

Results: 2014 Government GHG Emissions Inventory and Energy Flow Without Green-e RECs

Tompkins County has been purchasing Green-e Energy Certified Renewable Energy Credits (Green-e RECs) to offset 100 percent of the County’s electricity usage since November 2012.¹ Purchased RECs allow the purchaser, as opposed to the generation source, to claim the environmental attributes for the renewable electricity consumed. Although Tompkins County can claim the renewable energy use for the Green-e RECs it purchases for its government operations, it is important to consider the County government’s emissions without the RECs to gain a clearer understanding of total emissions if the County were not able to take credit for renewable energy generated by other parties. The information below provides a second version of the inventory calculations without the emissions reductions attributed to the purchase of Green-e RECs.

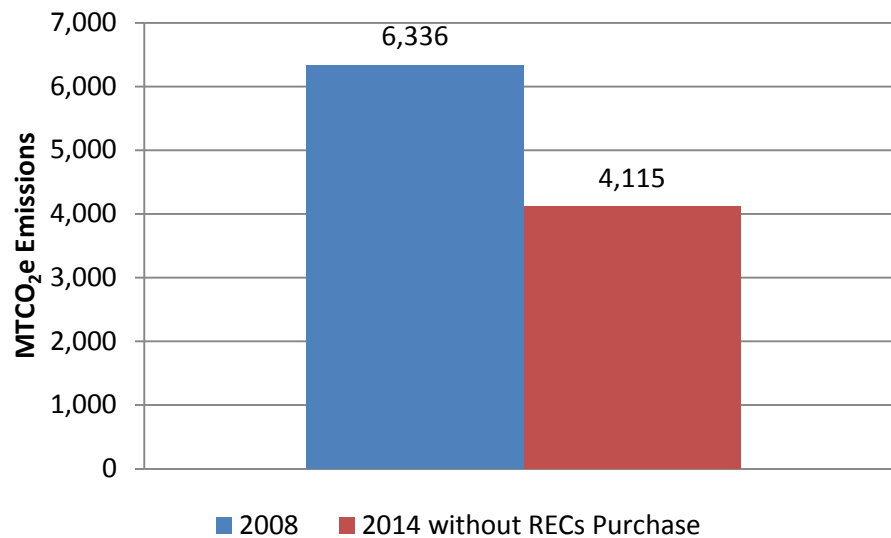


Figure 18. Total MTCO₂e emissions in 2008 and 2014 without RECs purchase

The total MTCO₂e emissions from Tompkins County government operations in 2014 were 4,115 MTCO₂e when RECs are excluded. In 2008, County government operations emitted 6,336 MTCO₂e. Tompkins County government emissions decreased by 35.0% between 2008 and 2014 when emissions reductions from purchased RECs are excluded (Figure 18). Even without the emissions reduction benefits of the RECs, County government emissions reductions have already exceeded the goal of 20 percent emissions reductions by 2020, and are well ahead of schedule to meet the 80 percent emissions reduction goal by 2050.

As shown in Figures 19 and 20, without the Green-e RECs, electricity moves ahead of vehicle fuels to become the second highest emissions fuel type, and Buildings & Facilities electricity moves to become the third highest sector for emissions.

¹ In reality, the County used 403,913 kWh more electricity than anticipated in the purchase agreement, so emissions from this additional electricity are included in the main body of the report, which otherwise assigns no emissions to the 6,100,000 kWh of electricity covered by the Green-e RECs purchase.

