

Northwest Indiana

2017 Regional Inventory of Community Greenhouse Gas Emissions



**Produced by the Northwestern Indiana Regional Planning Commission
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With assistance from:

ICLEI - Local Governments for Sustainability USA

Indiana University Environmental Resilience Institute

Executive Summary

The communities of this Northwest Indiana participating in the Indiana University Environmental Resilience Institute 2021 Climate Cohort recognize that greenhouse gas (GHG) emissions from human activity are catalyzing profound climate change, the consequences of which pose substantial risks to the future health, well-being and prosperity of the region. Furthermore, these communities have multiple opportunities to benefit by acting quickly to reduce community GHG emissions. By reducing activities that are primary contributors to community GHG emissions, residents can realize cost savings related to transportation and energy use, make their communities healthier places to live and be a part of mitigating the risks associated with climate change and their negative impacts on the livelihoods of those that live in and around the region.

Prior to this cohort, the communities of Gary and Michigan City participated in Indiana University's Environmental Resilience Institute's and ICLEI's 2019 resilience cohort program. Gary and Michigan City's emissions are included in Figure 1. This cohort's communities have participated in Indiana University's Environmental Resilience Institute's and ICLEI's 2021 resilience cohort program. By first conducting the GHG emissions inventory, they will be able to begin their carbon footprint reduction process. This report provides estimates of GHG emissions resulting from activities in Cedar Lake, Chesterton, East Chicago, Hammond, Highland, Hobart, Lake Station, La Porte, Merrillville, Munster, Portage, Schererville, Valparaiso, Lake County, La Porte County, and Porter County. These estimates are for the 2017 calendar year. 2017 was chosen so that our regional inventory would complement previous inventories conducted by Gary and Michigan City.

Key Findings

Region-Wide Emissions

Northwest Indiana CO₂e Emissions

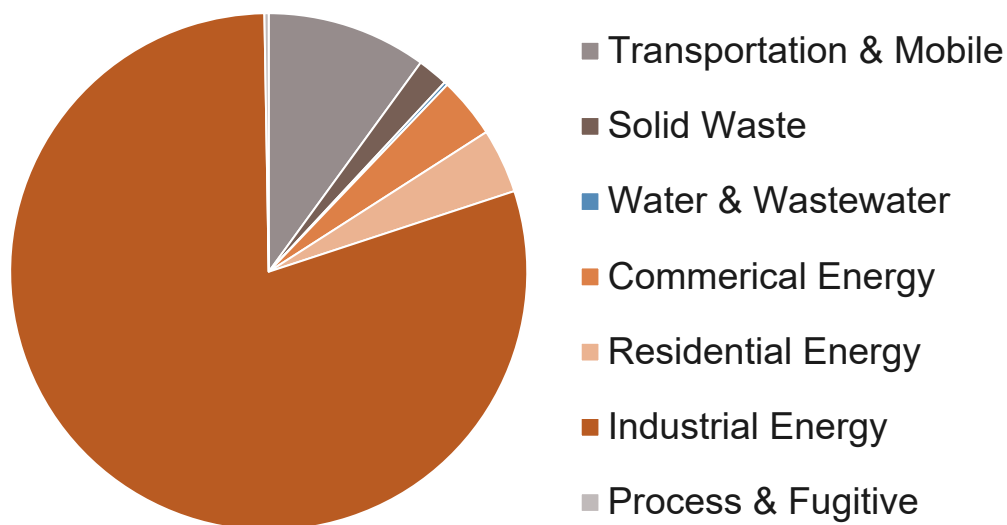


Figure 1. Relative contribution of source categories to Northwest Indiana CO₂e Emissions.

The total Green House Gas (GHG) Carbon Dioxide equivalents (CO₂e) from the three counties in 2017 was 48.9 million metric tons. Figure 1 represents the relative contribution of CO₂e from different source categories. Overall, 80% of those are come from industrial energy usage.

Discussion of industrial GHG sources will be limited to the regional level for two reasons. Firstly, because in Northwest Indiana jobs and other benefits industries provide are rarely limited to their host communities. Secondly, industrial sources are not the focus of community inventory.

GHG emissions from these sources are influenced by state and federal regulations, energy costs, and global competitiveness. Local governments and community members are better positioned to influence change in the other source categories analyzed in more detail.

