City of Kent, Ohio

DRAFT Community Greenhouse Gas Emissions Inventory Report

(REV. 10-14-22)

Mitigation Milestones
Milestone One: Conduct baseline emissions inventory & forecast; **DATE: APPROVED 12-15-21**
Milestone Two: Adopt an emissions reduction target for the forecast year; **DATE:**_____
Milestone Three: Develop local climate action plan; **DATE:**_____
Milestone Four: Implement the climate action plan; **DATE:**_____
Milestone Five: Monitor progress and report results; **DATE:**

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INTRODUCTION

Background

In 2017, Kent City Council adopted Resolution No. 2017-83, which formalized the City of Kent's support of the Paris Climate Agreement. The request that Kent City Council document its support of the Paris Climate Agreement was initiated by the City's Sustainability Commission, which is a City designated commission comprised of five (5) resident volunteers who are committed to promoting the responsible protection of ecosystems, the conservation of natural resources, and reducing the community's carbon footprint.

Resolution No. 2017-83 committed the Sustainability Commission to the development of a community-based climate action plan that furthered the Paris Climate Agreement goal of reducing greenhouse gas emissions that are generated through various human activities. The Sustainability Commission established an Ad Hoc Committee whose members focused specifically on the formation of the climate action plan for Kent. The Ad Hoc Committee volunteers reviewed action plans from several other communities and through this research, the City of Kent entered into a membership agreement with the Local Governments for Sustainability division of the International Council for Local Environmental Initiatives (ICLEI) for technical assistance and to utilize ICLEI's online application, known as ClearPath Pro, to develop a baseline greenhouse gas (GHG) emissions inventory for the City of Kent. The GHG emission inventory is the first phase of formulating a climate action plan for the community because it quantifies GHG emission levels, using actual and model data for various emission sectors that have been identified, in the field of climate science, as key contributors to carbon emissions.

Greenhouse Gas Inventory

A greenhouse gas (GHG) inventory is an aggregation of heat trapping and releasing gases such as carbon dioxide, methane, and nitrous dioxide, emitted to or removed from the atmosphere over a specified period of time. The GHG inventory provides a detailed account of the activities from various emission sectors that have been identified through climate science as being contributors to the release or removal of greenhouse gases. Establishing an accurate GHG inventory for a community provides a scientific understanding of greenhouse gas emission and removal trends

that can be assessed, not only at a point in time, but also longitudinally, as the base year inventory data is compared to future GHG inventories. Such analyses allow for accurate monitoring of the affects mitigation policies and implemented actions are having on reducing emission levels in high emission producing sectors throughout the community.

Greenhouse gas emissions are calculated using a formula which aggregates the activity data and the coefficient that translates the data into emissions called emission factors:

> Total Emissions = Sum of (Activity Data * Emission Factor)
> (Source: Global Protocol for Community-scale Greenhouse Gas Emissions, 2017).

There are several protocols that are used for accounting for greenhouse gas emissions, some of which include the Global Protocol for Community-scale Greenhouse Gas Emissions, 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines, Local Government Operations Protocol and the U.S. Community Protocol. These protocols stipulate the accounting and reporting standards, sectors and guidance, assumptions and guidelines, calculation methodologies, and the emission factors to use when estimating greenhouse gas emissions. The City of Kent's GHG inventory is primarily based on guidance from the Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories (GPC) and is consistent with the guidelines established by the International Council for local Environmental Initiatives (ICLEI).

The Importance of the City of Kent Greenhouse Gas Emissions Inventory

The goal of the City of Kent's community-wide inventory is to estimate the emissions of greenhouse gases associated with the activities of residents, businesses, students, commuters, and visitors undertaken within the City's geographical boundary. To ensure consistency of comparison across the various emission sectors, the Ad Hoc Committee sought data for the calendar year 2016 to enter into the ICLEI ClearPath Pro program. Members of the Ad Hoc Committee compiled a list of targeted contacts and possible data sources across the various emission sectors as the first step of the data collection process. The overall response rate for data solicited through direct targeted contact was less than optimal so online resources and statistical modeling were utilized for some emission sectors so a comprehensive GHG inventory could be established for the Kent community.

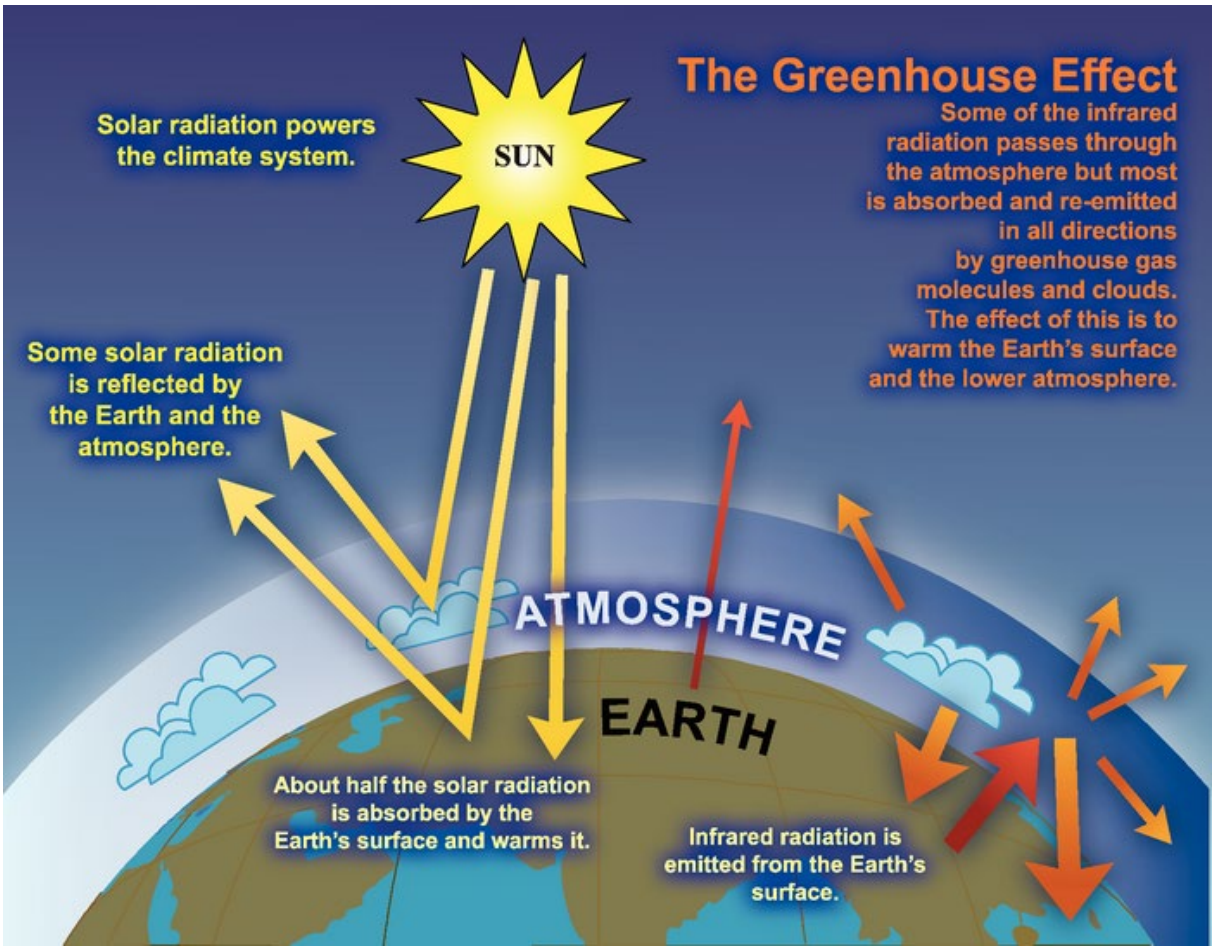
Identifying data-based emission levels for all carbon generating activities that are occurring within the Kent community enables the City to determine the major sources of emissions, how those emission patterns are trending, and account for the distribution emission patterns within the specific sectors identified in the ClearPath Pro system, which includes:

1. Residential Energy
2. Commercial Energy
3. Transportation and Mobile Sources
4. Solid Waste
5. Water and Wastewater
6. Agriculture, Forestry and Land Use

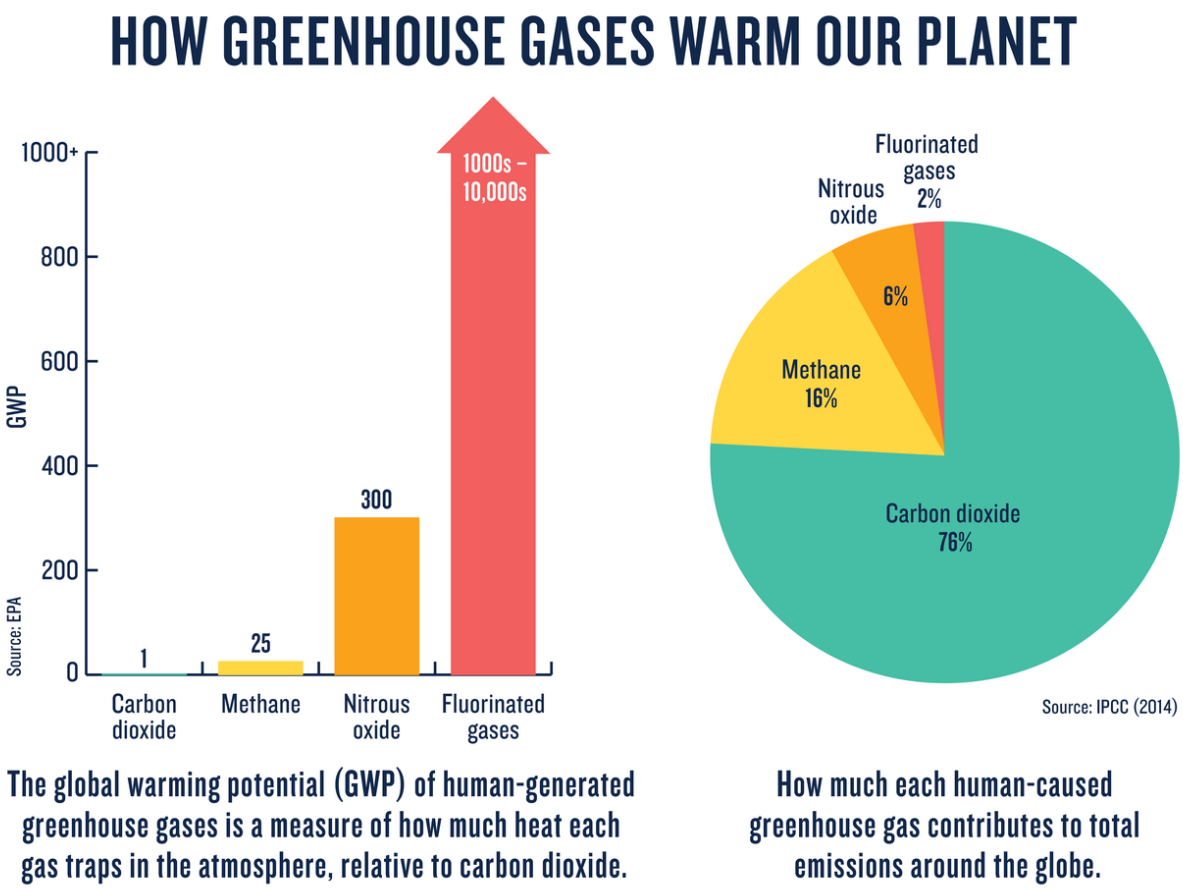
Greenhouse Gases

Greenhouse gases are heat trapping and emitting gases in the earth's atmosphere. They absorb infrared radiation emitted from the earth's surface and reradiating it back to the earth's surface, in the process contributing to the greenhouse effect. These include gases such as Carbon Dioxide, Methane, Nitrous Oxide, Hydrofluorocarbons, Perfluorocarbons and Sulfur Hexafluoride.