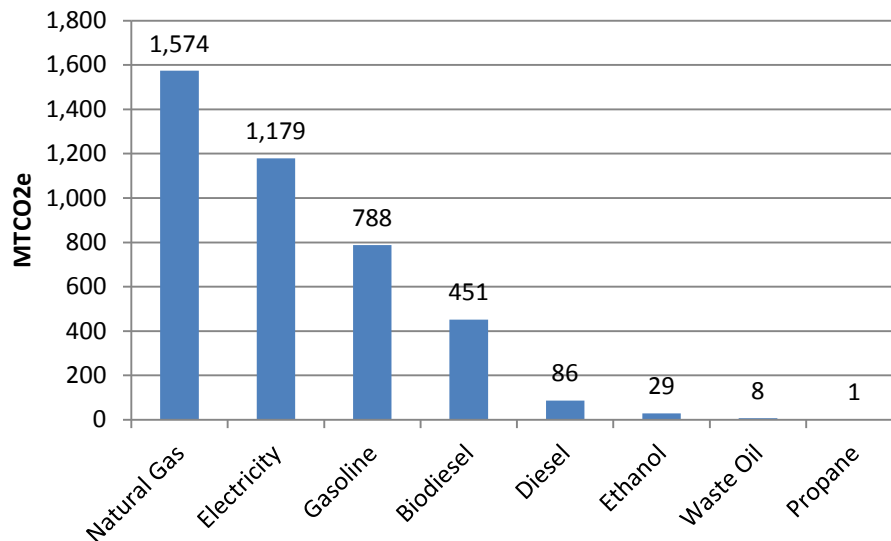


Figure 19. Breakdown of total CO₂e emission by fuel type without accounting for Green-e-Certified RECs purchase

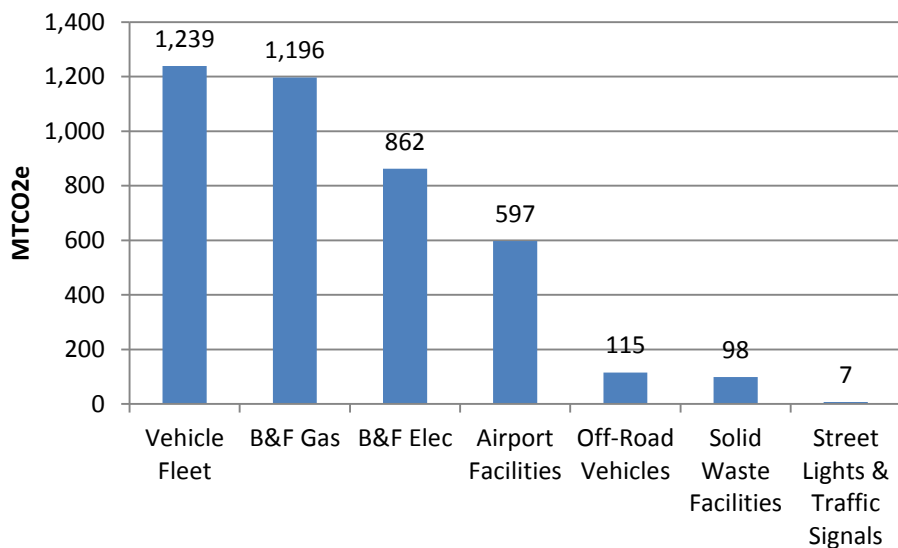


Figure 20. Breakdown of total CO₂e emission by sector without accounting for Green-e-Certified RECs purchase

Buildings and Facilities

Buildings and facilities operated by the County used 38,255 MMBtu of energy and generated 2,058 MTCO₂e in 2014. Producing 50.0% of all emissions, buildings and facilities continue to be the largest emitters as they have been in the three previous County government emissions inventories.

Vehicle Fleet

The County vehicle fleet included 255 vehicles in 2014 and was the second largest source of emissions, as it has been in previous inventories. The fleet used 18,092 MMBtu of energy, and generating 1,239 MTCO₂e, representing 30.1% of County government emissions.

Airport Facilities

The County's airport facilities include the airport terminal and its parking lot lights, three hangars, the Crash Fire and Rescue Building, and the Sand Storage Building. These facilities used 11,112 MMBtu of energy and generated 597 MTCO₂e in 2014, representing 14.5% of County government emissions.

