



## City Council Staff Report

**Subject:** Park City's 2016 Community-wide Footprint  
**Author:** Celia Peterson  
**Department:** Environmental Sustainability  
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**Type of Item:** Informational

### Executive Summary

The 2016 Community-wide Carbon Footprint has been completed for Park City. The total footprint is 510,126 MT CO<sub>2</sub>e. This is a reduction of 12.3 percent since the last community-wide carbon footprint inventory was conducted in 2009 with a full data set from 2007. This may not be a real decrease, as a comparison of transportation data shows a decrease of 68.7 percent since 2007, which is not the case, and due to discrepancies between modeling methodology between two separate traffic studies.

The 2016 Community-wide Carbon Footprint was conducted to record as many of Park City's emissions as feasibly possible. The inventory was conducted according to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) BASIC+ standard. This includes Scope 1 emissions from stationary fuel and transportation, Scope 2 emissions from electricity, and Scope 1 and 3 emissions from waste, and additionally emissions from industrial processes, agriculture, forestry and other land uses, and trans-boundary transportation. In addition, a voluntary consumption-based inventory was conducted as a baseline and information only, however these figures will not be used officially as the standard methodology is not well developed.

EMISSIONS (mtCO <sub>2</sub> e)	2005 (Reference Only)	2007 (Baseline)	2016	% Change Between 2007 Baseline and 2016
Residential Electric	83,065	86,128	83,879	-2.6%
Residential Natural Gas	71,241	73,271	64,914	-11.4%
Residential Propane	1,245	1,334	1,296	-2.8%
C&I Electric	107,432	109,506	90,068	-17.8%
C&I Natural Gas	37,886	37,795	49,572	31.2%
M&I Electric	5,837	4,622	2,910	-37.0%
M&I Natural Gas	0	1,210	0	N/A
Transmission & Distribution Losses	0	0	8,313	N/A
Non-Specified Sources	12,496	13,015	90	-99.3%
Fugitive Emissions	-	-	3,735	N/A

<b>Total Buildings</b>	<b>319,202</b>	<b>326,881</b>	<b>304,777</b>	<b>-6.8%</b>
Vehicle Travel	128,549	129,059	40,439	-68.7%
Air Travel	118,954	116,020	148,691	28.2%
<b>Total Transportation</b>	<b>247,503</b>	<b>245,079</b>	<b>189,130</b>	<b>-22.8%</b>
Landfill	8,082	8,661	15,003	73.2%
Composting <sup>10</sup>	-	-	101	N/A
Wastewater Treatment	46	50	152	206%
<b>Total Waste</b>	<b>8,128</b>	<b>8,711</b>	<b>15,256</b>	<b>75.1%</b>
Refrigerants	662	709	910	28.4%
<b>Total Industrial Product Use</b>	<b>662</b>	<b>709</b>	<b>910</b>	<b>28.4%</b>
Agriculture, Forestry, and Land Use	63	145	52	-63.9%
<b>Total AFOLU</b>	<b>63</b>	<b>145</b>	<b>52</b>	<b>-63.9%</b>
Potable Water Use <sup>10</sup>	-	-	2,506	N/A
Well-to-Pump <sup>10</sup>	-	-	10,064	N/A
Cement Use <sup>10</sup>	-	-	2,866	N/A
Food Consumption <sup>10</sup>	-	-	19,286	N/A
<b>Total Other Scope 3</b>	<b>-</b>	<b>-</b>	<b>34,722</b>	<b>N/A</b>
<b>Total BASIC+</b>	<b>575,558</b>	<b>581,525</b>	<b>510,126</b>	<b>-12.3%</b>
<b>Total GHG Emissions</b>	<b>575,558</b>	<b>581,525</b>	<b>544,848</b>	<b>-6.3%</b>