Greenhouse gas concentrations in the earth's atmosphere have varied across centuries with natural processes driving these trends. However, the Industrial Revolution ushered in new industrial processes, increased burning of fossil fuels such as coal, extensive agricultural activity, and increasing global population which led to a rise in greenhouse concentrations.



The Greenhouse Effect (IPCC, 2007: *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment,* Report of the Intergovernmental Panel on Climate Change)



Carbon Dioxide (CO_2) Equivalent

A carbon dioxide equivalent is a metric measure used to compare the emissions from various greenhouse gases based on their global-warming potential (GWP), by converting amounts of other gases to the equivalent amount of carbon dioxide with the same global warming potential. The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP: MTCO2E = (metric tons of a gas) * (GWP of the gas). Estimates from the inventory of emissions from the various emission generating activities will be expressed in MTCO2E.

Emission Sources Inventoried

Sector	Sub-Sectors
Residential Energy	Emissions from Grid Electricity Emissions from Stationary Fuel Combustion
Commercial Energy	Emissions from Grid Electricity Emissions from Stationary Fuel Combustion
Transportation and Mobile Sources	On Road Transportation (Out Boundary) Rail Transportation On Road Transportation (In Boundary) Public Transit Off Road Vehicles
Solid Waste	Biologic Treatment of Solid Waste (Composting) Solid Waste Collection (Only) Waste Generation
Water and Wastewater	Combustion Of Digester Gas Septic Systems
Agriculture, Forestry and Land Use	Emissions and Removals (Forest to Settlement)

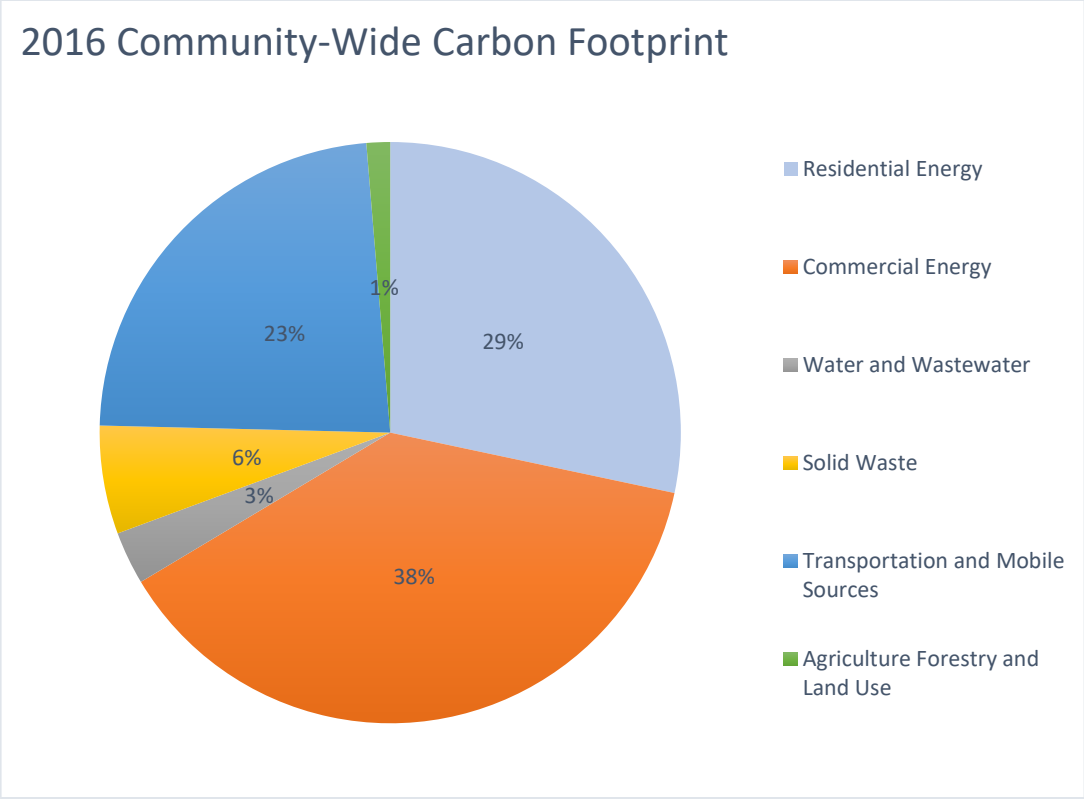
Data Sources

GHG Emission Sector	Project Resource
Commercial Energy	City of Kent, OH, ICLEI, Google EIE, U.S Census Bureau
Residential Energy	City of Kent, OH, ICLEI, Google EIE, U.S Census Bureau
Transportation and Mobile Sources	City of Kent, OH, ICLEI, Google EIE, U.S Census Bureau, AMATS, Kent State University, CSX Rail Company, PARTA
Solid Waste	City of Kent, OH, Republic Services Inc., U.S Census Bureau
Water and Wastewater	City of Kent, OH, U.S Census Bureau
Agriculture, Forestry and Land Use	City of Kent, OH, Kent State University

FINDINGS IN BRIEF

Total GHG Emissions
376,148 MT CO2 Eq.
Per Capita Carbon Emissions
12.51 MT
Major Sources of Carbon Emissions
Commercial Energy, Residential Energy, and Transportation and Mobile Sources
Population (Source U.S. Census Bureau ACS 2013-2017, 5-Year Estimates)
29,771
Total Housing Units (Source U.S. Census Bureau ACS 2013-2017, 5-Year Estimates)
12,429
Businesses
373

- There was a total of 376,148 MT CO2 Eq. emitted in the City.
- Commercial Energy was the major source of carbon emissions with 143,240 MT CO2 Eq. representing 38.08% with emissions generated by grid electricity and natural gas usage. Residential Energy accounted for 28.33%, emitting 106,575 MT CO2 Eq.
- Transportation and Mobile Sources Sector accounted for 23.30% of total greenhouse gas emissions, emitting 87,636 MT CO2 Eq.
- Solid Waste accounted for 6.03%, emitting 22,671 MT CO2 Eq.
- Water and Wastewater emissions was at 11,090 MT CO2 Eq., which is 2.95% of the total emissions.
- Agriculture, Forestry and Land Use represented 1.31% at 4,936 MT CO2 Eq.

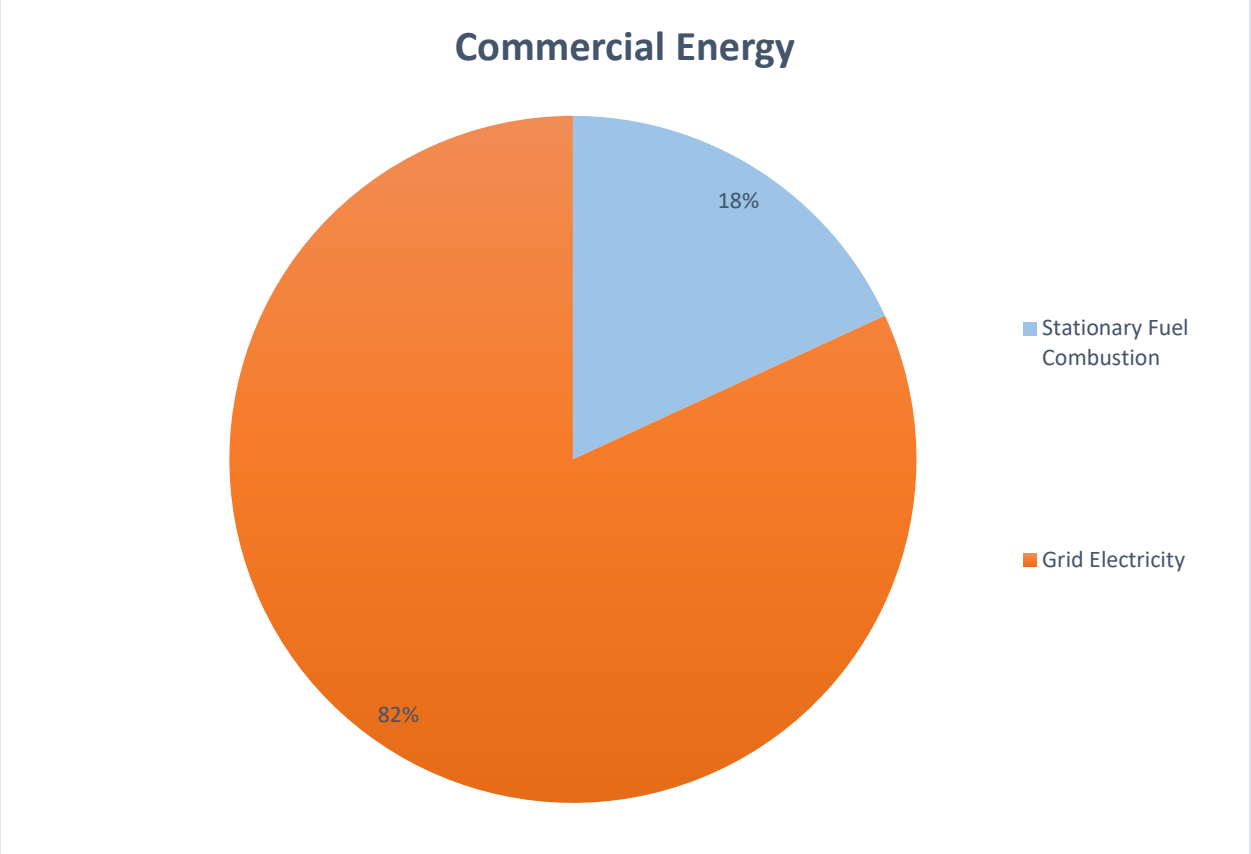


Sector	Metric Tons of CO2 Eq.	Percentage
Commercial Energy	143,240	38.08
Residential Energy	106,575	28.33
Transportation and Mobile Sources	87,636	23.30
Solid Waste	22,671	6.03
Water and Wastewater	11,090	2.95
Agriculture, Forestry and Land Use	4,936	1.31
TOTAL	**376,148**	

