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2022 Greenhouse Gas Emissions Inventory

An Executive Summary
prepared for



City of Phoenix
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sustainabilitysolutions.asu.edu

Acknowledgements

This report is a joint effort by the city of Phoenix:

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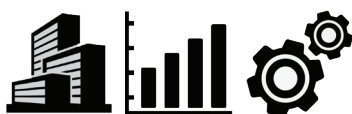
And

NAU **NORTHERN ARIZONA**
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2022 City of Phoenix Greenhouse Gas Emissions Reductions Summary Report

Prepared by the ASU Rob and Melani Walton Sustainability Solutions Service and the NAU School of Informatics, Computing, and Cyber Systems



Background

The city of Phoenix set its first climate action goals 14 years ago in 2008 with the stated goal of reducing greenhouse gas (GHG) emissions from city operations 5% below 2005 levels by 2015.

In 2012, three years ahead of schedule, Phoenix exceeded its goal with a reduction of 7.2%. In response to this accelerated reduction and to continue to position itself as a national leader, the Phoenix City Council adopted a new goal to reduce GHG emissions to 15% below 2005 levels by 2015. The completion of the Phoenix 2015 Greenhouse Gas Emissions Inventory for Government Operations showed that Phoenix exceeded its 15% reduction goal. In 2017, Phoenix updated its government operations GHG emissions reduction goal to 40% below 2005 levels by 2025.

Phoenix's 2021 Climate Action Plan set even more ambitious goals for reducing GHG emissions from government operations:

Achieve net-zero GHG emissions for municipal operations electricity use by 2030 through renewable energy projects, energy efficiency upgrades, and utility partnerships.

In addition to government operations, Phoenix conducts regular community-scale GHG emissions inventories according to the Global Protocol for Community-Scale GHG emissions Inventories (GPC). The GPC is a worldwide standard for inventorying city-induced GHG emissions and is the standard supported by the Global Covenant of Mayors for Climate and Energy. Phoenix is a member of the C40 Cities Climate Leadership Group and Global Covenant of Mayors for Climate and Energy.

At the community-scale, Phoenix City Council has approved the goal to reduce community GHG emissions from buildings, transportation, and waste by 50% by 2030 and to become a net-zero GHG city by 2050.

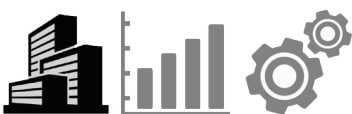


Government Operations Findings

In 2022, city of Phoenix government operations emitted 29% fewer GHG emissions than the 2005 baseline level of 718,854 MT CO₂e. This is a decrease in annual emissions of 206,052 MT CO₂e.

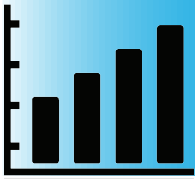
Community-Wide Findings

In 2022, community-wide GHG emissions for the city of Phoenix were 10% less than the 2012 baseline level of 17,614,455 MT CO₂e. Community-wide GHG emissions have decreased by 1,809,785 MT CO₂e annually.



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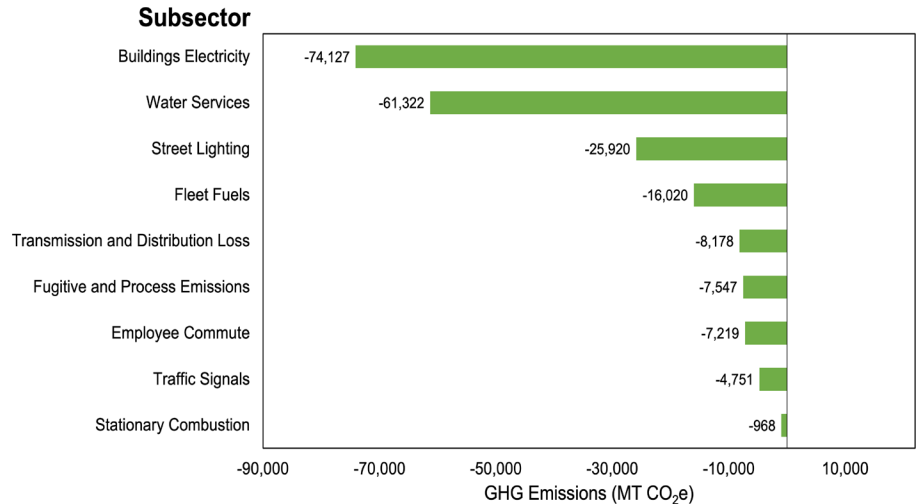
Government Operations

Significant Reductions

Since 2005, GHG emissions from Phoenix government operations have decreased from 718,854 MT CO₂e to 512,801 MT CO₂e, a 29% decrease in emissions.

