

2014 Greenhouse Gas Emissions Inventory Findings for Individual County Facilities¹⁹

In addition to changes specific to individual County facilities and department fleets between 2008 and 2014, several factors more generally affect electricity, natural gas, and fuel use across numerous County facilities and department fleets.

Solar PV Systems. The County has six leased solar PV systems installed on the following buildings: Building C; Emergency Response Center; Health Department; Human Services Annex; Human Services Building; Public Safety Building; and the Public Works Building. Together with the system the County owns at the Tompkins County Public Library, these solar panels can provide some shading and insulation benefits that slightly reduce the need for cooling in summer.

Heating and cooling degree days. The winter and summer of 2014 were cooler than 2008, resulting in the need for more natural gas heating in the winter and less electricity to cool in the summer.

Building use. Changes in occupancy, occupant behavior, and electronics/equipment used inside the building may affect both a building’s need for climate control and electricity use. Known changes are noted in the individual building profiles.

Fuel efficiency improvements. Vehicle fuel efficiency standards have improved since 2008, meaning that vehicles purchased since the 2008 are generally more fuel efficient than older vehicles of a similar class.

Airport Facilities

Energy Use

Airport Facilities include the Terminal, Crash Fire & Rescue, and Sand Storage buildings, along with the Airport parking lot lights, T Hangar I, T Hangar II, and the Old IHA Hangar. Between 2008 and 2014, Airport Facilities reduced electricity use by 74,074 kWh and increased natural gas use by 5,694 therms. However, neither the Old IHA (Ithaca Hangar Association) Hangar nor the Sand Storage Building’s energy use was included in the 2008 inventory. Without these new additions, the Airport Facilities’ electricity use would have decreased by 6.3% and natural gas use would have decreased by 3.3%.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Airport Facilities	1,460,128	1,386,054	-5.1%	58,118	63,812	9.8%
County Average*	574,675	474,137	-17.5%	25,848	22,739	-12.0%

**Note: Excludes facilities added or subtracted between 2008-2014*

¹⁹ Note that the emissions listed below do not include Green-e RECs, since the emissions reduction from these RECs are applied to the overall County emissions rather than to specific facilities.

Vehicle Fuel Use

Since 2008 a new tracking system for fuel pumping has been implemented. The Airport's vehicle/equipment fuel use decreased by 7,329 gallons, but some of this reduction may be due to the greater accuracy of fuel data available in the new system.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Airport	12,140	4,811	-60.4%
County Average	12,639	9,592	-24.1%

* 2014 data was not available, so 2015 fueling information has been used as a proxy for 2014.

Emissions

Airport Facilities' emissions decreased by 24.4%, or 193 MTCO_{2e}, between 2008 and 2014. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO _{2e})				Vehicle Emissions (MTCO _{2e})			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Airport Facilities	790	597	-24.4%	Airport	119	47	-60.7%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place in the Airport Terminal include a lighting upgrade for the Terminal and Crash Fire & Rescue Building.
- 2) *Changes in fuel tracking.* In 2008 the filling of fuel tanks used by the Airport was used in calculating total fuel use, even though all of that fuel may not have been consumed by Airport vehicles and equipment during that calendar year. The data used for 2014 benefit from a new tracking system that indicates the actual fuel from those tanks consumed by Airport vehicles and equipment. Therefore, the 2015 data, used as a proxy for 2014, more accurately represents the actual fuel pumped from these tanks for use in on- and off-road vehicles/equipment.
- 3) *Changes in vehicle and equipment use.* Since 2008, the frequency of grass mowing has been reduced, and the vehicles and equipment used for snow removal are no longer left outside idling during storms when not in active use.
- 4) *Vehicle and fuel improvements.* The Airport replaced some vehicles and equipment after the 2008 inventory, benefiting from improvements to fuel efficiency standards and the addition of an all-electric vehicle.
- 5) *Additional buildings.* The Airport took over the Old IHA Hangar from the Ithaca Hangar Association in January 2009. In 2012, the Sand Storage Building was constructed for the Airport's use. Therefore, neither building was part of the 2008 inventory.