FINDINGS PER SECTOR

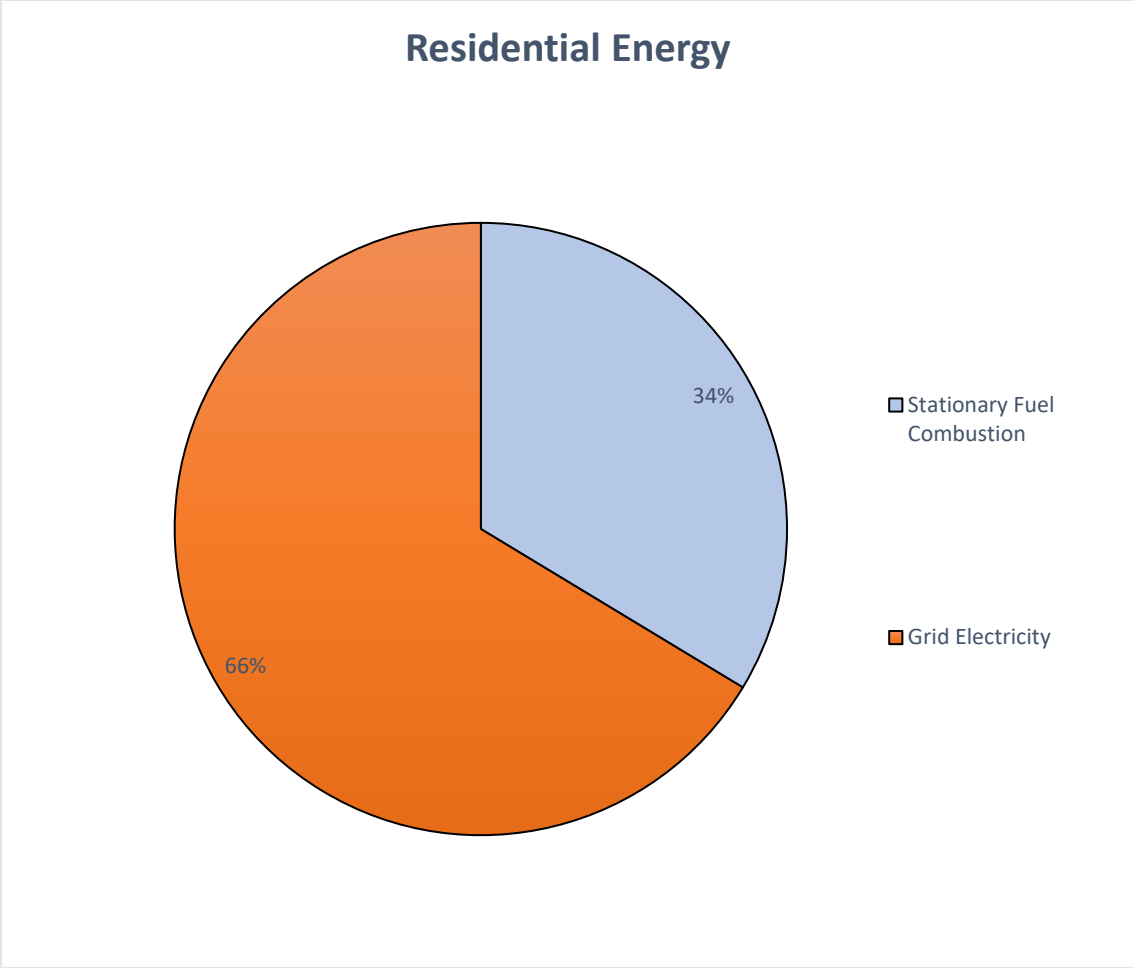
Commercial Energy

There was a total of 143,240 MT CO2 Eq. from the Commercial Energy Sector. The Grid Electricity Sub-sector emitted 117,269 MT CO2 Eq., representing 81.87% while the Stationary Fuel Combustion Sub-sector emitted 25, 971 MT CO2 Eq., representing 18.13%.



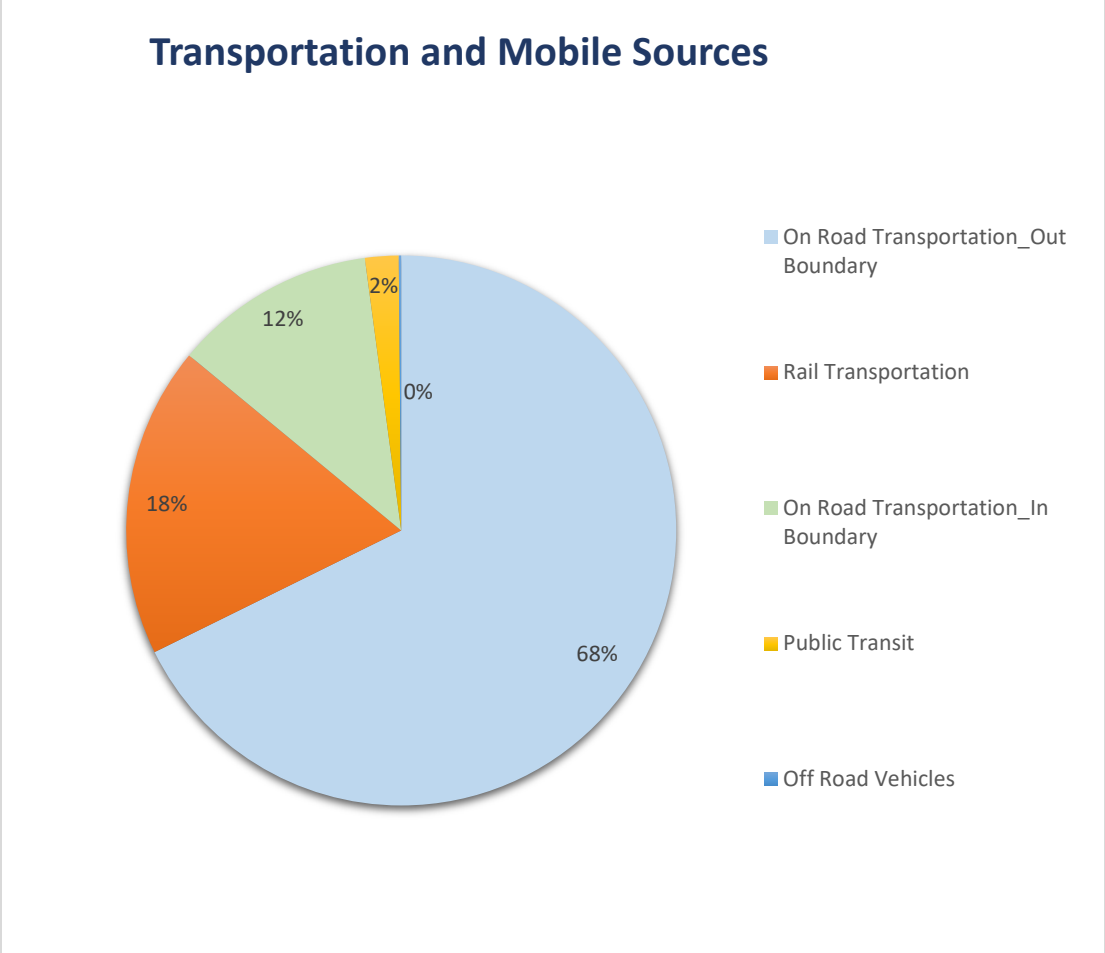
Residential Energy

There was a total of 106,575 MT CO2 Eq. from the Residential Energy Sector. The Grid Electricity Sub-sector emitted 70,704 MT CO2 Eq., representing 66.34% while the Stationary Fuel Combustion Sub-sector emitted 35,871 MT CO2 Eq., representing 33.66%.



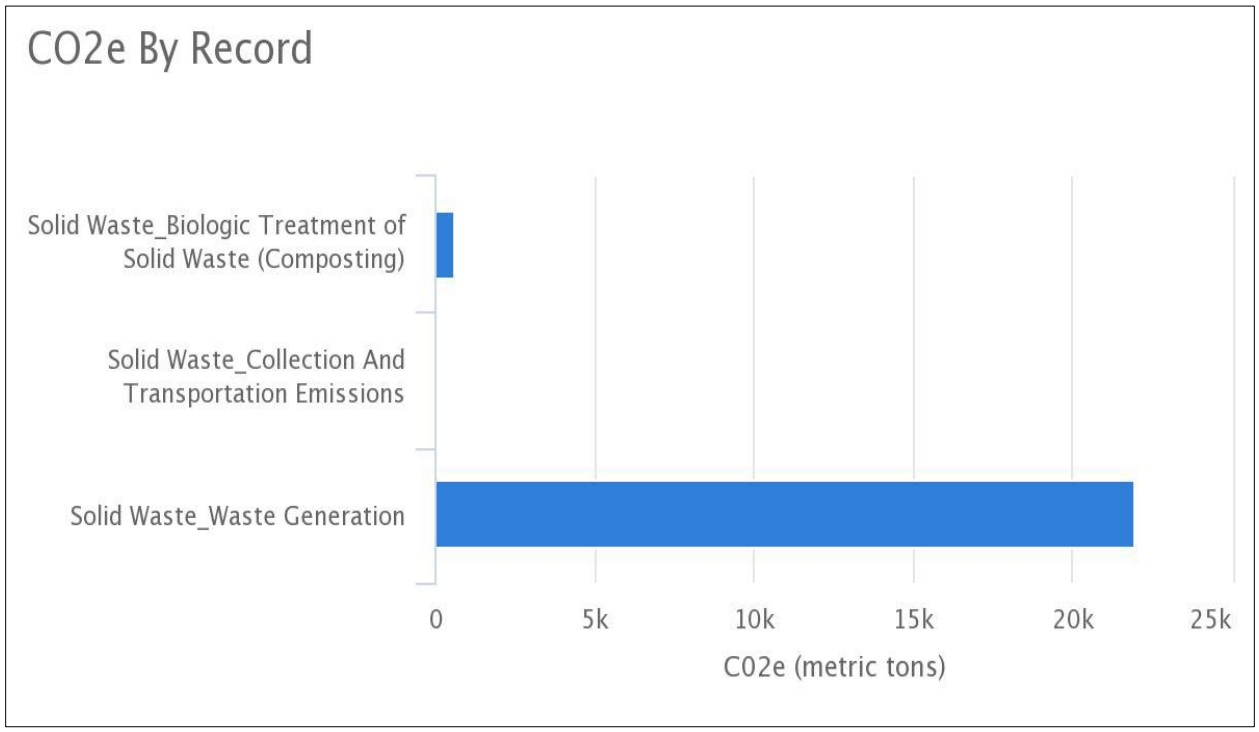
Transportation and Mobile Sources

There was a total of 87,635.8 MT CO2 Eq. from the Transportation and Mobile Sources Sector. The On Road Transportation Sub-sector, which includes the combined total of in-boundary and out-boundary transportation subsectors, emitted 69,762 MT CO2 Eq., representing 79.61% while the Rail Transportation Sub-sector emitted 16,020 MT CO2 Eq., representing 18.28%. Public Transit Sub-sector emitted 1,730 MT CO2 Eq., representing 12% while there were 123.8 MT CO2 Eq. from Off Road Vehicles representing 0.14% of emissions from the Transportation and Mobile Sources Sector.