The following are examples of city actions that resulted in substantial GHG emissions decreases.

- **Public Transit:** Moving from diesel to B20 biodiesel decreased the emission of 4,117 MT CO₂e.
- **Employee Commute:** Employee commuting emissions have decreased the emission by 7,219 MT CO₂e since 2005.
- **Buildings & Facilities:** GHG emissions from Buildings & Facilities have fallen 168,287 MT CO₂e due to efficiency upgrades and a less GHG intensive electricity grid.
- **Solid Waste:** The 27th Avenue Compost Facility will reduce future GHG emissions associated with hauling municipal solid waste.



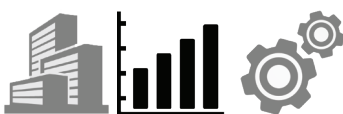
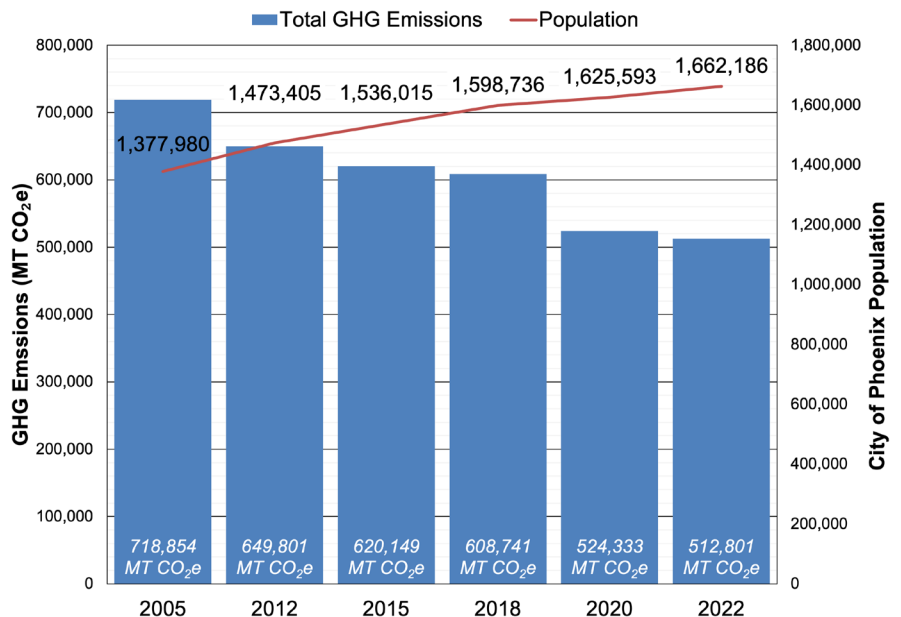
The 2022 inventory update enables Phoenix to evaluate its progress towards lowering emissions from its operations to reach the goals of 40% reduction by 2025.

GHG Emissions from the city of Phoenix government operations have decreased despite significant population growth.

The city achieved this through:

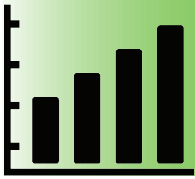
GHG emissions from Phoenix government operations have decreased.

- 43% fewer emissions from electricity consumption;
- 13% fewer emissions from natural gas combustion; and
- 5% fewer emissions from landfills and wastewater treatment.