## Abbreviations and Definitions

<b>AFOLU</b>	Agriculture, forestry and other land uses
<b>Carbon footprint</b>	A periodic measurement of carbon emitted by various activities and sectors. Carbon footprints are measured in three scopes: <u>Scope 1</u> - on site natural gas and other fossil fuel consumption, e.g. fleet and transit fuels <u>Scope 2</u> - purchased electricity (from Rocky Mountain Power) <u>Scope 3</u> - emissions from other, indirect sources such as visitors' air travel.
<b>Carbon sequestration</b>	The process by which carbon sinks remove carbon dioxide (CO <sub>2</sub> ) from the atmosphere.
<b>Carbon sink</b>	A natural or artificial reservoir that accumulates and stores some carbon-containing chemical compound for an indefinite period ( <a href="#">source</a> ).
<b>CO<sub>2</sub>*</b>	Carbon dioxide
<b>CO<sub>2</sub>e*</b>	Carbon dioxide equivalent is a measure used to compare the emissions from various greenhouse gases based on their global warming potential. GHGs included in PCMC's inventory are Carbon dioxide, methane (CH <sub>4</sub> ) and Nitrous oxide (N <sub>2</sub> O)
<b>Emissions factor</b>	A representative value that attempts to relate the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant.
<b>EUI</b>	Energy Use Intensity
<b>GHG Protocol</b>	Greenhouse Gas Protocol
<b>GHGs*</b>	Greenhouse gases. These typically include Carbon dioxide, Methane (CH <sub>4</sub> ) and Nitrous oxide (N <sub>2</sub> O).
<b>GPC</b>	The Global Protocol for Community-Scale Greenhouse Gas Emission Inventories
<b>ICLEI</b>	Local Governments for Sustainability, founded in 1990 as the International Council for Local Environmental Initiatives
<b>MT</b>	Metric ton
<b>Net-zero carbon</b>	Carbon neutrality, or having a net-zero carbon footprint, refers to achieving net-zero carbon emissions by balancing a measured amount of CO <sub>2</sub> e emissions released with an equivalent amount of sequestered through carbon sinks.

<b>Net-zero energy</b>	U.S. DOE definition (2015). “an energy efficient building where, on a source energy basis, the actual annual delivered energy is less than or equal to the on-site renewable exported energy.”
<b>Renewable electricity</b>	Energy sources for renewable energy include solar, wind, microhydro and biomass byproduct.
*	For simplicity’s sake, the terms CO <sub>2</sub> , CO <sub>2e</sub> and GHGs are used interchangeably.

## Background

- Park City was the first municipality in Utah to conduct a [community-wide carbon footprint for the year 2007](#).
- On September 24, 2015 City Council elevated Energy to a Critical Priority and set a goal of net zero carbon emissions for municipal operations by 2022 and citywide by 2032.

## The Challenge

Park City must reduce its community-wide net carbon emissions to zero by 2032. Periodic community-wide carbon footprint inventories must be conducted in order to track progress towards the goal. Staff recommends updates of the community-wide carbon footprint every three years.

[According to NASA](#), 2016 was the hottest year on record. The trend of globally increasing temperatures is troubling, as the increase coincides with increasingly [unpredictable weather](#) patterns.

Park City is especially vulnerable to changing weather patterns and a trend of warmer temperatures. Our economy is currently tied extremely tightly to the ski industry. We are [economically dependent on good snow](#) throughout the whole winter. Many visitors are able to drive or fly in for a good weekend, but many others plan their trips in advance. If we cannot supply a trustworthy source of recreation, particularly in the winter, the satisfaction of our winter visitors and subsequently the livelihoods of our full time residents working in the tourism and ski industry will be significantly compromised.

Human activities are [emitting carbon dioxide at a rate](#) far beyond what the planet has ever seen. The natural cycles of photosynthesis and decomposition cannot keep up with the amount of pollutants that our current industrial system and consumption habits emit as solid waste, wastewater, carbon dioxide and other greenhouse gases (GHGs), and other harmful emissions.

While carbon dioxide and other GHGs are naturally occurring substances and not inherently toxic or polluting, the levels at which they are present in the atmosphere is becoming increasingly problematic. In addition, the rate at which we emit carbon is increasing, exacerbating the problem. Greenhouse gases trap heat within Earth’s atmosphere. While localities may not experience warming or even cooling, the *overall* increase in heat causes air to move around more quickly and hold more water, which causes shifting weather patterns. Human civilizations are entirely dependent on relatively stable weather conditions, and we are seeing major shifts globally in events such as extreme drought, flooding, rising sea levels, melting polar ice caps, coral bleaching, and even extended growing seasons in some regions.