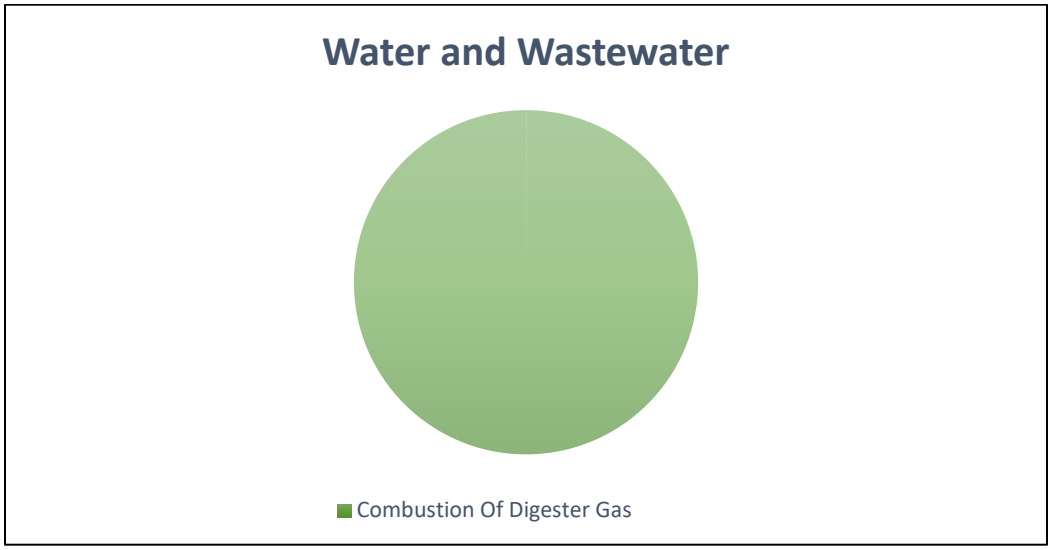
Solid Waste

There was a total of 22,670.52 MT CO2 Eq. from the Solid Waste Sector. The Waste Generation Sub-sector emitted 21,963 MT CO2 Eq., representing 96.88 % while the Biologic Treatment of Solid Waste (Composting) Sub-sector emitted 611.82 MT CO2 Eq., representing 2.70 %. Solid Waste Collection Sub-sector emitted 95.699 MT CO2 Eq., representing 0.42% of emissions from the Solid Waste Sector.



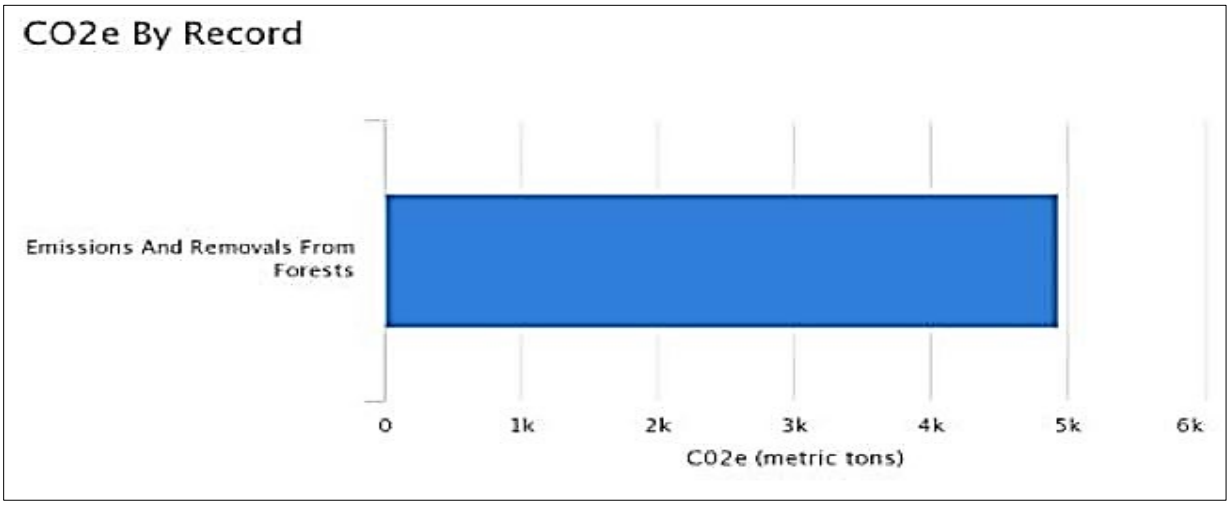
Water and Wastewater

There was a total of 11,090.22 MT CO2 Eq. from the Water and Wastewater Sector. The Combustion of Digester Gas Sub-sector emitted 11,087 MT CO2 Eq., representing 99.97% while the Septic Systems Sub-sector emitted only 3.22 MT CO2 Eq., representing 0.03% of total emissions, which is statistically insignificant. It should be noted that the City of Kent regulations requires all sanitary sewer services to be connected to the City's system and prohibits the use of septic systems citywide.



Agriculture, Forestry and Land Use

There was a total of 4,936 MT CO2 Eq. from the Agriculture, Forestry and Land Use Sector. The Emissions and Removals Sub-sector emitted 4,926 MT CO2 Eq. from the Net Annual Carbon Flux from the conversion of Forest Land Cover Class to Settlement from 2006 to 2016.



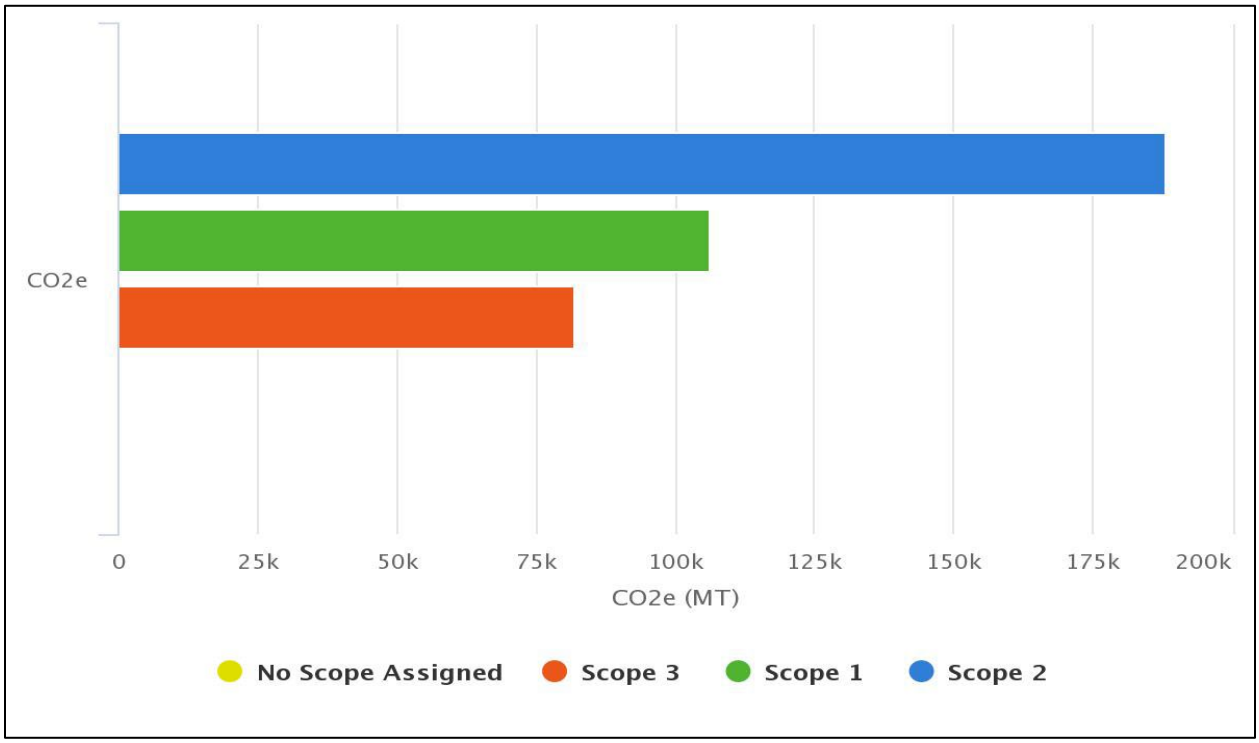
EMISSIONS BY SCOPE

The *Global Protocol for Community-Scale Greenhouse Gas Inventories, Version 1.1*, established by the World Resources Institute, C40 Cities and ICLEI, categorizes emissions by scope based on "activities taking place within a city that can generate GHG emissions that can occur within a city's boundary, as well outside of the city boundary. To distinguish between these [activities], the Global Protocol for Communities (GPC) groups emissions into three categories based on where they occur" (page 35). The three categories are:

