



2018 - 2019

GHG EMISSIONS INVENTORY

WHAT ARE GREEN HOUSE GASES?

Greenhouse gases or GHGs are naturally occurring gases that allow the sun's rays to enter Earth's atmosphere while also trapping warmth. Earth's natural processes keep GHGs and Earth's temperature stable; however, recent human activities have caused GHGs to reach drastically high levels, thus increasing Earth's temperatures and negative impacts from climate change.

HOW DO GHG'S EFFECT CLIMATE CHANGE?

High levels of GHGs trap and prevent the Sun's heat from leaving the atmosphere, causing increases in temperatures on a global scale. This increase in global temperatures disrupts the climate's stability, resulting in extreme weather events that can cause irreparable damage to the world's economies, ecosystems, and communities.

HUMAN ACTIVITIES THAT RELEASE GHGS IN THE ATMOSPHERE

There are several types of GHGs released from human activity that negatively effect the environment in different magnitudes. These gas specific levels of impact are described as global warming potential (GWP).

Carbon dioxide is a commonly released GHG, so while it has a lower GWP, it is at a higher concentration in the atmosphere and lasts longer in the atmosphere than other GHGs. This means the effects of already released CO2 will impact the Earth for generations. Mitigating the release of CO2 now will encourage livability of Earth for future generations.

GHG	GWP	Human Activity
Carbon dioxide	1	Burning fossil fuels
		Burning fossil fuels Intensive agriculture Landfills
Methane	25	Wastewater treatment practices
		Burning fossil fuels Intensive agriculture Industrial activities
Nitrous oxide	298	Landfills
Perfluorocarbons	7,390-22,800	Electronic industry
Hydrofluorocarbons	124-14,800	Air conditioning/refrigeration
Sulfur hexafluoride	22,800	Switchgear at power installations

When conducting a GHG inventory, we calculate the potential warming impact of all these different gases and scopes into MTCO₂e, or metric tons of carbon dioxide equivalent. This assists in monitoring, aids in reduction, and allows comparison of contributions of different types of GHGs occur across industries.

GHG SCOPES

GHGs from human activities are described and calculated as different scopes based on type of emissions.

- Scope 1: Butler direct emissions. i.e. power generated on campus and campus gas usage
- Scope 2: Indirect emissions from purchased energy. i.e. electric, natural gas, coal for lighting, heating, and cooling
- Scope 3: Purchased products life cycle emissions, commuting, and Butler students, faculty, and staff air travel

Butler University's Commitment to Carbon Neutrality



President Danko signed the Second Nature President's Carbon Commitment in 2012, committing Butler University to carbon neutrality by 2050.

Carbon Neutrality = no more release of GHGs

- 15% reduction by 2020
- 45% reduction by 2030
- 100% reduction by 2050

Conducting Butler's GHG Inventory

Butler Facilities and Operations analyzed building energy usage and utility data to assess Scope 1 and 2. Scope 3 data was collected by the Center for Urban Ecology and Sustainability from Butler staff across departments such as Parking and Transportation, Study Abroad, as well as College departmental administration professionals.

GHG RESULTS

Scope 1: 8,222 MTCO₂e
Scope 2: 25,904 MTCO₂e
Scope 3: 4,233 MTCO₂e



Butler University had an overall increase in GHG emissions from 2017 to 2020. The University acquired new buildings at south campus which can partially explain this increase.

The majority of GHG emissions result from campus energy usage.

Reduction Recommendations

The Butler University Sustainability and Climate Action Plan Addendum, or BUSCA, lists strategies for reducing Butler's carbon footprint. <https://www.butler.edu/sustainability/busca>

For Butler's full GHG inventory visit:
<https://www.butler.edu/sustainability/carbon-commitment>