The major [mechanism by which carbon is released](#) into the atmosphere is combustion of fossil fuels. That is, we are burning fossil fuels to release the energy contained in molecular carbon bonds to create electricity, move ourselves around, heat our homes, etc. In the meantime we release the carbon as CO<sub>2</sub> into the atmosphere at a rate that 10's of thousands of times quicker than it was captured and stored hundreds of millions of years ago. In essence, we are running the formation of our current, hospitable atmosphere in reverse. Where we are headed is anyone's guess and patterns are becoming increasingly chaotic.

### **Park City's 2016 Community-wide Carbon Footprint**

In 2017, Park City hired Lotus Engineering and Sustainability, LLC (Lotus) and ICLEI to create a 2016 community carbon footprint. GHG emissions were calculated as a BASIC+ inventory using the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) protocol. The inventory also included primary consumption-based activities.

The BASIC+ 2016 Park City community carbon footprint shows **a total emission value of 510,126 MT CO<sub>2</sub>e**. This value excludes consumption-based sources and is more consistent with the emission sources evaluated in previous inventories (i.e. for 2005 and 2007), as well as other cities' GHG inventory methodologies.

The inclusion of consumption-based activities shows a total emission value of 544,849 MT CO<sub>2</sub>e. This inventory, in addition to BASIC+ data, includes emissions associated with cement use, food consumption, and well-to-fuel pump. Consumption-based emissions were included to get a general idea of the carbon intensity of these activities, however the standard methodology is not well developed and therefore these emissions will not be included in Park City's official carbon footprint.

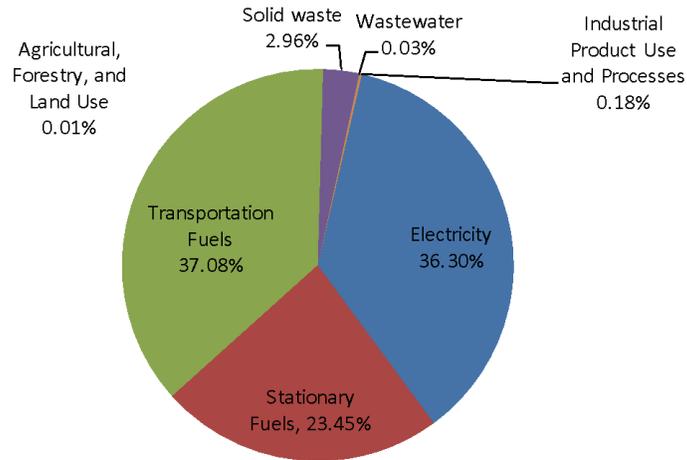
Park City established 2007 as the baseline year, with results from 2005 providing additional context. Since the baseline year of 2007, total community emissions have decreased by 12.3 percent, despite population growth of 17 percent. After normalizing for various growth factors, significant savings are revealed:

- Emissions per resident have reduced 25 percent
- Emissions per employee have reduced 28 percent

Nearly 97 percent of Park City's GHG emissions came from energy use, in the form of buildings, vehicles, and air travel. As has been the case historically, electricity and transportation fuels dominate the emissions profile for Park City, as shown in Figure 1.

