

# ADIRONDACK ENERGY & GHG INVENTORY

AN ANALYSIS OF HOW ADIRONDACK COMMUNITIES USE ENERGY  
AND THE IMPACTS OF THAT REGIONAL ENERGY USE

---

## EXECUTIVE SUMMARY

April 2009

*Report Prepared for*  
The Wild Center & ADKCAP

*In consultation with*  
The Adirondack Energy Smart Park Initiative (E\$PI)

*Funded by*  
ACT Adirondack Community Trust  
Master Family Fund

*Prepared by*  
Ecology and Environment, Inc.

*With Key Contributions from*  
Dr. Colin Beier  
Research Ecologist  
SUNY College of Environmental Science and Forestry

Please download the full report from:

[www.adkcap.org](http://www.adkcap.org)

# Executive Summary

A regional energy & greenhouse gas (GHG) inventory was conducted for the Adirondack Park as part of the Adirondack Carbon Offset Project and the Adirondack Climate Action Plan in order to support efforts to assess the Park's energy use and consumption data, identify GHG mitigation opportunities and to provide a baseline so that energy use and carbon emissions reductions can be documented over time.

The inventory encompassed 6 million acres within the Park boundary (known as the Blue Line), including all or parts of 12 counties. Regional primary fuel use and emission data were generally not available, and the inventory largely relied on secondary sources, including census data, assessment data, and other data compiled by state, federal, and academic sources. The effort involved data requests and consultation with local, state, and federal governments, the support of local academic institutions, detailed information provided by a number of large emitters, and the support of members of the community at large.

For the purposes of this inventory, commercial buildings were defined following conventions from the U.S. Department of Energy, Energy Information Administration (DOE EIA), and include all buildings other than agricultural, industrial, and residential structures. The inventory of Scope I and Scope II emissions are summarized on Table ES-1.

**Table ES-1 Summary Adirondack GHG Emissions**

Source	CO <sub>2</sub> e Emissions (metric tons)
<b>Scope I Emissions</b>	
Residential Building	341,901
Commercial Building	165,639
Agricultural – Buildings	22,711
Industrial	152,924
Mobile Sources	883,158
Agricultural - Fugitive Methane	21,250
Water Treatment Fugitive Methane	27,852
<b>Total Scope I</b>	<b>1,624,446</b>
<b>Scope II Emissions</b>	
Residential	331,732
Commercial	142,046
Agricultural	2,263
Industrial	36,391
<b>Total Scope II</b>	<b>512,433</b>
<b>Total Emissions</b>	<b>2,136,879</b>
Forest sequestration	-600,000
<b>Net Emissions (Sources and Sinks)</b>	<b>1,536,879</b>

Key observations and conclusions drawn from the Adirondack Park GHG inventory include the following:

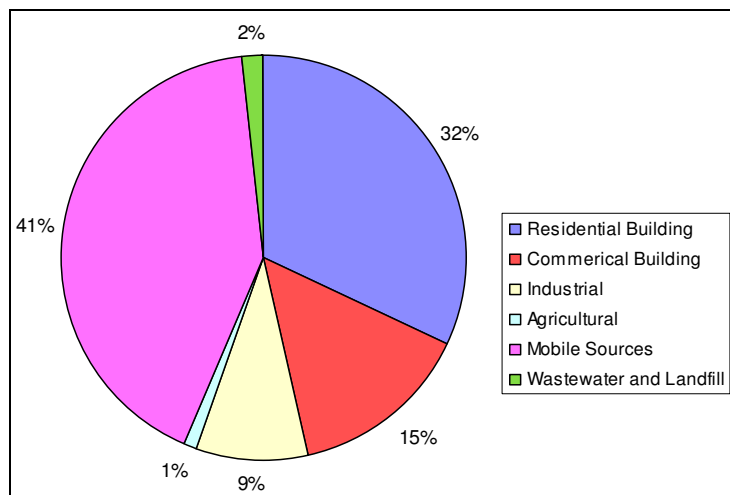
**Mobile source emissions make up the largest emissions source in the park.** As shown on Figure ES-1, mobile source emissions from cars and trucks are by far the largest emissions source in the Park. This reflects both the rural character of the region, which typically involves the use of larger-than-average

vehicles and travel between relatively dispersed communities. Any attempt to attain carbon neutrality will require significant focus on mitigating emissions resulting from vehicle travel.

**Residential emissions represent a significant portion of the emissions in the Park, providing opportunities for mitigation.** Due to the aging housing stock and relatively high reliance on electricity and fuel oil for heat, there are significant opportunities for mitigation. The relatively large proportion of residential emissions is due, in part, to the fact that many Park residents travel outside the Park for employment, with many commercial and industrial employers being located outside of the Park boundary. Given the high energy consumption in this community and the high proportion of economically challenged residents, there is great opportunity to tie GHG mitigation to residential building energy efficiency programs that would mitigate GHG emissions and lower costs for struggling families.