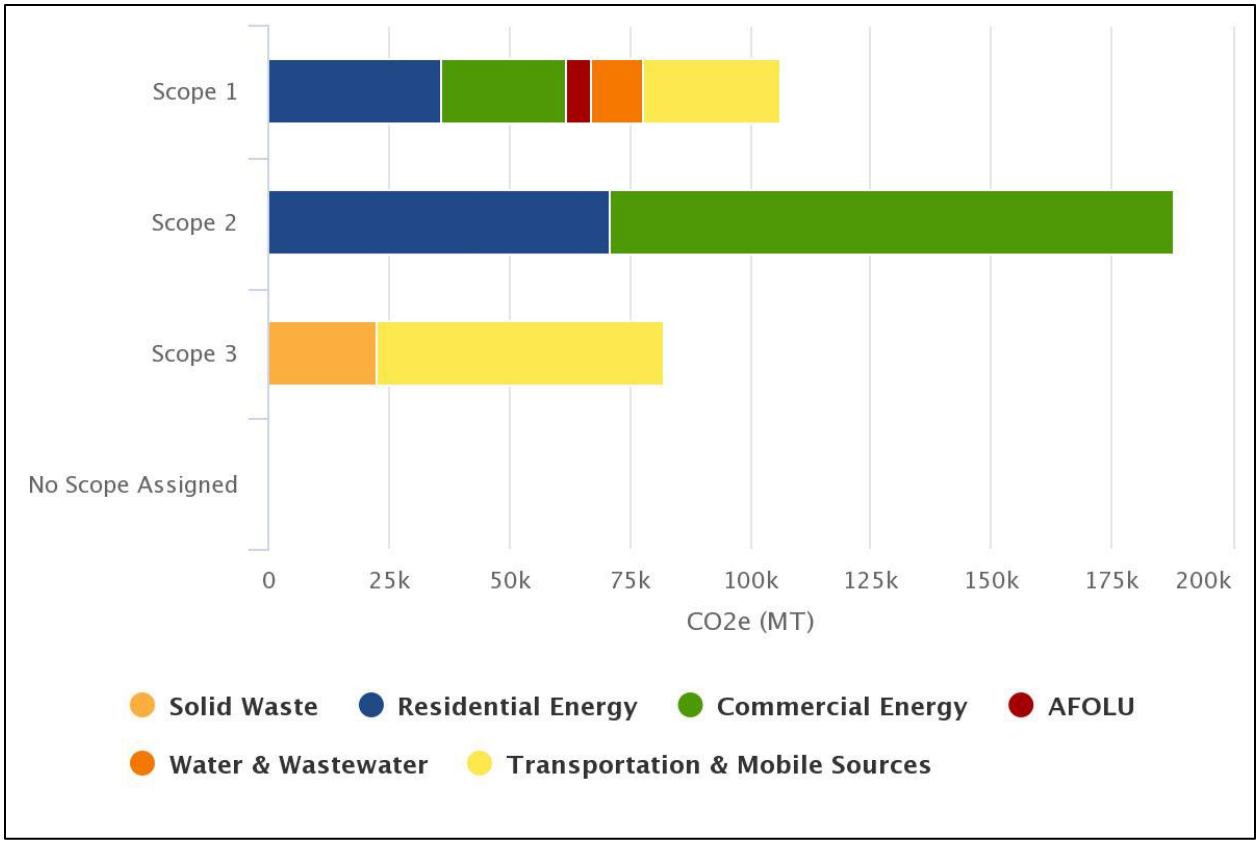
- Scope 1 is any greenhouse gas emissions (GHG) from sources that occurs *within* a community's boundaries. These include, but are not limited to, emissions from industrial processes, product use, and land use.
- Scope 2 is any greenhouse gas emissions (GHG) that occurs as a result of *using grid-supplied systems*, including but not limited to, electricity, heat, and steam within a community's boundary.
- Scope 3 is any greenhouse gas emission (GHG) that occurs *outside* a community's boundary as a result of activities undertaken within the community's boundary, including but not limited to, out-bound transportation or solid waste deposited at landfill.

Results for Emissions by Scope

Scope 2 emissions was the major source of emissions; accounting for 187, 973 MT CO2 Eq. Scopes 1 and 3 emissions were 106,169 MT CO2 Eq. and 82,005 MT CO2 Eq. respectively as shown below.



Scope	CO2e
Scope 2	187,973
Scope 1	106,169
Scope 3	82,005



Scope	Sector	CO2e
Scope 1	Transportation & Mobile Sources	28,300
Scope 1	Water & Wastewater	11,090
Scope 1	AFOLU	4,936
Scope 1	Commercial Energy	25,971
Scope 1	Residential Energy	35,871
Scope 2	AFOLU	0
Scope 2	Commercial Energy	117,269
Scope 2	Residential Energy	70,704
Scope 3	Transportation & Mobile Sources	59,334
Scope 3	Solid Waste	22,670
Scope 3	Water & Wastewater	0

COMPARISON WITH OTHER COMMUNITIES

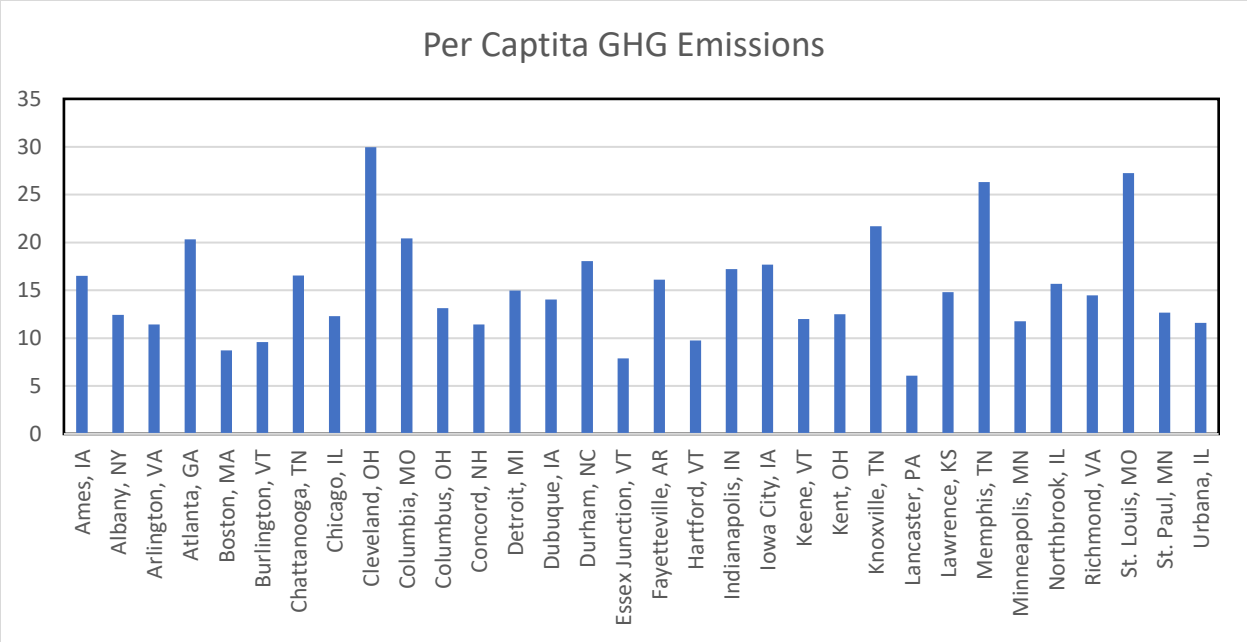
Community Comparisons

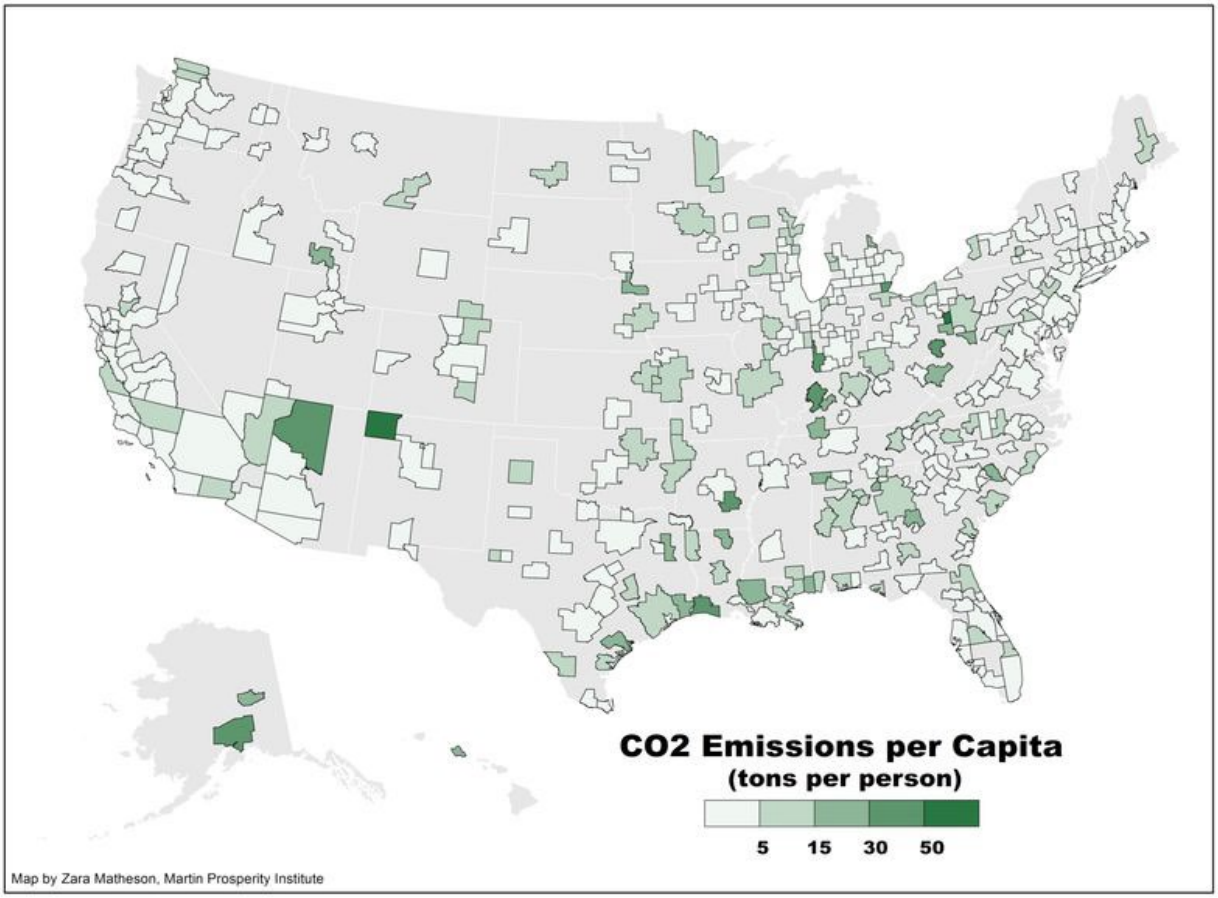
The estimates for greenhouse gas emissions varies from community-to-community. Factors such as geographic size, total population, scopes of emissions, which sectors are inventoried, and the methodology utilized for analyses makes exact comparisons difficult. There, however, is some value to be derived from comparing carbon emissions between communities because it identifies other communities' emission sources and the approach taken to reduce greenhouse gas emissions.

Understanding Kent's Per-Capita Community-wide Carbon Emissions

There was a total of 376,148 MT CO2 Eq. from the City of Kent's 2016 community-wide carbon emissions inventory and 12.51 MT Per Capita. The City of Kent's community-wide per-capita carbon emissions for 2016 is 236,251.35 cubic- feet of man-made greenhouse gas. The volume of atmosphere equates a cube of feet on each face.

Per capita emissions are not an indicator of how many metric tons of carbon an individual emits, but it does provide insight into cross-city comparison. Individual preferences in energy consumption, vehicle miles traveled, natural gas use, and waste generation accounts for the actual emissions generated. The City of Kent's per capita carbon emissions of 12.51 generally ranks it in a similar category to most Midwest cities.


Per Captita GHG Emissions
35
30
25
20
15
10
5
0
Ames, IA
Albany, NY
Arlington, VA
Atlanta, GA
Boston, MA
Burlington, VT
Chattanooga, TN
Chicago, IL
Cleveland, OH
Columbia, MO
Columbus, OH
Concord, NH
Detroit, MI
Dubuque, IA
Durham, NC
Essex Junction, VT
Fayetteville, AR
Hartford, VT
Indianapolis, IN
Iowa City, IA
Keene, VT
Kent, OH
Knoxville, TN
Lancaster, PA
Lawrence, KS
Memphis, TN
Minneapolis, MN
Northbrook, IL
Richmond, VA
St. Louis, MO
St. Paul, MN
Urbana, IL


CO2 Emissions per Capita
(tons per person)
5
15
30
50
Map by Zara Matheson, Martin Prosperity Institute

FORECAST OF GREENHOUSE GAS EMISSIONS

Greenhouse Gas Emissions Forecast

Greenhouse gas emissions caused or influenced by people, also known as anthropogenic emissions, is a primary factor contributing to the disequilibrium in the earth's climate system and changes in the intensity and spatial distribution of extreme weather events. The continued rise in anthropogenic greenhouse gas emissions means an increase in the atmospheric concentrations and changes in the global, regional, and local climate and related impacts.