Board of Elections Training and Storage Facility

Energy Use

The County did not begin leasing the Board of Election's Training and Storage Facility space until late 2008, therefore a comparison of energy use between the two inventories is not possible. In addition to its use as storage for electronic voting machines and as a training site for election inspectors of the machines, until late 2013 it also housed the office of the Tompkins County Soil and Water Conservation District. The County rents rather than owns the building, but is responsible for the energy used at the facility.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Board of Elections T&S	0	18,912	NA	0	2,886	NA

Vehicle Fuel Use

There is no vehicle fuel use for this facility because the Board of Election's vehicle fuel use is provided in information regarding Building C, its primary office.

Emissions

There are no associated emissions from vehicle use since vehicle fuel use is associated with Building C, the primary home of the Board of Elections.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
Board of Elections T&S	0	19	NA

* Note: Facility emissions do not include Green-e RECs

Building C

Energy Use

Building C houses the Assessment and Information Technology Services (ITS) Departments along with the Board of Elections. Between 2008 and 2014, Building C reduced its electricity use by 22,762 kWh and increased its natural gas use by 1,640 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Building C	216,720	193,958	-10.5%	5,666	7,306	28.9%
County Average*	574,675	474,137	-17.5%	25,848	22,739	-12.0%

*Note: Excludes facilities added or subtracted between 2008-2014

Vehicle Fuel Use

In 2010 both the Assessment and ITS Departments added a hybrid car to their fleets and the ITS fleet was cut from two vehicles to one hybrid car. The Board of Elections maintains a fuel card, but not its own vehicle, so much of its reduction comes from the ability to borrow a hybrid vehicle from the Assessment Department.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Assessment	1,518	905	-40.4%
Board of Elections	14	5	-66.0%
ITS	450	86	-80.9%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

Building C's facility emissions decreased by 26.0%, or 26 MTCO₂e, between 2008 and 2014. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Building C	101	75	-26.0%	Assessment	14	8	-41.5%
				Board of Elections	0	0	NA
				ITS	4	1	-80.9%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place at Building C include lighting upgrades and improvements to the building envelope, and installation of plug load controls. Johnson controls suspects that adjustments of space set points and schedules for heating may be contributing to increased use of natural gas.
- 2) *Generator.* A natural gas-powered generator provides back-up power to the building and its computer servers and other equipment. Although there are no records of generator use between 2008 and 2014 beyond normal testing, it is possible that some undocumented generator use would contribute to spikes in natural gas use.
- 3) *HVAC.* Occupants in Building C report wide discrepancies in heating and cooling throughout the building, likely resulting in increased energy use, particularly as heating systems consuming natural gas are turned on or thermostats raised to offset cold offices.
- 4) *Vehicle and fuel improvements.* Fuel use reductions stem from the ITS fleet replacing two conventional vehicles with a single hybrid car, and the addition of one hybrid car to the Assessment Department fleet which the Board of Elections borrows as needed. The Assessment Department had two fewer field staff positions in 2014 than it did in 2008, which reduces the number of staff members driving department vehicles. Also, 2008 was a full revaluation year so Assessment staff members were out in the field much more than in 2014, which was a more typical year.
- 5) *Staff reductions.* The Assessment Department decreased by 6 Full Time Equivalent (FTE) staff members between 2008 and 2014. This reduced the computers, monitors, office lights, and other appliances used by staff.