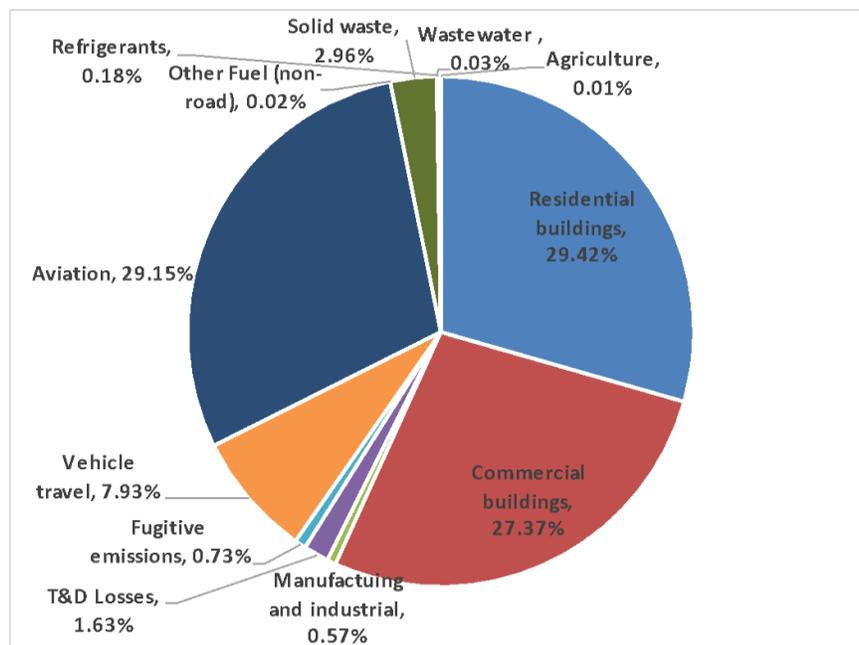
**Figure 1. 2016 EMISSIONS BY SOURCE**

## All EMISSIONS BY SOURCE



Residential and commercial energy consumption comprise roughly equal shares of emissions for Park City in 2016, making up 57 percent of total emissions, as shown in Figure 2. This is higher than the national average of 39 percent<sup>1</sup>. The other significant contributor is combustion of aviation fuels, comprising 29 percent of total emissions.

**Figure 2. 2016 EMISSIONS BY SECTOR**



## Methodology

<sup>1</sup> <http://www.eesi.org/files/climate.pdf>

The GPC defines what emissions must be reported and how they are measured and analyzed. The 2016 community carbon footprint was completed to be GPC compliant and enabled Park City to track, record, and report their emissions within ClearPath<sup>2</sup>. ClearPath draws on methods from ICLEI- Local Governments for Sustainability (ICLEI) U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, which provides more detailed methodology specific to U.S. Communities. Park City elected to conduct a BASIC+ inventory, which accounts for all Scope 1, Scope 2, and Scope 3 emissions.

Optional consumption-based emissions sources were calculated as well: potable water use, well-to-fuel pump emissions, cement use, and food purchases as information-only.

GPC does not account for emission reductions based on recycling or the use of renewable energy.

Park City's geo-political organizational boundary was used as the boundary for the emissions inventory.

Supplemental to a report, database and management plan, all data sources, contact information and correspondence were catalogued in order to facilitate comparable subsequent inventories.

## **Analysis**

The 2016 Park City community-wide carbon footprint shows a total emission value of 510,126 MT CO<sub>2e</sub>.

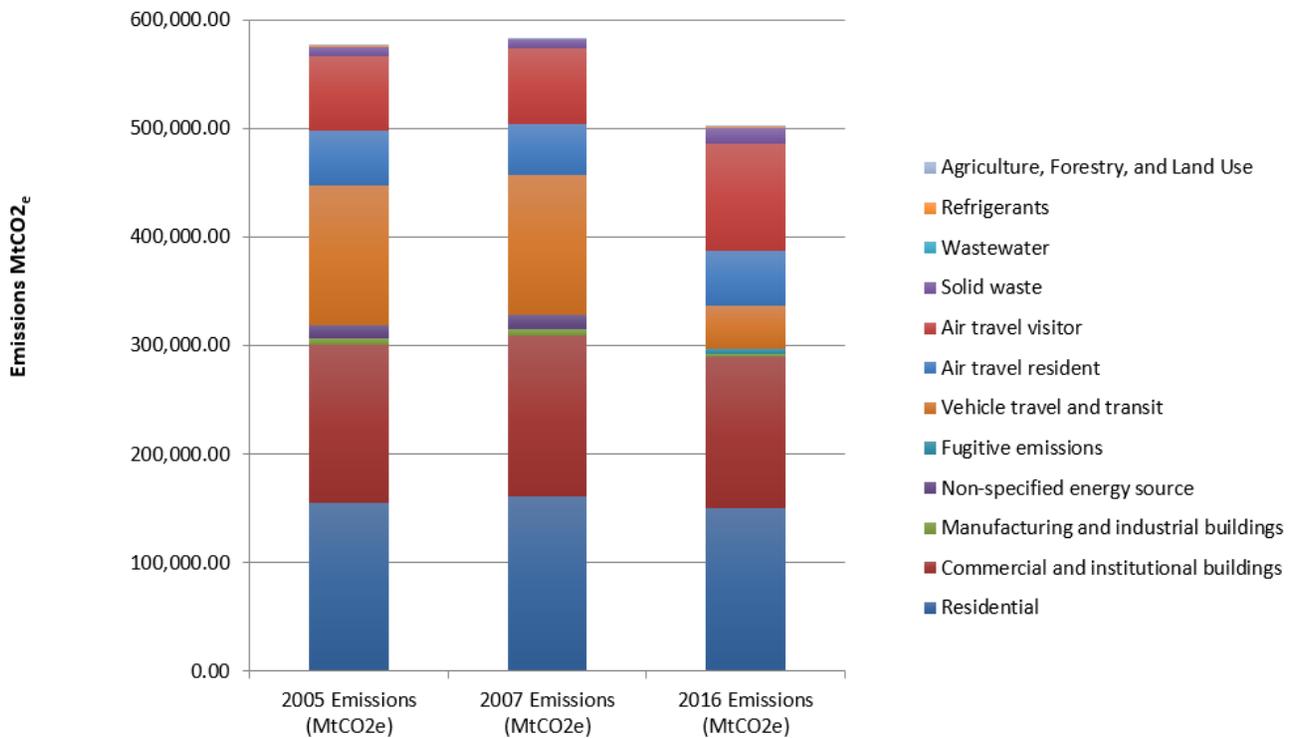
Residential buildings and aviation were the largest contributors to Park City's emissions in 2016, comprising 30 percent and 29 percent of the total emissions inventory, respectively. Commercial and industrial facilities followed closely, accounting for 28 percent of total emissions. Vehicular travel and on-road transportation (which includes gasoline and diesel-powered vehicles and public transit) accounted for 8 percent of Park City's total emissions in 2016; however when compared to 2007, the 2016 on-road vehicle miles traveled data looks to be significantly lower (68 percent) which is not the case. The discrepancy is due to varying methodologies in transportation studies, there remains a need to understand historic transportation data and data collection methodologies, and this number may be revised in the future.

