

**FROM:**  
CEAC, [Climate Economy Action Center of Addison County](#)

**CONTACT:** Richard Hopkins  
Tel. (850) 544-7614  
Email: [hopkinsrs@comcast.net](mailto:hopkinsrs@comcast.net)

Greg Dennis  
Tel. (802) 989-4115  
Email: [gregdennisvt@yahoo.com](mailto:gregdennisvt@yahoo.com)

## Groundbreaking Study Identifies Local Climate Emissions

- *Transportation, Buildings and Agriculture Account for Most Greenhouse Gas Emissions in Addison County, VT*

The first-ever study of greenhouse gas (GHG) emissions in Addison County has identified the major sources of the county's GHG emissions, which contribute to global climate change. The study finds that three sectors -- buildings, transportation, and agriculture -- account for the vast majority of emissions.

In a county with many farms, agriculture is the single largest source of emissions, accounting for nearly 41%. Other sectors combined contribute the majority of emissions, at 59%. The GHG inventory can be found online [here](#).

The study was produced by the Climate Economy Action Center of Addison County ([CEAC](#)). The nonprofit organization acts as a hub to convene the community around climate change and a sustainable economy, while fostering partnerships among businesses, nonprofits, education and local governments.

"This in-depth inventory draws on numerous data sources to provide a baseline estimate of local climate change emissions," said Dr. Richard Hopkins, a member of CEAC's [Board of Directors](#). "The analysis fills a gap in what was known about local emissions and creates a basis for measuring the effects of present and future efforts to reduce emissions."

This is the first time GHG emissions have been researched and reported for Addison County alone. The state government reports overall data for Vermont emissions but does not make estimates by city or county. As the study states, "Only when emissions

are tracked locally, using local data, can the community implement and monitor the success of targeted and informed programs to reduce these emissions."

A full-time paid intern, Acadia Hegedus, Middlebury College Class of 2022, carried out the primary work on the report during the summer of 2020. She conducted the inventory and produced the report under guidance from Hopkins, who is a retired epidemiologist and an expert on climate data, and from Steve Maier, who heads the CEAC Board of Directors.

"This report provides valuable new information about local sources that contribute to climate change," Maier said. "We see the effect and increasing dangers of climate change in Vermont in various ways, including more extreme weather and significant, harmful warming overall.

"The inventory is not itself a climate action plan," he emphasized. "It's a snapshot of where things stand. Looking ahead, CEAC hopes to work with all sectors of the county's economy and community to create a climate plan that will help direct our community's efforts to bring down our GHG emissions and grow a sustainable economy."

In Vermont as a whole, transportation is the biggest source of GHG emissions, at 44.5%, while transportation accounts for 27.2% in Addison County. Statewide, agriculture accounts for only 12.2% of greenhouse gas emissions, compared to 40.8% in this heavily agricultural county. About 25% of the state's dairy cattle live in the county.

Vermont's emissions are growing despite public awareness of the impacts of climate change. "Total gross GHG emissions in Vermont for 2016 were approximately 13% above the 1990 baseline emissions levels," according to a [recent report](#) from the Vermont Department of Environmental Conservation.

The CEAC report estimates GHGs released by Addison County in 2017, the most recent year for which comprehensive data was available. It examines emissions of the three greenhouse gases that have the most climate impact for American communities: carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O).

Amounts of these three gases are converted in the report to metric tons of CO<sub>2</sub> equivalents, to account for the greater pound-for-pound greenhouse potency of methane and nitrous oxide. The methods used are widely accepted and follow protocols developed by the organization [Local Governments for Sustainability](#).

Globally, according to U.N. Secretary General [Antonio Guterres](#), “Time is fast running out for us to avert the worst impacts of climate disruption and protect our societies from the inevitable impacts to come ... More severe and frequent floods, droughts and tropical storms, dangerous heatwaves and rising sea levels are already severely threatening lives and livelihoods across the planet.”

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Here is a brief summary of the CEAC report's findings by sectors:

### **Agriculture**

Farming accounted for 40.8% of the county's GHG emissions in 2017. The primary contributor in this sector (60% of the sector total) is enteric fermentation, “which occurs in the stomachs of ruminants like cows and goats when they digest their food.” This process releases methane, a potent greenhouse gas that promotes climate change. Also contributing to ag-related emissions are manure management and soil practices.

### **Transportation**

The transportation sector is the second-largest contributor of county GHG emissions, accounting for 27.2%. The biggest single source within the sector is passenger vehicles, which contribute 78% of transportation-related emissions.

### **Buildings and Industrial Operations**

An estimated 29.1% of county emissions fall within this sector. It encompasses delivered fuels (fuel oil, propane and kerosene), natural gas, electricity and wood. The report notes a recent decrease in homes heated with fuel oil and a rise in propane and electricity for home heating. It predicts natural gas and electric heat pumps will account for more local home heating in the future.

### **Wastewater and Solid Waste**

Wastewater treatment and disposal of solid waste produce greenhouse gases, mostly methane. Together they account for 2.7% of 2017 emissions. Solid waste decomposition emits methane, which can be burned at a landfill site to generate electricity. The largest source of wastewater emissions in the county is the Middlebury facility, which serves commercial, industrial and residential customers.

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In addition to a substantial amount of original research, CEAC's greenhouse gas inventory draws upon information from the Vermont state departments or agencies of:

Motor Vehicles; Taxes; Agriculture, Food and Markets; Natural Resources; and Transportation. Also contributing data were Efficiency Vermont, the Addison County Regional Planning Commission, Green Mountain Power, Vermont Gas, the Addison County Solid Waste Management District and staff of the county's wastewater treatment plants.