Stationary Energy

The primary source of data for residential, commercial, and industrial energy in Northwest Indiana was Northwest Indiana Public Service Company (NIPSCO). The utility company provided total electricity and natural gas for all municipalities in the regional cohort. Electricity emissions were larger than natural gas emissions. NIPSCO is actively working to reduce their emissions^[1] and make their electricity generation portfolio more sustainable. Smaller utility services, such as Kankakee Valley REMC, also provided data for the communities they serve.

Residential and commercial energy emissions were calculated with data provided by utility services. Residential emissions also included estimates of propane and kerosene consumption. Usage of these non-utility fuels were estimated by applying United States Census Bureau for 2017. Porter County had the highest per capita residential emissions and La Porte County had the largest commercial emissions. Residential energy based GHG emissions for the region totaled 1.97 million metric tons in 2017, with commercial energy coming in closely behind at 1.85 million metric tons. The 2017 average residential GHG emissions per person averaged 2.6 tons per year.

Industrial emissions from energy were determined with utility energy service provided by NIPSCO plus other fuel sources included in the data facilities reported to EPA. Emissions from industrial processes, non-NIPSCO fuel combustion or energy sources, and fugitive emissions from facilities and pipelines came from data companies reported directly to EPA. The EPA's Greenhouse Gas Reporting Program (GHGRP)^[2] requires emissions reports from large GHG emission sources across the country, which can be publicly accessed through the EPA's Facility Level Information on Greenhouse Gases Tool (FLIGHT). Many facilities had emissions from operations using distillate fuel oil, coke oven gas, blast furnace gas, and more. Total Northwestern Indiana industrial GHG emissions were calculated as 39 million metric tons in 2017, or 80% of regional emissions. Communities in Northwest Indiana recognize the importance of industry in the region, it bolsters the economy, provides a way of life to many residents, and provides valuable materials to the nation. While acknowledging industry is the largest source of climate change inducing emissions in our region, because of the limited capacity for local government to influence this source category, we did not focus on it here.

Excluding emissions from industry, the GHG CO₂e from Northwest Indiana in 2017 was 9.8 million metric tons. The relative contribution of non-industrial categories is shown in Figure 2. Transportation & mobile sources accounted for 50%. Residential energy use comprised 20% and commercial energy use 19% respectively. 10% came from solid waste management, and 1% from water and wastewater treatment

Northwest Indiana CO₂e Emissions by Sector (excluding Industrial sources)

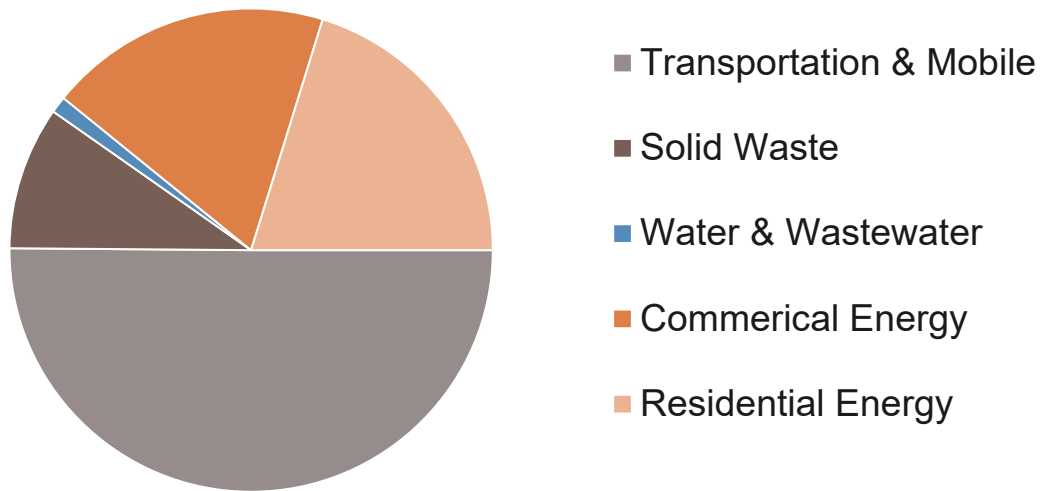


Figure 2. Relative contribution of CO₂e source categories excluding industry for Northwest Indiana