Figure 3 illustrates the change in emissions over time by source. Due to changes in the methodology for conducting the inventory and the desire of Park City to have an inventory that is consistent with global reporting standards, there is some variation in the emissions calculated in 2007 and 2016 for transportation, waste, and AFOLU. As Park City strives towards aggressive emissions reductions and other climate action targets, the City intends to use the 2016 year and emissions methodology as a 'new baseline' that will provide a more comparable and robust emissions accounting methodology into the future.

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<sup>2</sup> This software was developed by ICLEI and was also used to calculate the 2016 municipal footprint

**Figure 3. CHANGE IN EMISSIONS BY SOURCE OVER TIME**



### Community Indicator Trends

Between 2007 and 2016, Park City experienced growth in varying degrees across all community indicators except for the number of heating degree days (HDD), as can be seen in Table 1. In these 9 years, the City has seen a 19 percent increase in population and a 38 percent increase in the number of people employed in Park City. Park City has also seen a 256 percent increase in the number of annual tourists, which represents significant growth in economic activity for the community.

COMMUNITY INDICATORS	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
Park City Population	7,025	7,165	8,376	19%
Number of Households	2,518	2,568	3,002	19%
Number of Housing Units	9,471	9,608	9,608	1%
Number of Jobs	10,547	11,860	14,506	38%
C&I Building Floor Space (sq. ft.)	2,771,253	2,771,253	3,016,898	9%

Number of Tourists Annually	200,387	201,807	712,725	256%
Heating Degree Days	7,837	7,770	6,874	-12%
Cooling Degree Days	161	348	408	153%

**Table 1. CHANGES IN COMMUNITY INDICATORS**

Although growth can benefit the community economically, it makes the task of achieving significant reductions in energy use and GHG emissions more challenging. However, normalized metrics<sup>3</sup> indicate that Park City is reducing overall GHG emissions in the face of growth, and in some cases normalized metrics present drastic reductions, as can be seen in Table 2.