College towns such as the City of Kent, Ohio, have a greater net contribution of greenhouse gas emissions due to the influx of non-resident students and workers into the community, which increases emissions across numerous sub-sectors, including but not limited to electricity use, vehicle miles traveled, and fuel consumption. A greenhouse gas emissions forecast is central to carbon mitigation planning as it identifies the trends in greenhouse gas emissions if reduction strategies are not implemented. Such information can inform decisions for prioritizing reduction efforts, assist with formulating emission reduction policies, and provides greater insight into which actions will have the most cost-benefit for emission reduction.

Business-As-Usual Forecast

The Intergovernmental Panel on Climate Change (IPCC) defines a "business-as-usual" (BAU) scenario as the extent of carbon emissions that will emanate from the various sectors if current trends continue unabated. This implies that no emission reduction strategies will be implemented within the year(s) under review, which is a primary factor in determining the level of emission reduction required to meet a set reduction goal.

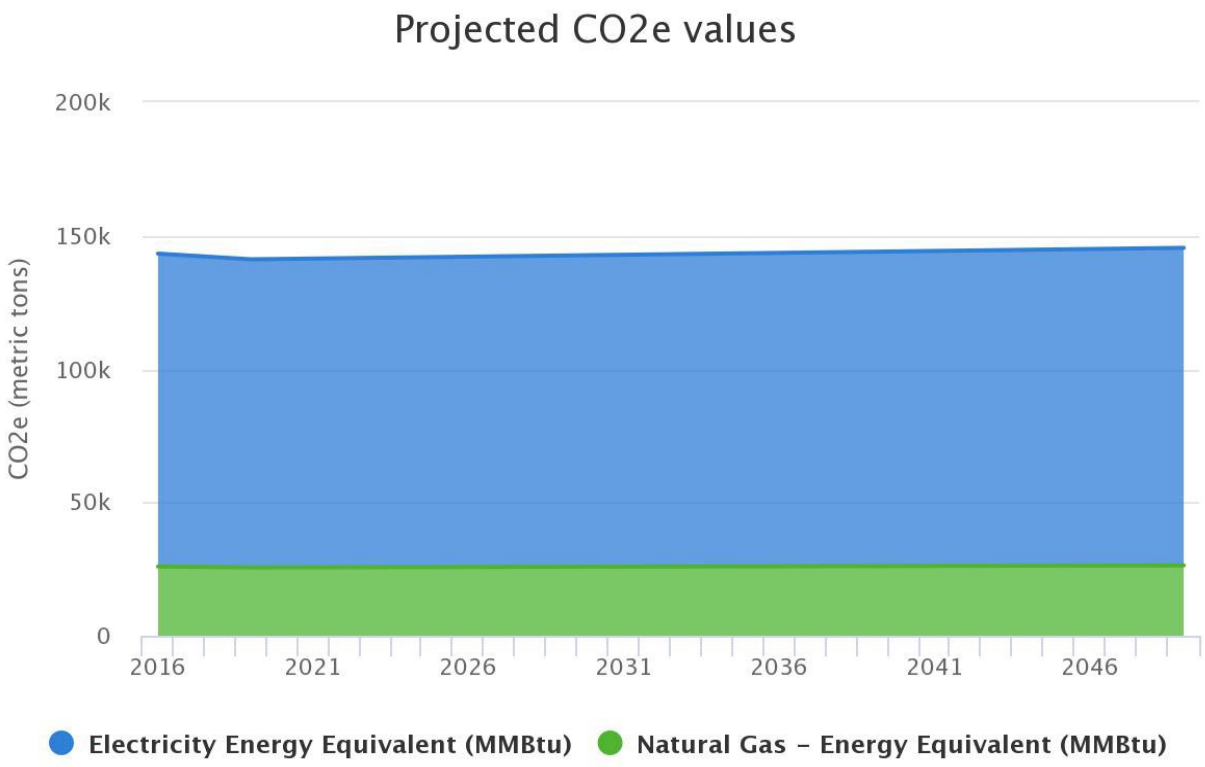
A forecast of emissions in the City of Kent was conducted, using inventoried emissions in the ICLEI ClearPath Pro, for the year 2050. The forecast utilized the "business-as-usual" scenario to forecast emissions, whereby a 'status quo' setting in the community was used as the sole basis for forecasting without interventions from within the community or higher levels of government. Variables that were factored into the forecasting process include population growth rate, local economic activity indicators, and transportation and energy sector specific indices.

Forecasts of greenhouse gas emissions are not merely a prediction of the extent of carbon which will be emitted in the future, but modeled projections based on specific informed assumptions and

methodologies. The emissions forecasts conducted in this report should be interpreted within the context of the limitations of the assumptions that informed them. Changes in economic indices, policy impacts, weather patterns, and in the case of the City of Kent, student enrollment and employment trends over time, all have uncertain implications on emission sectors in the future, including but not limited to electricity and natural gas use, vehicle miles traveled, and waste generation.

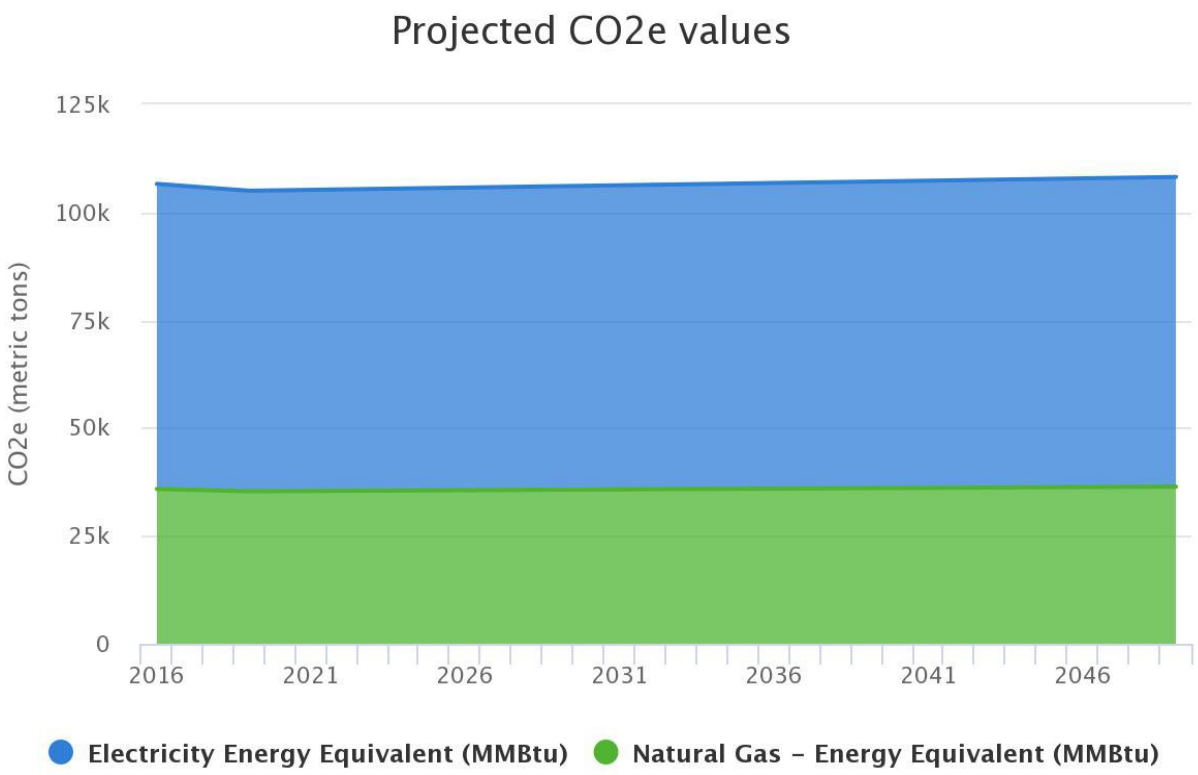
Commercial Energy

Emissions from the Grid Electricity sub-sector of the Commercial Energy Sector are projected to rise from 117,269 MT CO2 Eq. to 119,035 MT CO2 Eq. by 2050. The Stationary Fuel Combustion Sub-sector is projected to increase from 25, 971 MT CO2 Eq. to 26, 362 MT CO2 Eq. by 2050.



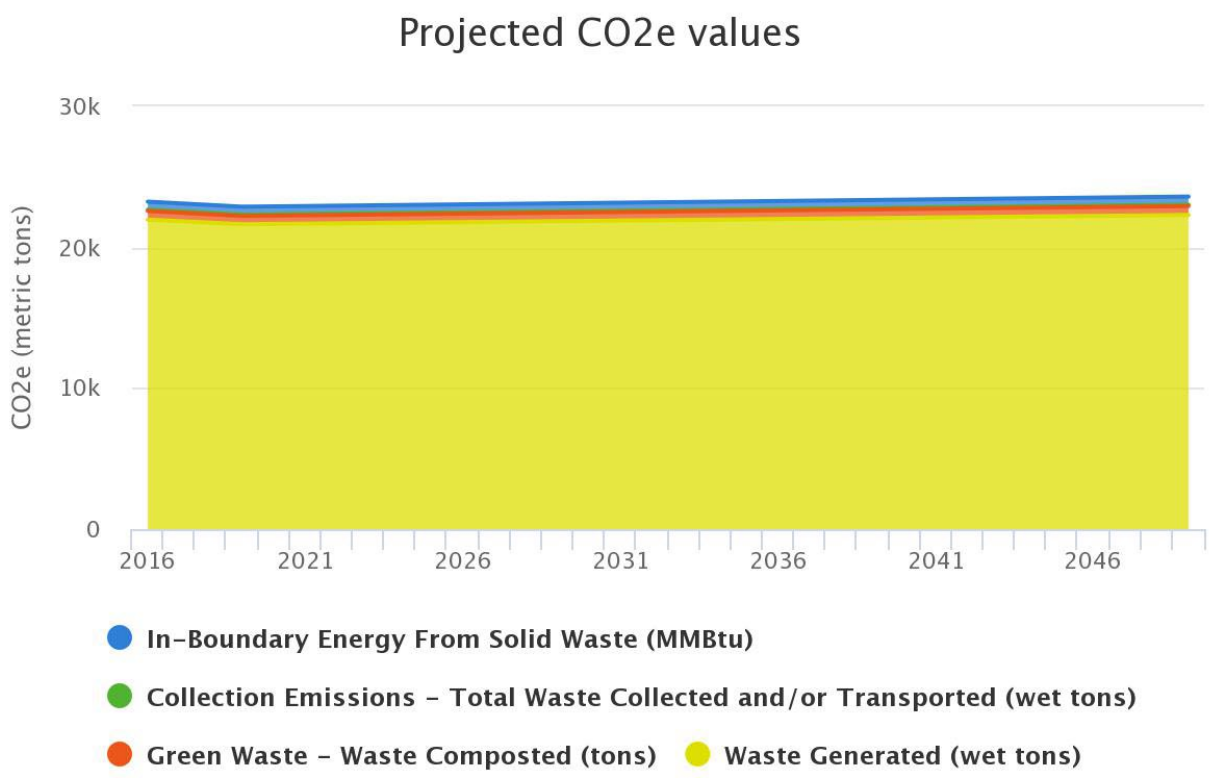
Residential Energy

Emissions from Grid Electricity Sub-sector of the Residential Energy Sector are projected to rise from 70,704 MT CO2 Eq. to 71,769 MT CO2 Eq. by 2050. The Stationary Fuel Combustion Sub-sector is projected to increase from 35,871 MT CO2 Eq. to 36, 411 MT CO2 Eq. by 2050 (Refer to figure below).