Transportation & Mobile Sources

Daily vehicle miles traveled (VMT) typically contributes greatly to any community's emissions profile, but Northwest Indiana's proximity to Chicago, Lake Michigan, industry, and interstates contribute to unusually high travel and transportation emissions. VMT provided by the Indiana Department of Transportation (INDOT) was multiplied by 340 to reach a regional annual VMT estimate. ICLEI recommends using 340 instead of 365 as an adjustment to account for holidays and weekends that have abnormal amounts of traffic. Gasoline and diesel vehicles produce different amounts of GHG emissions. These differences are captured in the vehicle fleet mix data provided by NIRPC and national defaults for fuel economy and emissions factors. The VMT models and calculations used primarily account for in-boundary traffic. Trans-boundary trips either start in a community and end somewhere else, start outside of a community and end within the community or only travel straight through a community. Because of this, trans-boundary trips account for fewer GHG emissions included in each community's inventory than in-boundary trips. In-boundary trips are defined as those that begin and end within one community. This methodology ensures that emissions from transportation & mobile sources are reported solely on travel that each community has influence over.

Beyond on-road transportation, GHG emissions were estimated for off-road vehicles, rail, waterborne transportation and aviation in applicable communities. Off-road emissions are produced by vehicles such as construction equipment, golf carts, ATVs and other recreational vehicles. Their emissions were estimated using the EPA's national emissions inventory^[3]. Emissions from rail were calculated by scaling down national emissions from rail companies in Northwest Indiana, based on their national rail mileage and local rail mileage. Local harbors, marinas and yacht clubs were contacted for fuel consumption during 2017. Aviation data was collected from local airports when available; otherwise emissions estimates from the EPA's national emissions inventory were used again. All together this sector generated 4.9 million metric tons of GHG emissions in 2017.

Water & Wastewater

Water and wastewater operations contributed the smallest amount of GHG emissions but are important to include, because communities often have influence over these facilities. Most facilities were provided electricity and natural gas by NIPSCO, so their emissions were subtracted from the commercial energy sector to prevent double counting. Much of the data for the water and wastewater sector had to be scaled based on population because facility-specific data was only provided for some communities.

Emissions occur at water utilities through the extraction, treatment and distribution of potable water.

Wastewater facilities produce emissions through energy use, digester gas, flaring, nitrification/denitrification, effluent discharge, nitrogen removal and solids disposal. Water and wastewater treatment contributed 107,984 of regional GHG Emissions in 2017.

Solid Waste

Within this regional section of the report only waste that was produced and contained within Lake, Porter and La Porte counties are accounted for. Individual community reports provide information on their solid waste streams. A significant portion of solid waste was transported to landfills outside of each community's jurisdiction. Waste characterization factors for municipal waste were provided by Purdue University Northwest-Hammond's 2012 Municipal Solid Waste Characterization Study. Most sources of waste were municipal but some industrial facilities also produced large amounts of waste that is reported. Differences in facility operations such as composting, methane collection systems, flaring and incineration all contribute varying amounts of greenhouse gas emissions. Regional GHG Emissions from Solid Waste was 938,150 metric tons.

Next Steps

Informed by the results of this inventory, in 2022 Northwestern Indiana Regional Planning Commission (NIRPC) plans to develop a Regional Climate Action Plan Framework with input from stakeholders in each source category. This Framework will be incorporated into Regional Long Range Transportation Plan. It can also provide a basis for each municipality to create a local climate action plan to reduce their community GHG emissions and improve their environmental resilience. Each community action plan needs to reflect local priorities, the mix of GHG-producing activities within their boundaries, those they can significantly influence, and the cost and effectiveness of implementing different emission reduction strategies.

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- [1] Our Environment - NIPSCO. (2021). Retrieved from <https://www.nipsco.com/our-company/about-us/our-environment>
 - [2] Greenhouse Gas Reporting Program (GHGRP). (2021). Retrieved from <https://www.epa.gov/ghgreporting>
 - [3] [National Emissions Inventory \(NEI\)](#). (2020) Retrieved from <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>

Credits and Acknowledgments

Communities of Cedar Lake, Chesterton, East Chicago, Hammond, Highland, Hobart, Lake Station, La Porte, Merrillville, Munster, Portage, Schererville, Valparaiso, Lake County, La Porte County, Porter County.

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