Off-Road Vehicles

The County's off-road vehicles include pick-up trucks, dump trucks, fire trucks, and equipment such as forklift, loader, and mower at both the Airport and Highway Division. These facilities used 1,789 MMBtu of energy and generated 115 MTCO₂e in 2014, representing 2.8% of County government emissions.

Solid Waste Facilities

The County's solid waste facilities include the Solid Waste Office, the Recycling Center, and the Solid Waste - Household Hazardous Waste Building. These facilities used 1,822 MMBtu of energy and generated 98 MTCO₂e in 2014, representing 2.4% of County government emissions.

Street Lights and Traffic Signals

The County's airport facilities include the airport terminal and its parking lot lights, three hangars, the Crash Fire and Rescue Building, and the Sand Storage Building. These facilities used 132 MMBtu of energy and generated 7 MTCO₂e in 2014, representing 0.2 percent of County government emissions.

Comparison of Emissions and Energy Use 2008-2014 Without Green-e RECs

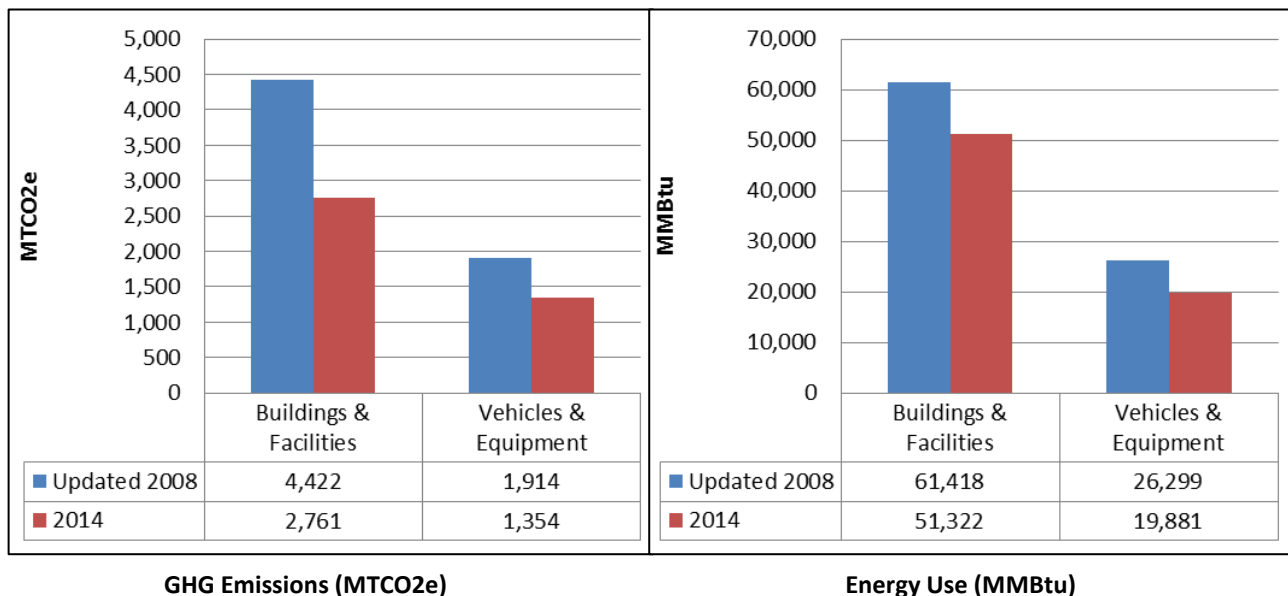


Figure 21. 2014 GHG Emissions and Energy Use without RECs purchase

The County government has two overarching sectors (1) Buildings & Facilities, which include electricity and thermal heating for all County buildings and facilities, including the Airport, Solid Waste Facilities, and (2) Vehicles & Equipment, which includes both on- and off-road vehicles and equipment powered by vehicle fuels. Without the emissions reduction benefits of the Green-e RECs, the increase in conventionally generated electricity results in a closer correlation between energy use and emissions.