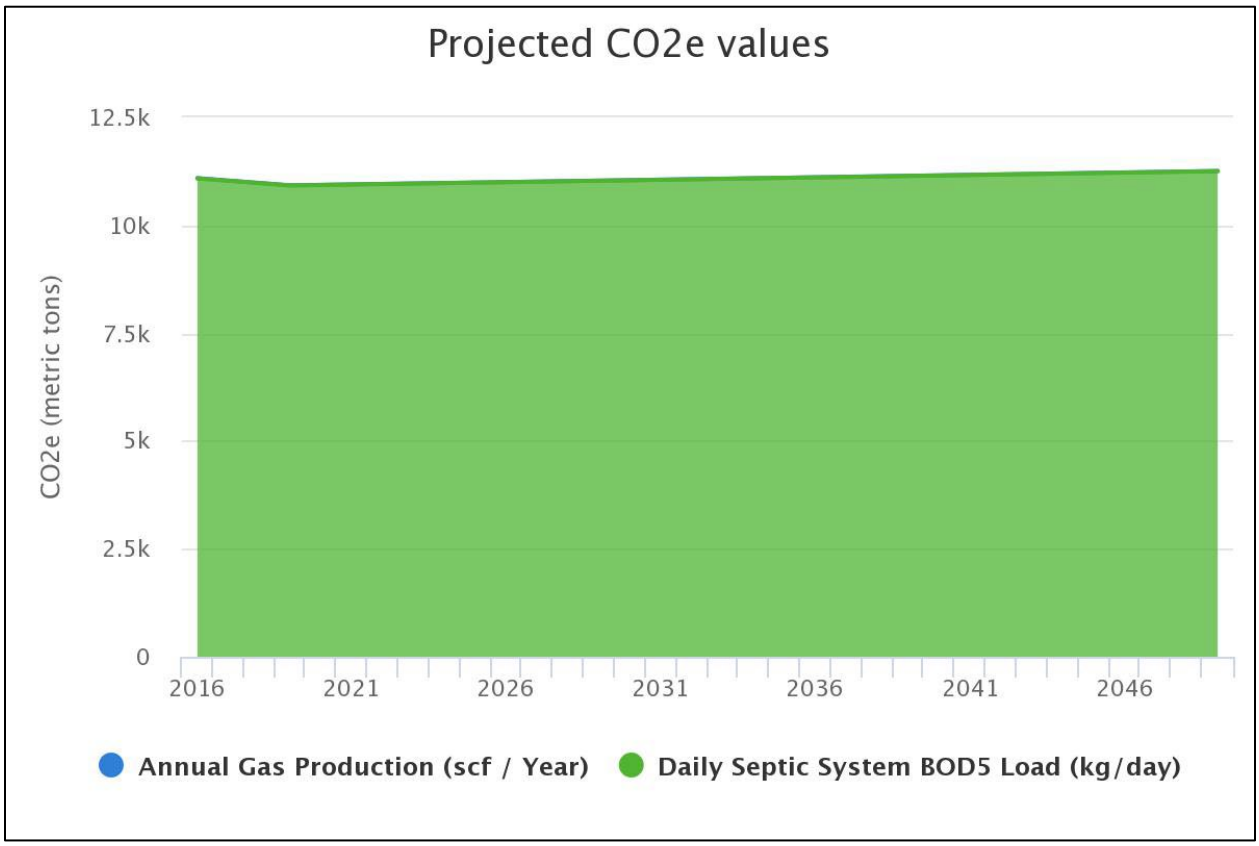
Solid Waste

Waste generated from the Solid Waste Sector is projected to increase by 2050 leading to rise in carbon emissions from 21,963 MT CO2 Eq. to 22,294 MT CO2 Eq. Emissions from Biologic Treatment of Solid Waste (Composting) Sub-sector is projected to rise from 611.82 MT CO2 Eq. to 630 MT CO2 Eq.



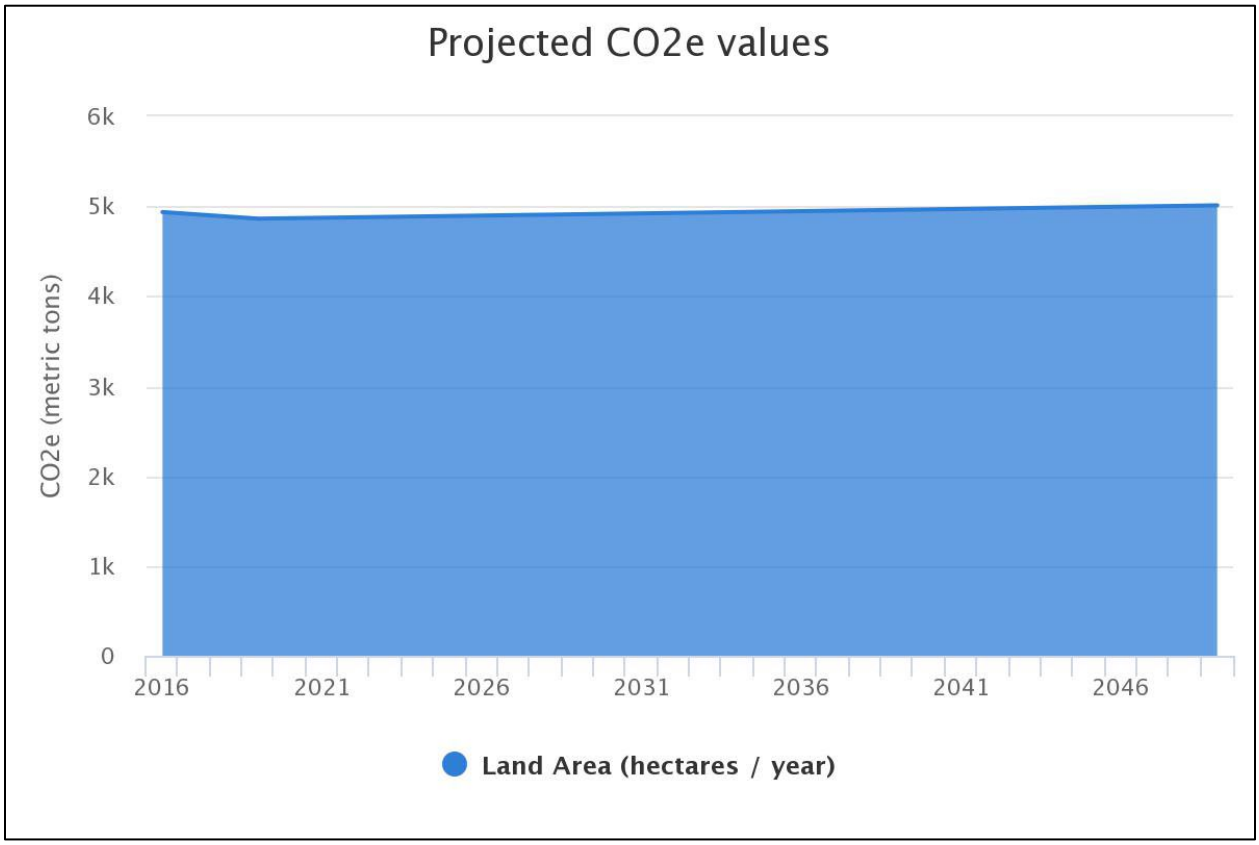
Water and Wastewater

Projections from the Water and Wastewater Sector indicate that emissions will rise from 11090.22 MT CO2 Eq. to 11,254 from The Septic Systems Sub-sector due to an increase in Daily Septic System BOD Load (kg/day).



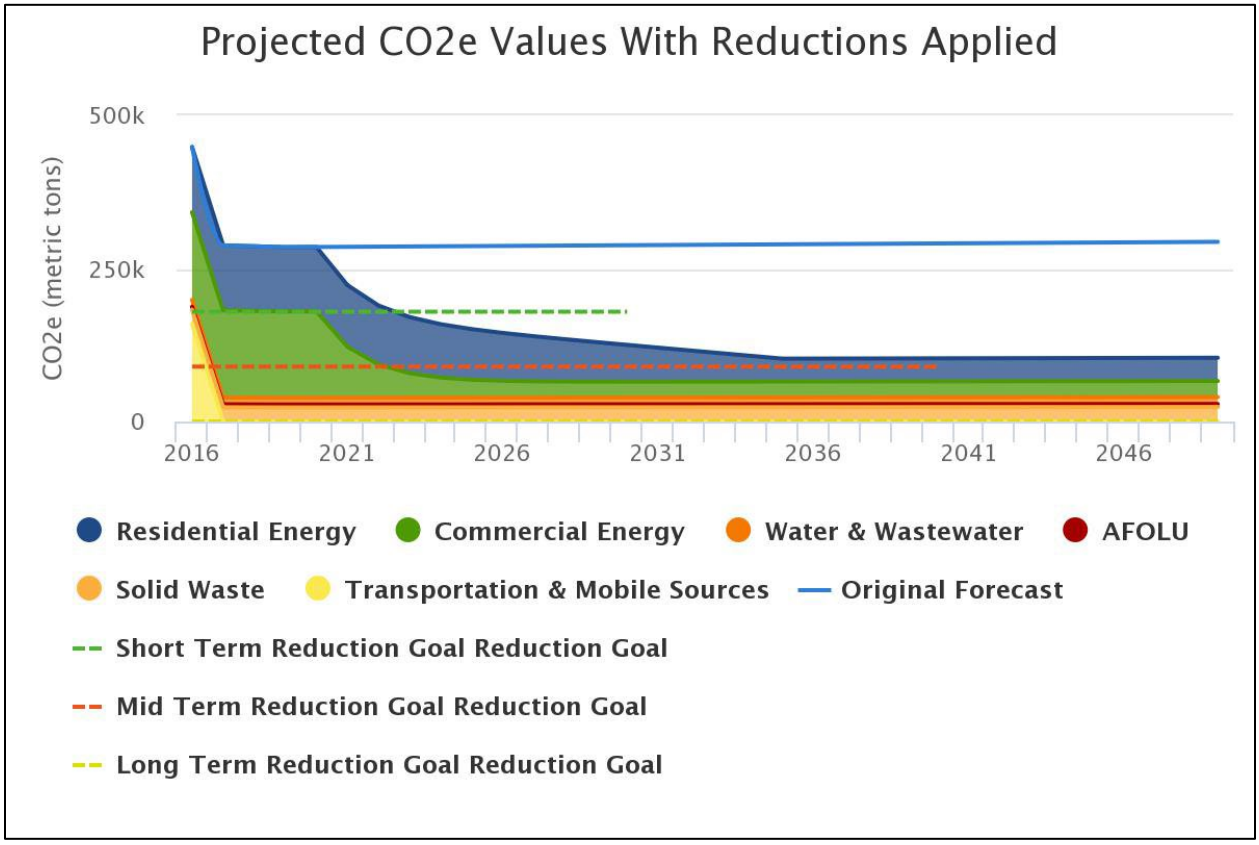
Agriculture, Forestry and Land Use

Emissions from the Emissions and Removals Sub-sector is projected to rise from 4,926 MT CO2 Eq. to 5,010 in 2050 due to Net Annual Carbon Flux from the conversion of Forest Land Cover Class to Settlement including impervious surfaces.