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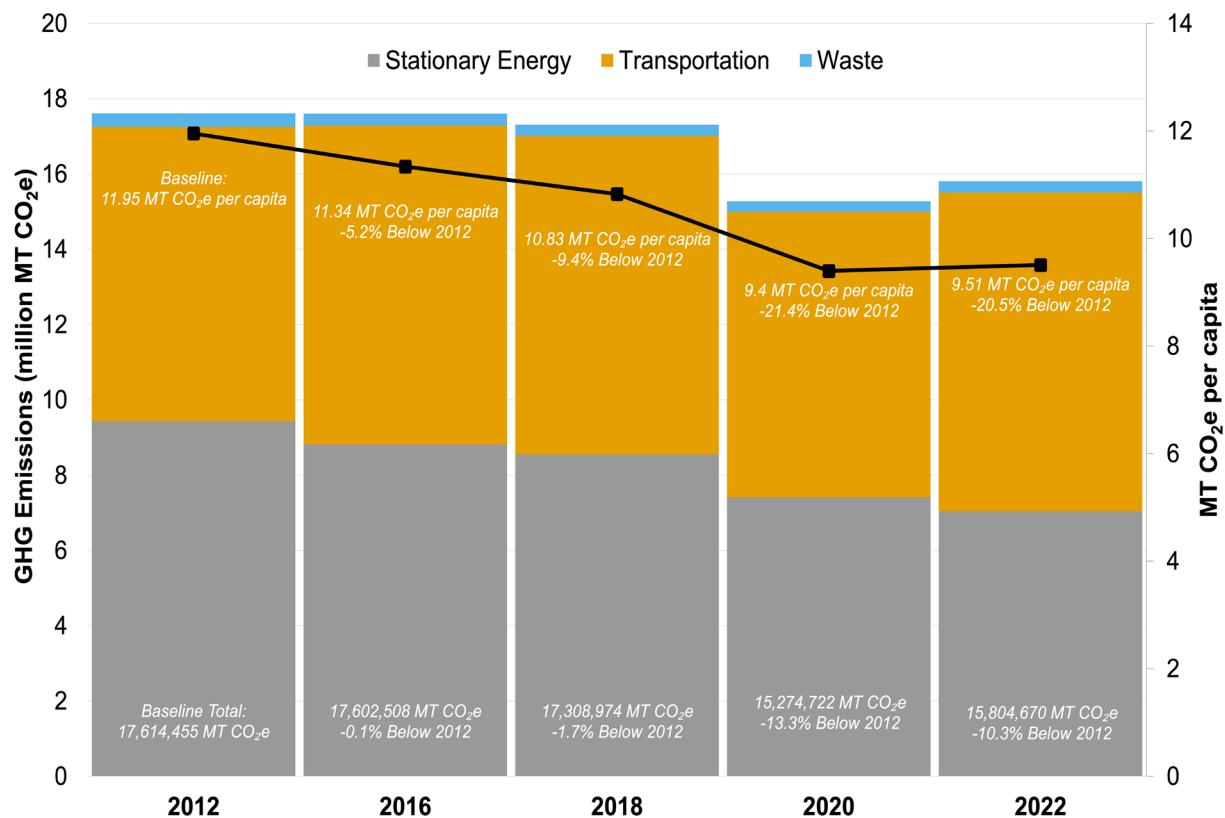
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Community Emissions

The city of Phoenix completed its fifth community greenhouse gas emissions inventory for calendar year 2022 using the Global Protocol for Community-Scale GHG Emission Inventories (GPC). Calendar year 2012 is the baseline for Phoenix-wide GHG emissions. A community inventory estimates GHG emissions from the entire Phoenix community, not just government operations, for all stationary energy consumption, transportation activities and waste generation. The GPC is the international standard for conducting community GHG emissions inventories.

Phoenix community GHG emissions between 2012 and 2022



Key Findings:

- In 2022, community-scale GHG emissions were 15,804,670 MT CO₂e, representing a 10.3% decrease below the 2012 baseline level of 17,614,455 MT CO₂e.
- Phoenix’s GHG emissions decreased over a period when population grew 12.8% and the the metro area economy also grew significantly, showing Phoenix can reduce GHG emissions while increasing in population and experiencing economic growth.
- The Phoenix per capita GHG emissions rate fell 20.5% from 11.95 MT CO₂e to 9.51 MT CO₂e between 2012 and 2022.
- Transportation-related activities are the largest source of GHG emissions across Phoenix, comprising 53% of emissions. Community-wide transportation activity saw a rebound from the pandemic-induced lows of 2020 leading to an increase in overall GHG emissions in 2022. Transportation activities will be the largest source of GHG emissions as the regional electricity grid becomes less GHG intensive.