Courthouse Complex

Energy Use

The Courthouse Complex includes the Main Courthouse, Daniel D. Tompkins Building (or Old Courthouse), and the Old Jail. The Courthouse Complex houses the State Court System, District Attorney's Office, County Clerk's Office, and County Legislature, as well as the County Administration, Finance, Personnel, and Planning Departments. Between 2008 and 2014, the Courthouse Complex reduced its electricity use by 97,200 kWh and reduced its natural gas use by 5,629 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Courthouse Complex	679,200	582,000	-14.3%	38,373	32,744	-14.7%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Vehicle Fuel Use

The Planning Department and County Clerk each had a single vehicle in 2014, but the Planning Department replaced its car with a hybrid in 2010.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Clerk	976	763	-21.8%
Planning	261	131	-49.9%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

The Courthouse Complex reduced its facility emissions by 33.9%, or 145 MTCO₂e. The increase in the County Clerk's Office vehicle emissions and decrease in Planning Department vehicle emissions between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Courthouse Complex	427	282	-33.9%	Clerk	5	7	35.3%
				Planning	2	1	-50.6%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place include installing facility management systems and making building envelope improvements to all three buildings. Both the Main Courthouse and Old Jail benefited from boiler replacements and installation of plug load controls. An old rooftop air handling system was replaced at the Main Courthouse.
- 2) *Renovation of Daniel D. Tompkins Building for County Legislature.* The second floor of the Daniel D. Tompkins Building was renovated for the new Legislature chambers in 2013, and the first floor also received lighting upgrades during the project.

- 3) *Vehicle and fuel improvements.* The Planning Department replaced its car in 2010 with a hybrid vehicle, and by 2014 was sharing vehicles with the Assessment Department when needed. The County Clerk’s Office was using the same vehicle in 2014 as it did in 2008 and experienced some benefit from using ethanol blended gasoline.

Department of Motor Vehicles

Energy Use

The Department of Motor Vehicles is rented by the County rather than owned, but the County is responsible for the energy used at the facility. Its electricity use decreased by 0.2%, or 100 kWh, between 2008 and 2014 and reduced its natural gas use by 3.3%, or 89 therms. This department does not have vehicles or fuel cards.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
DMV	43,980	43,880	-0.2%	2,707	2,618	-3.3%

Emissions

The Department of Motor Vehicle’s facility emissions decreased by 23.4%, or 7 MTCO₂e, between 2008 and 2014.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
DMV	29	22	-23.4%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Rented space.* As a tenant rather than a building owner, the County has not made the types of energy efficiency improvements that have reduced energy use in many County-owned facilities.

Emergency Response Center

Energy Use

Between 2008 and 2014, the Emergency Response Center reduced its electricity use by 32,897 kWh and reduced its natural gas use by 1,819 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Emergency Response	442,054	409,157	-7.4%	8,755	6,936	-20.8%
County Average*	574,675	474,137	-17.5%	25,848	22,739	-12.0%

*Note: Excludes facilities added or subtracted between 2008-2014

Vehicle Fuel Use

Although the Department of Emergency Response's two vehicles date to after the 2008 inventory and benefit from improvements in fuel efficiency, the SUV and pickup truck are less fuel efficient than cars, and the Department only reduced its consumption by 47 gallons.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Emergency Response	1,299	1,252	-3.6%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

The Emergency Response Center's facility emissions decreased by 41.1%, or 79 MTCO₂e, between 2008 and 2014. The Department of Emergency Response vehicle emissions decreased by 1.4%, or 0.2 MTCO₂e. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Emergency Response	192	113	-41.1%	Emergency Response	12	11	-1.4%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Vehicle and fuel improvements.* Although the Department's vehicles have been replaced since the 2008 inventory, the SUV and pickup truck tend to be less fuel efficient than department fleets with a higher proportion of sedans and/or hybrid vehicles. The Department's pickup truck is a heavy-duty fire scene support unit that carries an air compressor and breathing air cascade system. It should be noted that several fire departments have retired from service duplicate systems (and vehicles) because the County can share with them a single, safer and more efficient unit. The SUV is necessitated by response expectations that occur in all weather conditions and frequently "off-road." The reduction in fuel usage by the department has occurred despite increased response demands and the addition of several County-maintained remote radios transmission sites since 2008.
- 2) *Boiler replacement.* A new boiler system was installed in 2014.
- 3) Continued efforts to consolidate computerized equipment and demobilize legacy communications systems within the Center since 2014 are expected to further reduce utility usage.