**Table 2-2 Residential Fuel and Electricity Use, by End Use**

Energy Type	Fuel or Electricity Consumption
<b>Space Heating</b>	
Electricity (kWh)	148,220,508
Fuel Oil/Kerosene (gallons)	31,344,408
LPG (gallons)	8,713,787
Wood (cords)	45,750
<b>Water Heating</b>	
Electricity (kWh)	158,132,989
Fuel Oil (gallons)	4,609,396
LPG (gallons)	692,804
<b>Appliance</b>	
Electricity – Refrigerators (kWh)	129,346,819
Electricity – Other Appliances and Lighting (kWh)	489,379,900
LPG (gallons)	730,542



**Figure ES-1 GHG Emissions by Sector**

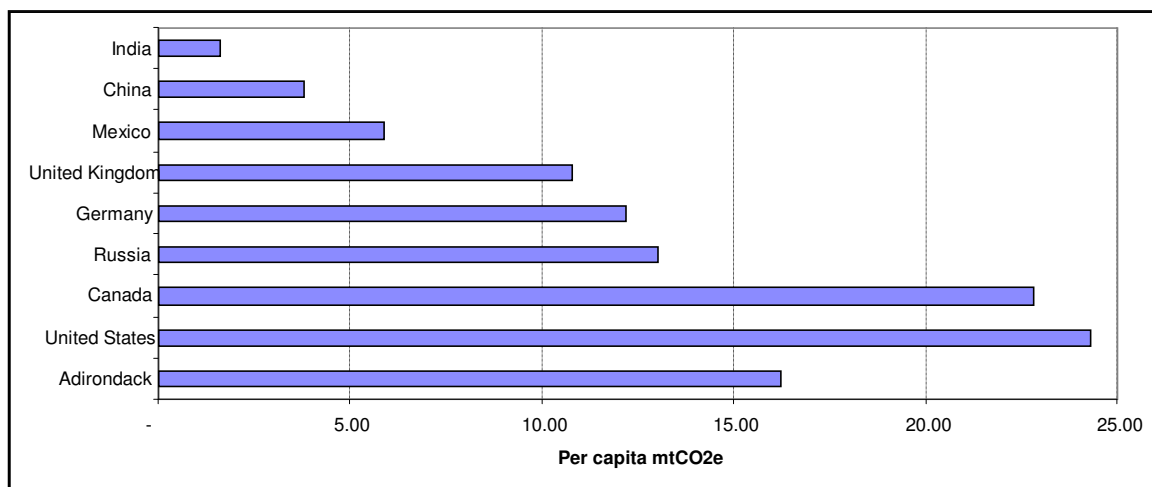
**Industrial emissions are dominated by the International Paper Company’s (IP’s) paper mill in Ticonderoga, New York.** Based on fuel use data provided by IP, it was found that the Ticonderoga mill emits

about 86% of the industrial emissions in the Park, which does not include biomass burned by the mill. This is in spite of the fact that the mill combusts a large amount of relatively carbon neutral biomass. The lack of other large industrial emitters reflects the protected status of the Adirondack Park and the fact that much of the region’s industry lies outside the Park boundary. Opportunities to mitigate emissions from industry are probably rather limited, as there is not a large amount of industry, and the largest emitter already has an active program of biofuels and energy efficiency initiatives.

**Forests provide significant sequestration and storage of carbon in the Park.** Annually, the above ground forest in the park sequesters approximately 600,000 carbon dioxide equivalent (CO<sub>2</sub>e) metric tons per year, which is 28% of the Park’s total emissions. Belowground soil sequestration is also expected to be important but was not estimated. Additionally, the Park forests store approximately 242,600,000 metric tons CO<sub>2</sub>e, or approximately 113 times the annual emissions of the park (including belowground storage). There are significant data gaps and research needs to understanding carbon fluxes and storage in Adirondack forests, water bodies, and wetlands, and in particular to understanding how climatic variation can affect carbon storage and sequestration.

**Wastewater and solid waste are modest sources of GHG emissions for the Park.** All waste from the Park is land filled or incinerated at large regional facilities outside the park, and therefore constitutes a Scope III indirect emission source. Wastewater is a much larger source than solid waste, and occurs within the Park. Fugitive methane emissions from oil, gas and mineral extraction is not a significant source within the Park.

**Adirondack residents may have lower GHG intensity per capita than the U.S. at large.** Per capita GHG emissions were calculated for the Adirondack Park and are compared to the U.S. and a sample of other countries on Figure ES-2. These numbers do not include sequestration provided by the Park forests. The figure shows relatively low per capita emissions for the Park. This likely results from the tendency of residents to 1) have jobs outside the Park, 2) have lower incomes and therefore less energy intensive lifestyles, and 3) the lack of a large number of high emitting industrial emitters in the Park. If emissions from employers of Park residents whose facilities are located outside the Park were considered in this inventory, it is likely that Park per capita would be higher.



**Figure ES-2 Per Capita Emissions for the Adirondacks and by Country**