Applying Latest Climate Science on Shale Gas to Results: 2008-2014

Between 2008 and 2014 the source of the gas used in the community, including by County government, transitioned from wells drilled through conventional methods to fracked gas, primarily coming from the Marcellus Shale in Pennsylvania. Emissions associated with fracked shale gas are calculated extremely differently depending on whether current accounting methods or evolving climate science accounting methods are applied. If the new accounting is applied to natural gas extracted from shale using fracking, the County government has not seen a remarkable 35 percent reduction in emissions without its purchase of Green-e RECs, but instead has *increased* emissions by 39 percent between 2008-2014 if the 20-year global warming potential and mid-range overall leakage rate of 12% are applied for methane emissions (Figure 18, Table 4. This is due to direct natural gas use as well as the use of electricity generated using natural gas. Applying this conclusion to the Inventory calls for rapidly replacing all County electricity use with renewably generated electricity and developing strategies to dramatically reduce reliance on natural gas.

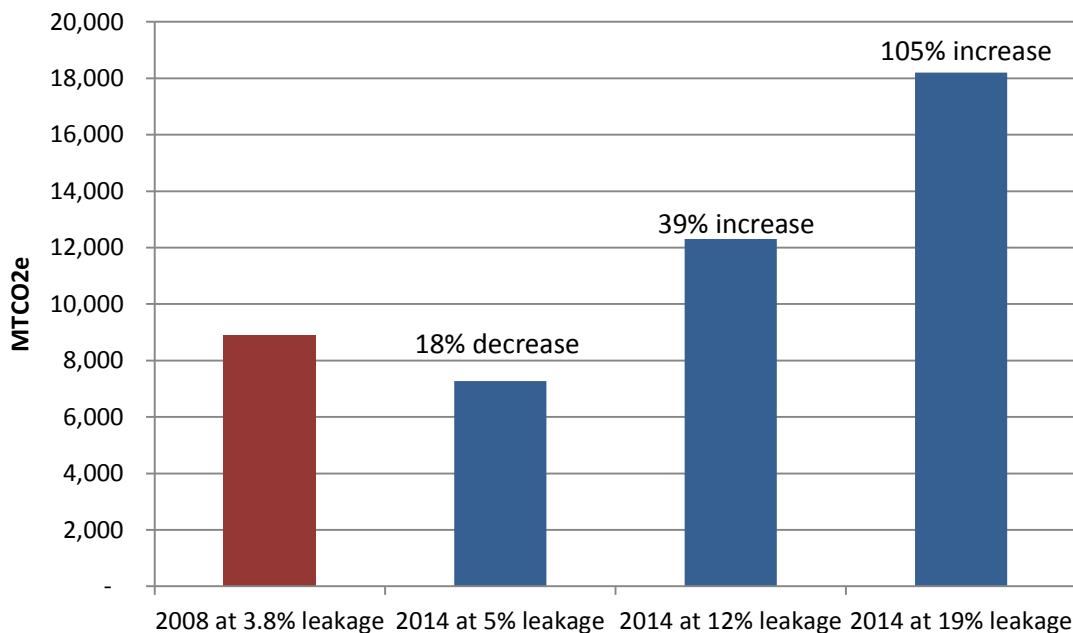


Figure 22. GHG Emissions - New Shale Gas Accounting

	2014 with 100-yr GWP and without Leakage	2014 New Accounting 5th IPCC 20-yr GWP for Methane with 5% Leakage	2014 New Accounting 5th IPCC 20-yr GWP for Methane with 12% Leakage	2014 New Accounting 5th IPCC 20-yr GWP for Methane with 19% Leakage
MTCO2e from Leaked Methane	n/a	3,612	8,192	14,092
Total Government MTCO2e with Leakage	4,115	7,277	12,307	18,207

Table 4. 2014 Emissions as 5%, 12% and 19% Methane Leakage and GWP of 86