Health Department

Energy Use

The Health Department's new building constructed in 2010 means that comparisons between 2008 and 2014 are not available. However, as compared to its electricity use in the Biggs Building it occupied in 2008, the Health Department reduced its electricity use by 78,043 kWh and reduced its natural gas use by 18,063 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Biggs Building	367,649	0	NA	35,461	0	NA
Health Department	0	289,606	NA	0	17,398	NA

Vehicle Fuel Use

Programmatic changes, vehicle replacements, and a gradual decline in out of County travel reduced vehicle miles and fuel consumption by the Health Department.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Health	8,502	2,974	-65.0%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

Again, direct comparisons between 2008 and 2014 are not possible, however as compared to its former home in the Biggs Building, facility emissions decreased by 52.7%, or 163 MTCO₂e. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Biggs B	309	0	-100.0%	Health	76	26	-65.4%
Health Department	0	146	NA				

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Renovation.* The renovation of the existing Health Department building in 2010 to become the County's first LEED Silver Certified building provided a much more energy efficient facility than the c.1920 Biggs Building occupied by the department in 2008.
- 2) *Changes to vehicles, vehicle use, and fuel improvements.* In 2012 the Health Department's Home Care Unit eliminated its vehicle fleet and stopped making home visits, which significantly reduced both mileage and fuel consumption between 2008 and 2014. Thirteen of the Health Department's 19 vehicles date to after the 2008 inventory, benefiting from improving fuel standards. Department vehicle use for out of County travel has also been declining over the past several years, and ethanol fuel use since 2008 further reduces emissions.

Highway Satellite Facility

Energy Use

The Highway Satellite Facility is located at the Caswell Landfill in the Town of Dryden. Although the Highway Division has been using the facility since 2006 as an eastern satellite of its main facility at Bostwick Road, it was not included in the 2008 inventory and data are not available to adjust 2008 inventory results to include the facility. The building uses electricity but no natural gas. Its heater used approximately 40 gallons of propane and 700 gallons of waste oil in 2014, according to Highway staff estimates.

Facility	Electricity Use (kWh)		
	2008	2014	% Change
Highway Satellite	0	14,060	NA

Emissions

Although no comparison can be made to 2008, the 2014 emissions were 3 MTCO₂e.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
Highway Satellite	0	3	NA

* Note: Facility emissions do not include Green-e RECs

Human Services Annex

Energy Use

The Human Services Annex building houses the Office for the Aging. This building was purchased for the County's use in 2011; therefore a comparison to 2008 is not possible. However, it should be noted that the County renovated the building to LEED standards, a rating system devised by the U.S. Green Building Council to evaluate the environmental performance of a building and encourage sustainable design which reduces the use of energy and water while reducing greenhouse gas emissions.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Human Services Annex	0	17,229	NA	0	2,716	NA

Vehicle Fuel Use

The Office for the Aging does not own a vehicle or have a WEX fuel card with which it could fuel a vehicle. It takes advantage of shared fleet vehicles with Planning and DSS.

Emissions

The Office for the Aging does not own a vehicle or have a WEX fuel card with which it could fuel a vehicle. As noted above, 2014 emissions cannot be compared with the 2008 inventory.