EMISSIONS METRICS	Units	2007 (Baseline)	2016	Change since 2007
Residential electricity per person	kWh/person	12,604	13,588	7.8%
C&I electricity per employee	kWh/Job	9,681	8,424	-13.0%
Residential natural gas per person	dTh/person	165.52	145.71	-12%
C&I natural gas per employee	dTh/Job	51.58	63.63	23.4%
Transportation emissions per resident	mtCO <sub>2</sub> e/ resident	34.21	22.58	-34.0%

**Table 2. NORMALIZED EMISSIONS METRICS**

### Other Factors Influencing Emissions

Emissions are a produce of emission factors and activity data. Activity data refers to the data measures for the purpose of the community carbon footprint calculations, such as fuel consumed (e.g. kilowatt hours of electricity consumed, or units of natural gas consumed for heating), tons of waste generated, vehicle miles traveled, etc. Activity data is influenced by community indicators (i.e. population, economic growth, etc.) and energy consumption and generation behaviors. Changes in emissions result from the interplay of these factors. Park City can influence positive changes in emissions through various programs, policies, and outreach and education efforts. A review of emissions changes and the factors that influence those changes inform how well Park City's climate-change initiatives are working and may inform where the City should focus future efforts.

In addition, the emissions coming from electricity usage change over time as the generation source changes. For example, electricity generated from coal emits much more carbon compared to electricity generated from renewables. This is reflected as the

<sup>3</sup> Normalized metrics are intensity ratios that can be used in GHG emissions accounting to scale the net generated emissions by business metrics or other financial or community indicators.

grid emission factor. As Park City moves closer to 100% renewable electricity, the emission factor for electricity (Scope 2) will move closer to zero.

Energy	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
Electricity Emissions Factor	mtCO <sub>2</sub> e/MWh	0.95373	0.95373	0.74199	-22.2%

Table 4. CHANGES IN EMISSION FACTORS

### Energy trends

As shown in Table 5, total electricity emissions decreased nearly 12 percent between 2007 and 2016, while total natural gas emissions increased by almost 2 percent. However, energy consumption shows contrasting trends when compared to emissions: between 2007 and 2016, total electricity usage and total natural gas usage increased (Table 5).

ENERGY METRICS	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
<b>Activity Data</b>					
Residential Electricity	kWh	87,095,206	90,306,968	113,811,744	26.0%
Residential Natural Gas	dTh	1,153,113	1,185,980	1,220,499	2.9%
C&I Electricity	kWh	112,644,224	114,819,194	122,193,059	6.4%
C&I Natural Gas	dTh	613,222	611,756	923,049	50.9%
M&I Electricity	kWh	6,012,225	4,846,434	3,948,088	-18.5%
M&I Natural Gas	dTh	-	19,588	-	-100%
<b>Total Electricity Usage</b>	<b>kWh</b>	<b>205,751,655</b>	<b>209,972,596</b>	<b>239,952,891</b>	<b>14.3%</b>
<b>Total Natural Gas Usage</b>	<b>dTh</b>	<b>1,766,335</b>	<b>1,817,324</b>	<b>2,143,548</b>	<b>18.0%</b>
<b>Emissions</b>					
Total Electricity Emissions	mtCO <sub>2</sub> e	196,334	200,256	176,857	-11.7%
Total Natural Gas Emissions	mtCO <sub>2</sub> e	109,127	112,276	114,486	1.9%

Table 5. CHANGES IN ENERGY DATA

For electricity, this shows that lower grid emission factors offset the increases in consumption and resulted in lower overall emissions values. Likewise, a slightly lower emissions factor for natural gas between the 2007 and 2016 inventories, combined with significantly higher usage of natural gas, combines for a slightly higher level of natural gas emissions.

### Electricity Usage

Total community electricity usage increased 14 percent since the baseline year of 2007 (see Table 5). When normalizing consumption for growth factors, Table 6 shows residential electricity usage increased by 7.8 percent per household and per person since 2007. In comparison, Commercial (C&I) electricity consumption decreased per employee by 13 percent. This indicates a higher level of efficiency in the commercial and industrial building sector.

ELECTRICITY METRICS	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
Residential electricity per household	kWh/HH	34,590	35,165	37,910	7.8%
Residential electricity per person	kWh/person	12,398	12,604	13,588	7.8%
C&I electricity per employee	kWh/FTE	10,680	9,681	8,424	-13.0%

Table 6. NORMALIZED ELECTRICITY DATA

### Natural Gas Usage

Natural gas consumption increased over 18 percent overall in the community since 2007 (see Table 5). However, when normalizing natural gas consumption, Table 7 shows residential natural gas usage decreased by 12 percent per household and per person, whereas commercial natural gas per employee increased by more than 23 percent.

