions and totaled 42,030 MTCO<sub>2</sub>e, roughly 59% of total emissions.



### **Institutional Breakdown**

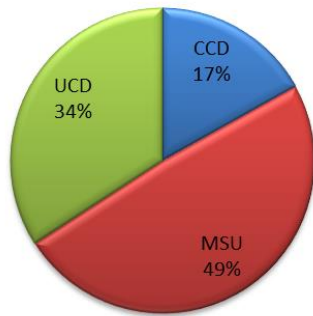
For the purposes of this report through the ACUPCC reporting system, emissions have been broken down according to enrollment and square footage to determine each school's individual footprint. Based on this methodology, total emissions breakdown is as follows:

CCD – 17% of total enrollment and 453,051 square feet = 11,998 MTCO<sub>2</sub>e

MSU Denver – 49% of total enrollment and 1,249,108 square feet = 34,790 MTCO<sub>2</sub>e

CU Denver – 34% of total enrollment and 881,950 square feet = 24,222 MTCO<sub>2</sub>e

## Institutional Emissions



## Highlights and Considerations

- Overall emissions from natural gas are down 11% from 2013
- Steam emissions have remained virtually the same from 2013 to 2014
- Emissions from electricity are up 7% from 2013
- Commuter data for this report is the same data as 2013 report as it was the most current set of data (the survey is completed every other year)
- The CU Denver Student Commons building was not online when the 2013 GHG report was submitted. This new building accounts for a portion of the increase in emissions.
- 5<sup>th</sup> Street Garage opened in the Fall of 2014, which is also a factor in the increase in energy usage.
- Auraria is in the midst of transitioning to a new energy management system, EnergyCAP. This software will help immensely in gathering data for this report. This is the first year in which this software was the primary source of data for this report. While the information is accurate, the system is still being modified and tweaked to perform better. It will be fully online for the 2015 report and changes may be made to this report retroactively if any issues are identified. Sustainability and facilities staff will be closely monitoring this new system and will be utilizing it to better understand building energy use which will help greatly in reducing energy use across campus.

- It must be noted this reporting process straddled two very different reporting mechanisms: manually collecting data and automated data through EnergyCAP which resulted in reporting challenges. Follow up and edits may ensue in 2015/16 to ensure the most accurate data is represented.

## **Recommendations**

Auraria's transition to smarter and more consolidated energy & utility management system is paramount in understanding where the greatest opportunities for improvement lie. EnergyCAP is one tool for achieving this and utilizing this new system will not only support the reporting process, but will help to show a clear and accurate picture of energy use. Auraria's decision to work with Energy Performance Contracting in 2015 is another crucial step in lowering the campus carbon footprint. Ongoing energy management support and monitoring is highly recommended as the campus transitions to newer and more technologically advanced systems.

Due to the age of most of the buildings on campus, close attention must be paid and resources allocated to ensuring that all campus buildings are energy efficient through both large and small-scale improvements. In addition, a shift from traditional fossil fuels towards renewable energy will dramatically reduce carbon emissions.

While the SCP (Sustainable Campus Program) provides significant support through various projects across campus, their efforts and resources alone are not enough if the Auraria Campus is to reach its target of reducing carbon emissions by 20% by 2020. A continuation of the SCP fund is crucial for building student involvement and creating a deeper culture of sustainability on campus, but a paralleled commitment from all three institutions to contribute to this work is critical.