After acquiring the Human Services Annex, the County renovated the building to LEED standards. LEED, or Leadership in Energy and Environmental Design, is a rating system devised by the U.S. Green Building Council to evaluate the environmental performance of a building and encourage sustainable design which reduces the use of energy and water while reducing greenhouse gas emissions.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
Human Services Annex	0	18	NA

* Note: Facility emissions do not include Green-e RECs

Human Services Building

Energy Use

The Human Services Building houses the Department of Social Services (DSS), the Probation Department, and Youth Services. Between 2008 and 2014, the Human Services Building reduced its electricity use by 445,789 kWh and its natural gas use by 6,529 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Human Services	1,181,527	735,738	-37.7%	33,989	27,460	-19.2%
County Average*	574,675	474,137	-17.5%	25,848	22,739	-12.0%

**Note: Excludes facilities added or subtracted between 2008-2014*

Vehicle Fuel Use

The Probation Department's vehicle fuel consumption from its two large SUVs held fairly steady between 2008 and 2014. DSS reduced its consumption by 1,557 gallons. All but one of the DSS cars in its fleet is post-2008 models, including five hybrid cars.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
DSS	7,930	6,373	-19.6%
Probation	1,427	1,388	-2.8%
County Average	12,639	9,592	-24.1%

**Note that Youth Services does not have a vehicle*

Emissions

The Human Services Building's facility emissions decreased by 50.3%, or 286 MTCO₂e, between 2008 and 2014. The Human Services Building houses the Department of Social Services (DSS), the Probation Department, and Youth Services. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Human Services	569	283	-50.3%	DSS	71	56	-21.1%
				Probation	13	12	-5.4%

** Note: Facility emissions do not include Green-e RECs*

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place at the Human Services Building include installing a facility management system, a separate A/C unit for the computer room, plug load controls, and a water flow monitoring system.

- 2) *Vehicle and fuel improvements.* DSS replaced nearly all of its vehicles with more efficient models between 2008 and 2014, including five hybrid models. DSS also began operating satellite offices in 2014. This may have further reduced the need to travel to individual clients.
- 3) *Boiler replacement.* One of the building's three c. 1997 boilers was replaced in 2015.

Mental Health Building

Energy Use

Between 2008 and 2014, the Mental Health Building reduced its electricity use by 52,790 kWh. Its natural gas use decreased by 4,773 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Mental Health	589,800	537,010	-9.0%	20,001	15,228	-23.9%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Vehicle Fuel Use

Program changes in 2014 significantly decreased the miles driven by Mental Health Department vehicles, and helped reduce vehicle fuel consumption by 3,014 gallons. Also, three fuel efficient cars and one hybrid car were purchased after the 2008 inventory.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Mental Health	4,240	1,563	-63.1%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

The Mental Health Building, constructed in 2004, decreased its facility emissions by 39.7%, or 119 MTCO₂e, between 2008 and 2014. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Mental Health	300	181	-39.7%	Mental Health	38	13	-64.6%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place at the Mental Health Building include a lighting upgrade, installation of a facility management system, improvements to the building envelope, and installation of plug load controls as well as a water flow monitoring system.
- 2) *Changes to vehicles and usage.* In addition to replacing several vehicles with more efficient models, in 2014 program changes required the Mental Health department to start connecting clients with Medicaid-assisted transportation (bus passes, Gadabout, etc.) instead of using County vehicles to provide transportation both in and out of town for appointments and daily necessities.
- 3) *Building use.* Changes in occupancy, occupant behavior, and electronics/equipment used inside the building may affect both a building's need for climate control and electricity use.
- 4) *Boiler replacement.* A new boiler system was installed in 2012.

Old Library Building

Energy Use

The Old Library was previously used for County archives and the Alternatives to Incarceration Program offices. By 2014, only the Day Reporting Program remained in the building. Between 2008 and 2014, the Old Library Building reduced its electricity use by 57,900 kWh and reduced its natural gas use by 5,041 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Old Library Building	285,600	227,700	-20.3%	34,003	28,962	-14.8%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Emissions

The facility emissions decreased by 28.5%, or 78 MTCO₂e, between 2008 and 2014, and no vehicle emissions are associated with the building. On average, County facilities reduced emissions by 44.9%.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
Old Library Building	275	196	-28.5%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Occupancy changes.* The reduced occupancy of the building between 2008 and 2014 likely decreased the amount of electricity needed for lighting, computers, etc. The need for natural gas decreased at a slower rate, possibly due to fewer people and less equipment generating heat.