NATURAL GAS METRICS	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
Residential natural gas per household	dTh/HH	457.96	461.81	406.54	-12.0%
Residential natural gas per person	dTh/person	164.14	165.52	145.71	-12.0%
C&I natural gas per employee	dTh/FTE	58.14	51.58	63.63	23.4%

Table 7. NORMALIZED NATURAL GAS DATA

Because the heating degree days (HDD; see Table 1) decreased between 2005 and 2016 by 12 percent, it would be expected that residential natural gas use would

decrease, yet natural gas consumption per HDD decreased at a much lower rate than the HDD decrease, as shown in Table 8.

WEATHER NORMALIZED NATURAL GAS METRICS	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
Heating Degree Days			7,770	6,874	-12.0%
Residential natural gas per household	dTh/HH/HDD	0.05844	.05944	.05914	-0.5%
Residential natural gas per person	dTh/person/HDD	0.02094	.02130	.02120	-0.5%
C&I Natural Gas per employee	dTh/FTE/HDD	0.00742	.00664	.00926	39.4%

**Table 8. COMPARISON OF NATURAL GAS USE TO HDD**

The data suggests that the residential sector saw a decrease in natural gas consumption that is more likely due to behavioural and economic factors than to weather. Unlike electricity use in the residential sector, Park City residents seem to be using less natural gas to perform the same tasks.

Natural gas use in the commercial sector saw a significant increase over time; this may be due to an increase in the amount of commercial area that must be heated for employees in the winter and a lack of programs to help reduce natural gas consumption in the commercial sector.

### Transportation

As shown in Table 9, overall emissions from the transportation sector (including air travel) decreased by nearly 23 percent between 2007 and 2016. This reduction is in large part due to the calculation methodology for on-road transportation. The previous inventory utilized a study by Fehr and Peers Transportation to estimate vehicle miles travelled (VMT). The 2016 inventory relied on data from Summit County Engineering, which estimated VMT data for the entire county based on traffic counts from the Utah Department of Transportation and then applied a portion of VMT to Park City based on population. This value should be considered an estimate, and Park City intends to update this value as more data becomes available.

TRANSPORTATION METRICS	Units	2005 (Reference Only)	2007 (Baseline)	2016	Change since 2007
<b>Transportation Activity Data</b>					
On-road transportation visitor	VMT	53,852,304	54,627,003	14,352,074	-59.9%
On-road transportation resident	VMT	141,683,771	144,175,596	65,381,668	-59.9%

<b>Transportation Emissions</b>					
Vehicle travel	mtCO <sub>2</sub> e	128,549	129,059	40,439	-68.7%
Air travel	mtCO <sub>2</sub> e	118,954	116,020	148,691	28.2%
<b>Total Transportation</b>	<b>mtCO<sub>2</sub>e</b>	<b>247,503</b>	<b>245,079</b>	<b>189,130</b>	<b>-22.8%</b>
<b>Transportation Metrics</b>					
Emissions per resident	mtCO <sub>2</sub> e / resident	35.23	34.21	22.58	-34.0%
VMT per resident	VMT/ resident	20,169	20,122	7,806	-61.2%
VMT per visitor	VMT/visitor	269	271	20	-92.6%

**Table 9. CHANGES IN TRANSPORTATION DATA**

### Waste

As shown in Table 10, overall emissions from waste increased by more than 75 percent between 2007 and 2016. However, overall the amount of waste has decreased by 50 percent between 2007 and 2016. After the 2002 Winter Olympics, Park City saw a substantial increase in the amount of construction, including construction and demolition waste and commercial waste. After 2008, building began to slow down and match historic trends. The significant decrease in landfilled waste reflects the downturn in the construction industry. At the same time, emissions from landfilled waste have increased over 73 percent. This discrepancy is due to changes in the methodology and emission factors for waste between 2007 and 2016. The standard waste emission factors used today are based on waste types and are taken from ICLEI's *U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions.*, which is widely accepted as the standard values to use in GHG reporting. Emission factors used in the previous inventories were taken from the U.S. EPA's Waste Reduction Model (WARM).