Forecast with Reductions Applied

Another forecast was developed based on the anticipated implementation of community level initiatives and other programs to reduce greenhouse gas emissions. The second forecast also was conducted using inventoried emissions in ICLEI ClearPath Pro, for the City of Kent in year 2050, but applied proposed emission reduction strategies used to forecast emissions. Variables that were factored into the forecasting process include Local Green Power Purchase (Commercial), Residential Energy Efficiency Education, Improved Bike Infrastructure, and the expansion in use of Low-Income Household Weatherization Programs. With the implementation of these programs, the forecast identified carbon emissions will be reduced in the short-term, continue to decrease through 2030, and into the long-term (2050) where carbon neutrality is the goal.



Science-Based Reduction Target

In line with the City of Kent's vision of upholding the tenets of the Paris Climate Agreement, a goal for carbon neutrality by 2050 has been identified for the community. A 2030 science-based target was set by the Intergovernmental Panel on Climate Change (IPCC) in its recommendations and guidelines. Sector specific greenhouse gas emission reduction targets were set through a combined process of identifying the emission sources and drivers within the City of Kent and greenhouse gases covered in the completed inventory.

Using ICLEI's newly released Science-Based Target (SBT) guidance, which uses the One Planet City Challenge (OPCC) the SBT calculation methodology (most appropriate for ICLEI members) sector specific Science-Based Targets were determined. This was done with input from ICLEI's designated technical advisor and a High Impact Analysis Assessment was conducted to determine emission reduction strategies which will have a high impact on the City's carbon emissions.

HIGH IMPACT ACTION ANALYSIS SUMMARY

GREENHOUSE GAS INVENTORY ESTIMATION SUMMARY SHEETS

Outputs

Name	Value
Off Road Fuel Use	1576.5
Energy Equivalent (MMBtu)	217.62
CO2 (MT)	16.096
Bio CO2 (MT)	0
CH4 (MT)	9.1437×10^{-4}
N2O (MT)	4.0989×10^{-4}
CO2e (MT)	16.282
GPC Scope	Scope 1
GPC Reference Number	I.3.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.073964
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	4.2017×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.8835×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
Energy Equivalent (MMBtu)	213820
CO2 (MT)	15809
CH4 (MT)	1.2387
N2O (MT)	0.40257
CO2e (MT)	16020
GPC Scope	Scope 1
GPC Reference Number	II.2.1
US-CP Reporting Category	Source and Activity
CO2 Emissions Factor	0.073934
CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	5.7931×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.8828×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	TR.5

Outputs

Name	Value
Off Road Fuel Use	2257
Energy Equivalent (MMBtu)	311.56
CO2 (MT)	23.044
Bio CO2 (MT)	0
CH4 (MT)	0
N2O (MT)	0
CO2e (MT)	23.044
GPC Scope	Scope 1
GPC Reference Number	I.5.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.073964
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	0
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	0
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
Off Road Fuel Use	2962.6
Energy Equivalent (MMBtu)	408.96
CO2 (MT)	30.248
Bio CO2 (MT)	0
CH4 (MT)	0.0017183
N2O (MT)	7.7028×10^{-4}
CO2e (MT)	30.598
GPC Scope	Scope 1
GPC Reference Number	I.5.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.073964
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	3.6221×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.8835×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
Off Road Fuel Use	757
Energy Equivalent (MMBtu)	104.50
CO2 (MT)	7.7290
Bio CO2 (MT)	0
CH4 (MT)	0.0010901
N2O (MT)	1.9682×10^{-4}
CO2e (MT)	7.8736
GPC Scope	Scope 1
GPC Reference Number	I.6.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.073964
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	1.0432×10^{-5}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.8835×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
Off Road Fuel Use	5053.4
Energy Equivalent (MMBtu)	631.42
CO2 (MT)	44.369
Bio CO2 (MT)	0
CH4 (MT)	0.0025267
N2O (MT)	0.0011117
CO2e (MT)	44.877
GPC Scope	Scope 1
GPC Reference Number	I.5.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.070268
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	4.0016×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.7607×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
Off Road Fuel Use	126.4
Energy Equivalent (MMBtu)	15.794
CO2 (MT)	1.1098
Bio CO2 (MT)	0
CH4 (MT)	6.32×10^{-5}
N2O (MT)	2.7808×10^{-5}
CO2e (MT)	1.1225
GPC Scope	Scope 1
GPC Reference Number	I.3.1
US-CP Reporting Category	Source
CO2 Emissions Factor	0.070268
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	4.0016×10^{-6}
CH4 Emissions Factor Units	MT/MMBtu
N2O Emissions Factor	1.7607×10^{-6}
N2O Emissions Factor Units	MT/MMBtu
US Community Protocol Reference	
GCoM Common Reporting Framework Reference	Direct Emissions

Outputs

Name	Value
On Road VMT	2.8083×10^{7}
Fossil Fuel Energy Equivalent (MMBtu)	146528
Biofuel Energy (MMBtu)	0
CO2 (MT)	10292
CH4 (MT)	0.55043
N2O (MT)	0.33419
Biogenic-CO2 (MT)	0
Biofuel CH4 (MT)	0
Biofuel N2O (MT)	0
CO2e (MT)	10427
Emissions per Capita (MT CO2 per Person)	0.34688
Emissions per Mile (g CO2e per mile)	371.30
GPC Scope	Scope 1
GPC Reference Number	II.1.1
US-CP Reporting Framework	Source and Activity
CO2 Emissions Factor	0.07024
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0.068414
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	1.96×10^{-8}
CH4 Emissions Factor Units	MT/mile
N2O Emissions Factor	1.19×10^{-8}
N2O Emissions Factor Units	MT/mile
US Community Protocol Reference	TR.1.B

Outputs

Name	Value
On Road VMT	1.5980×10^{8}
Fossil Fuel Energy Equivalent (MMBtu)	833809
Biofuel Energy (MMBtu)	0
CO2 (MT)	58567
CH4 (MT)	3.1322
N2O (MT)	1.9017
Biogenic-CO2 (MT)	0
Biofuel CH4 (MT)	0
Biofuel N2O (MT)	0
CO2e (MT)	59335
Emissions per Capita (MT CO2 per Person)	1.9739
Emissions per Mile (g CO2e per mile)	371.30
GPC Scope	Scope 3
GPC Reference Number	II.1.3
US-CP Reporting Framework	Activity
CO2 Emissions Factor	0.07024
CO2 Emissions Factor Units	MT/MMBtu
Biogenic CO2 Emissions Factor	0.068414
Biogenic CO2 Emissions Factor Units	MT/MMBtu
CH4 Emissions Factor	1.96×10^{-8}
CH4 Emissions Factor Units	MT/mile
N2O Emissions Factor	1.19×10^{-8}
N2O Emissions Factor Units	MT/mile
US Community Protocol Reference	TR.1.A

DRAFT NO. 17-83
(As amended on October 4, 2017)

RESOLUTION NO. 2017-83

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF KENT IN SUPPORT OF THE PARIS CLIMATE AGREEMENT, AND DECLARING AN EMERGENCY.

WHEREAS, consensus exists among the world's leading climate scientists that global warming caused by emissions of greenhouse gases from human activities, which has led to climate change, is among the most significant problems facing the world today; and

WHEREAS, global climate change has led to increased occurrences of extreme weather events and to adverse impacts on ecosystems, demographic patterns and socio-economic activities; and

WHEREAS, responding to climate change provides communities an opportunity to be a leader in a green economy; developing products, services and knowledge that are required when transitioning to a climate-resilient future; and

WHEREAS, the City of Kent desires to protect and enhance the quality of life for all those who live, work, learn and play in our community, without compromising the ability of future generations to meet their own needs; and

WHEREAS, actions that reduce greenhouse gas emissions also have the potential to improve air and water quality, public health, energy security, social equity, our local economy and natural environment, and the quality of life in Kent; and

WHEREAS, the City of Kent has demonstrated its commitment to sustainability through a series of initiatives, including signing on to the U.S. Conference of Mayors' Climate Protection Agreement in 2007, the creation of a Sustainability Commission, energy efficiency improvements to existing city buildings, and a commitment to LEED certifications for new construction; and

WHEREAS, the City of Kent recognizes the important role that local communities will play in taking immediate action to significantly curb greenhouse gas emissions; and

WHEREAS, protecting our planet is of the utmost importance and requires a comprehensive effort at all levels-including government policies, industry standards, and household practices.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Kent, Portage County, Ohio, at least three-fourths (3/4) of all members elected thereto concurring:

SECTION 1. The City of Kent commits to consider for adoption a community based climate action plan to be developed by the Sustainability Commission in response to the City's support of the Paris Climate Agreement and in accordance with this resolution.

SECTION 2. The City of Kent, with this Resolution, stands in solidarity with communities across the nation and the world in support of the Paris Climate Agreement.

SECTION 3. That it is found and determined that all formal actions of this Council concerning and relating to the adoption of this Resolution were adopted in an open meeting of this Council and that all deliberations of this Council, and of any of its committees that resulted in such formal

action, were in meetings open to the public in compliance with all legal requirements of Section 121.22 of the Ohio Revised Code.

SECTION 4. That this Resolution shall be in full force and effect from and after the earliest time permitted by law.

PASSED: October 18, 2017 on 3rd reading
as amended on October 4, 2017
Date

Jerry T. Fiala
Mayor and President of Council

EFFECTIVE: October 18, 2017
Date

ATTEST: _____
Tara Grimm, CMC
Clerk of Council