Public Safety Building

Energy Use

Between 2008 and 2014, the Public Safety Building reduced its electricity use by 111,426 kWh and reduced its natural gas use by 1,151 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Public Safety Building	731,760	620,334	-15.2%	27,336	26,185	-4.2%
County Average*	574,675	474,137	-17.5%	25,848	22,739	-12.0%

*Note: Excludes facilities added or subtracted between 2008-2014

Vehicle Fuel Use

With the majority of the Sheriff's Office fleet in 2014 consisting of more fuel efficient vehicles purchased after the 2008 inventory, vehicle fuel use decreased by 8,682 gallons.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Sheriff	60,644	51,962	-14.3%
County Average	12,639	9,592	-24.1%

Emissions

The Public Safety Building's facility emissions decreased by 34.0%, or 131 MTCO₂e, between 2008 and 2014. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Public Safety Building	386	255	-34.0%	Sheriff	543	459	-15.4%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place at the Public Safety Building include a lighting upgrade, installation of a facility management system, improvements to the building envelope, and installation of plug load controls as well as a water flow monitoring system. An additional EPC executed in 2013 resulted in replacing exterior lighting with more efficient LEDs, replacing windows, and replacing a failing roof with a new roof that includes improved insulation. By February 2014, a more efficient boiler system had been installed and initial heat pump replacements occurred throughout 2014.
- 2) *Vehicle and fuel improvements.* Some ethanol consumption in 2014 reduced emissions slightly, and most of the fleet was replaced between 2008 and 2014, benefitting from improved fuel efficiency standards.

Public Works Facility

Energy Use

The Public Works Facility, also known as the Bostwick Road or Highway Facility, houses the Facilities, Highway, and Weights and Measures Departments. Between 2008 and 2014, the Public Works Facility reduced its electricity use by 29,826 kWh and its natural gas use by 33 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Public Works	271,800	241,974	-11.0%	31,755	31,722	-0.1%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Vehicle Fuel Use

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Facilities	5,616	4,633	-17.5%
Highway	95,287	75,003	-21.3%
Weights & Measures	536	396	-26.1%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

The facility's emissions increased by 13.9%, or 36 MTCO₂e, between 2008 and 2014. The associated changes in emissions from vehicle use between 2008 and 2014 are also detailed below. On average, County facilities reduced emissions by 44.9% and vehicle emissions declined by 29.2%.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Public Works Facility	258	222	-13.9%	Facilities	50	41	-19.3%
				Highway	950	657	-30.8%
				Weights & Measures	5	3	-27.0%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Energy Performance Contract with Johnson Controls, Inc.* The facility improvement measures (FIMs) that took place at the Public Works Facility include a lighting upgrade, improvements to the building envelope, boiler replacement, and installation of plug load controls. The lighting upgrade reduced heat generated by lighting, so would slightly increase the need for natural gas for heating in winter.
- 2) *Vehicle and fuel improvements.* The Highway Department began converting its vehicles to B10/B20 biodiesel in 2009 and had converted most diesel vehicles by 2014, which significantly reduced emissions. Nearly a third of its 2014 on-road and off-road vehicles and equipment were purchased after 2008, benefiting from improvements in fuel standards and particularly to the efficiency of diesel engines. In 2014, the Facilities Division was

purchasing B20 biodiesel from the Highway Division, helping to reduce its emissions in addition to a reduction in its overall fuel use. Also travel schedules have been rearranged to reduce mileage.

- 3) *Occupancy changes.* In November 2013 the Tompkins County Soil and Water Conservation District moved from its space in the Board of Elections Training and Storage Facility into the second floor of the Public Works Facility.