<b>WASTE METRICS</b>	<b>Units</b>	<b>2005 (Reference Only)</b>	<b>2007 (Baseline)</b>	<b>2016</b>	<b>Change since 2007</b>
<b>Waste Activity Data</b>					
Landfilled waste	Tons	-	24,015	12,009	-50.0%
Composted waste <sup>4</sup>	Tons	-	-	1,450	-
Wastewater (Nitrogen effluent discharge)	lbs./day	-	-	139	-
<b>Waste Emissions</b>					
Landfilled waste	mtCO <sub>2</sub> e	8,082	8,661	15,003	73.2%
Composted waste <sup>1</sup>	mtCO <sub>2</sub> e	-	-	101	-

<sup>4</sup> Composted waste was not included in previous inventories.

Wastewater	mtCO <sub>2</sub> e	46	50	152	206%
<b>Total Waste</b>	<b>mtCO<sub>2</sub>e</b>	<b>8,128</b>	<b>8,711</b>	<b>15,256</b>	<b>75.1%</b>
<b>Waste Metrics</b>					
Landfill tons per resident	Tons/resident	-	3.35	1.43	-57.3%
Landfill tons per job	Tons/FTE	-	2.02	.828	-59.0%
Total waste emissions per resident	mtCO <sub>2</sub> e/resident	1.16	1.22	1.82	49.2%
Total waste emissions per job	mtCO <sub>2</sub> e/job	.7706	0.7345	1.0517	43.2%

Table 10. CHANGES IN WASTE DATA

### Reductions Activities, ongoing and planned

CO <sub>2</sub> footprint segment	% of total footprint	CO <sub>2</sub> reduction activity/planned activity
Residential	30%	
Scope 1	(13%)	Energy efficiency programs with SCPW will focus on energy efficiency such as weatherization and promoting HVAC and water heating system upgrades. Staff is implementing a project to determine real time residential energy usage with a local firm called Vutiliti to better understand usage trends. Staff plans to implement 3 <sup>rd</sup> party software which will calculate each residence's energy efficiency (measured as EUI). Staff is also investigating application of a voluntary STRETCH code to incentivize energy efficient design.
Scope 2	(17%)	Switching to 100% renewable electricity will bring the Scope 2 emissions that come from residential buildings to 0.
Aviation Scope 3	29%	This is a challenging source of emissions, as Park City does not have direct control over visitors' mode of travel, much less the aviation industry. Emissions will need to be balanced with carbon sequestration programs. City staff is investigating ways that carbon can be offset locally.
Commercial and institutional buildings	28%	The transit fleet will be electrified. This may cause a temporary increase in Scope 2 emissions, until we secure 100% renewable electricity.
Scope 1	(10%)	Energy efficiency programs with SCPW will focus on energy efficiency such as weatherization and promoting HVAC and water heating system upgrades. Staff plans to implement 3 <sup>rd</sup> party software which will calculate each commercial building's energy efficiency (measured as EUI).
Scope 2	(18%)	Switching to 100% renewable electricity will bring the Scope

		2 emissions that come from residential buildings to 0.
On-road Transportation Scope 1	8%	Switching from individual vehicle to public transit, and electrification of transport combined with 100% renewable electricity will reduce these emissions.
Solid Waste	2.9%	Continued promotion of recycling with Recycle Utah and policies to limit single-use plastics. Staff are investigating ways to reduce food waste with local businesses.

This report focuses on carbon emissions. The Environmental Sustainability team is also planning investigating ways to increase carbon sinks and sequestration rates in order to balance out emissions that we cannot reduce. Staff is currently exploring the right partners to help us with this project. In addition to carbon sinks, staff is working with Rocky Mountain Power to quantify our current capacity to produce electricity from renewables.

**How this could further the goals expressed in the General Plan**

This program aligns with three goals expressed in the General Plan:

- 5A** Encourage development practices that decrease per capita carbon output, decrease vehicle miles traveled, increase carbon sequestration, protect significant existing vegetation and contribute to the community emission reduction goal.
- 5B** Encourage efficient infrastructure to include water conservation, energy conservation, renewable resource technology, decreased waste production, green public transit, and increased road and pathway connectivity.
- 5C** Park City Municipal Corporation will be a strong partner in efforts to reduce community GHG emissions, leading by example and providing policy guidance while promoting personal

**Feedback needed from City Council**

Does Council have any additional recommendations?

**Department Review**

Sustainability, Legal and Executive

**Funding Source**

No funding is required at this time.

**Appendix**

2007 Community Carbon Footprint