Solid Waste Facilities

Energy Use

Solid Waste facilities include the Solid Waste Office, the Recycling Center, and the Solid Waste - Household Hazardous Waste Building. Between 2008 and 2014, Solid Waste facilities reduced electricity use by 330,485 kWh. Natural gas use decreased by 16,008 therms.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
Solid Waste Facilities	608,205	277,720	-54.3%	24,750	8,742	-64.7%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Vehicle Fuel Use

The Solid Waste Division reduced its vehicle fuel consumption by 156 gallons.

Vehicle Fuel Use (gallons)			
Department	2008	2014	% Change
Solid Waste	1,380	1,224	-11.3%
<i>County Average</i>	<i>12,639</i>	<i>9,592</i>	<i>-24.1%</i>

Emissions

The Solid Waste Division's facility emissions decreased by 70.4%, or 233 MTCO₂e, between 2008 and 2014. The Solid Waste Division's vehicle emissions decreased by 12.4%, or 2 MTCO₂e.

Facility Emissions (MTCO ₂ e)				Vehicle Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change	Department	2008	2014	% Change
Solid Waste Facilities	331	98	-70.4%	Solid Waste	12	11	-12.4%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Single stream transfer.* In 2011, processes changed at the Recycling Center as dual stream sorting was replaced with a single stream process. A lot of sorting equipment was removed from operation as materials no longer needed sorting before transfer to a facility in Ontario County.
- 2) *2011 Recycling Center upgrades.* During the upgrades, 32 high intensity discharge light fixture were replaced with fluorescent fixtures that are 68% more efficient. Multiple overhead doors were added to reduce the need to use rooftop exhaust fans. A number of overhead heaters using natural gas were removed and replaced with

two infrared heaters over the sorting platform. Also, the maintenance and break room HVAC units were replaced with more efficient units.

- 3) *2013-2014 facility improvements.* In 2013 electric heaters in the sprinkler and electric room were replaced with more efficient units. In 2014 the duct work from the HVAC unit to the Solid Waste Office was replaced and insulated.
- 4) *Vehicle and fuel improvements.* Two of the Department’s three vehicles have been replaced since the 2008 inventory, and therefore benefit from improved fuel efficiency in newer vehicles.
- 5) *Boiler replacement.* A new boiler system was installed in 2013.

Tompkins County Public Library

Energy Use

Between 2008 and 2014, the Tompkins County Public Library increased its electricity use by 7,065 kWh and reduced its natural gas use by 3,576 therms. The Library does not have a County vehicle or fuel card.

Facility	Electricity Use (kWh)			Natural Gas Use (therms)		
	2008	2014	% Change	2008	2014	% Change
TC Public Library	862,400	869,465	0.8%	24,728	21,152	-14.5%
<i>County Average*</i>	<i>574,675</i>	<i>474,137</i>	<i>-17.5%</i>	<i>25,848</i>	<i>22,739</i>	<i>-12.0%</i>

**Note: Excludes facilities added or subtracted between 2008-2014*

Emissions

The Tompkins County Public Library reduced its emissions by 41.5%, or 172 MTCO₂e.

Facility Emissions (MTCO ₂ e)			
Facility	2008	2014	% Change
TC Public Library	415	243	-41.5%

* Note: Facility emissions do not include Green-e RECs

Reasons for Changes

- 1) *Not Included in Energy Performance Contract with Johnson Controls, Inc.* The Tompkins County Public Library was not one of the facilities improved under the contract with Johnson Controls, so the building has not benefited from efficiency measures to reduce electricity use. The solar panels on the Library’s roof are owned by the County and reduce the amount of electricity provided through the grid, but solar electricity has been included in the total electricity use.
- 2) *Building Use.* Although winter was colder in 2014 than it was in 2008, increased occupancy may have helped reduced the demands on the heating system.