

ONONDAGA COUNTY CLIMATE ACTION PLAN



ANNUAL UPDATE
REPORT FOR
2013

CLIMATE ACTION PLAN
GHG EMISSIONS – 2013 SUMMARY REPORT
6/13/2014

In April of 2012 Onondaga County finalized its Climate Action Plan (CAP) to reduce greenhouse gas emissions associated with County operations. In developing its Climate Action Plan, the County performed an inventory of greenhouse gas emissions from its operations based primarily on data for the calendar year 2008. The inventory utilized electricity and natural gas usage at County buildings and facilities, wastewater discharges and gaseous emissions [more than just methane] from County wastewater treatment facilities, and electrical usage from the lighting of various County areas. Since gasoline and diesel consumption data by department were not readily available for 2008, the inventory utilized gasoline and diesel usage records for 2010. Using this approach the County established a baseline of total annual greenhouse gas emissions associated with County operations of approximately 75,000 metric tons per year (Revised up from 72,000 due to a revision for process emissions from wastewater treatment operations as discussed below).

The County established a CAP emission reduction target of 25% over 25 years, or an average reduction of approximately 1% per year. This report summarizes greenhouse gas emissions associated with County operations for the year 2013, and compares these emissions with those established in the baseline described above and with prior year emissions.

The County has undertaken a number of energy and fuel reduction initiatives during the interval between baseline calculations and today. These projects, to name a few, include:

- Installation of solar photovoltaic at Beaver Lake Nature Center
- Lighting upgrades and LEDs in numerous County buildings
- War Memorial cooling tower replacement
- Demand control ventilation in Justice Center
- WEP laboratory heat recovery coil re-location
- Installed LED lights at War Memorial
- District heating and cooling plant chilled water piping rerouting
- New Board of Elections building HVAC
- Installed LED lights at OnCenter parking Lot (replaced diesel generator road lights)
- Installed variable frequency drives
- Use of methane produced at waste water treatment plants to fuel boilers for heat and a co-generation unit to produce both electricity and heat.

In the year 2013 the Metropolitan Water Board embarked in a Comprehensive Asset Renewal and Energy (CARE) efficiency project. When completed this project is projected to save up to 4,700,000 kWh annually in pumping energy thereby reducing greenhouse gases by approximately 1,500 MTCO₂e.

Following is a discussion and comparison of greenhouse gas emissions, in metric tons, between the baseline years and 2013.

With regards to wastewater treatment, process emissions are calculated using industry accepted formulas based on population. The County used TKN values in its original calculation of process emissions. Subsequent information suggests it would be more appropriate to use total nitrogen rather than TKN. The table below reflects the revised calculations for process emissions using total nitrogen instead of TKN.

GHG Source	Calculated CO ₂ e (MT)			
	2008 (Original)	2008 (Revised)	2012 (Original)	2012 (Revised)*
N ₂ O from Effluent (All)	364,287	3,622,929	305,459	3,500,264
N ₂ O from Treatment Process (All)	875,059	738,470	732,205	732,205
CH ₄ from Anaerobic Digestion (All)	456,182	456,182	293,023	293,023
Total - All WEP WWTPs	1,695,528	4,817,581	1,330,687	4,525,492

*2012 data will continue to be used in all subsequent annual updates until process emissions are recalculated based on changes in population determined in the next census.

Given this change, following is a comparison of greenhouse gas emissions, in metric tons, between the baseline years and prior year:

Emission Source	Baseline (MTe)	2012 (MTe)	2013 (MTe)	Change from Baseline	Change from Prior Year
Natural Gas & Electric from County Facilities	61,793	59,456	61,172	-1.00%	2.89%
Fleet (gas & Diesel)	8,357	7,757	8,512	1.85%	9.73%
Waste Water Process Emissions*	4,818	4,525	4,525	-6.06%	0.00%
Total Emissions	74,967	71,738	74,209	-1.01%	3.44%

* Wastewater process emissions will be updated in the future coincident with updated census data.

Meteorological conditions (temperatures, rainfall and snowfall) can greatly affect year-to-year energy and fuel consumption in County operations.

	HDD	CDD	HDD+CDD	WTR (in)	SNW(in)
2008 Totals	6587	541	7128	41.77	126.5
2012 Totals	5394	953	6347	35.11	78.6
2013 Totals	6504	712	7216	40.32	123.5
Percent Difference from Prior Year	20.6%	-25.3%	13.7%	14.8%	57.1%
Percent Difference from Base Year	-1.3%	31.6%	1.2%	-3.5%	-2.4%

HDD - Heating Degree Days = 65°F-average daily temperature, e.g. Daily high =25°F, Daily low = 5°F, Daily Average = 15°F, therefore 50 HDD for that day, 65°F-15°F=50 HDD. Annual total is the sum of the HDD's for each day of the year. If average temperature for a day is 65°F or above, HDD for that day = 0

CDD – Cooling Degree Days = average daily temperature - 65°F, e.g. Daily high =85°F, Daily low = 65°F, Daily Average = 75°F, therefore 10 CDD for that day, 75°F-65°F=10 CDD. Annual total is the sum of the CDD's for each day of the year. If average temperature for a day is 65°F or below, CDD for that day = 0

WTR = Total precipitation in inches of any form including the water equivalent of snow

SNW = Snow inches

The data above show that the weather conditions in 2013 were comparable to those in the base year of 2008 indicating that weather did not play a role in GHG reductions between those years. The lower Combined Heating Degree Days + Cooling Degree Days as well as the lower total Water (precipitation) and Snow Fall likely was the primary factor in the lower 2012 GHG emissions.

Between 2012 and 2013 the E911 continued to increase its electrical usage for computer and communications equipment. WEP also added wastewater collection and treatment facilities as a part of its Onondaga Lake clean-up actions. Van Duyn Home & Hospital was sold at the end of November 2013 and therefore its December 2013 energy use was not included in the calculations above. Van Duyn was the fourth largest energy user after WEP, Facilities Management and MWB, and its removal from the County portfolio will have a measureable impact on the County GHG emissions. In 2014, the County is working to add approximately 5,000,000 kWh of solar generated electricity at its Route 31 Metropolitan Water Board and Oak Orchard Waste Water Treatment sites. This is anticipated to reduce greenhouse gas emissions by over 2% annually.

The comparable weather conditions between the baseline years and 2013 suggests that the County is making progress in reducing greenhouse gas emissions. As more data points are collected, it may become possible to normalize emissions data to better account for meteorological and/or other factors. Accordingly, the CAP calls for a more detailed evaluation at five year intervals to determine if the County needs to adjust its approach in order to meet the target, or if the target can be made even more aggressive due to new technology or changing circumstances. The County's Environmental Sustainability Advisory Committee has also established a working group to develop recommendations to address the impact of some of these variables.

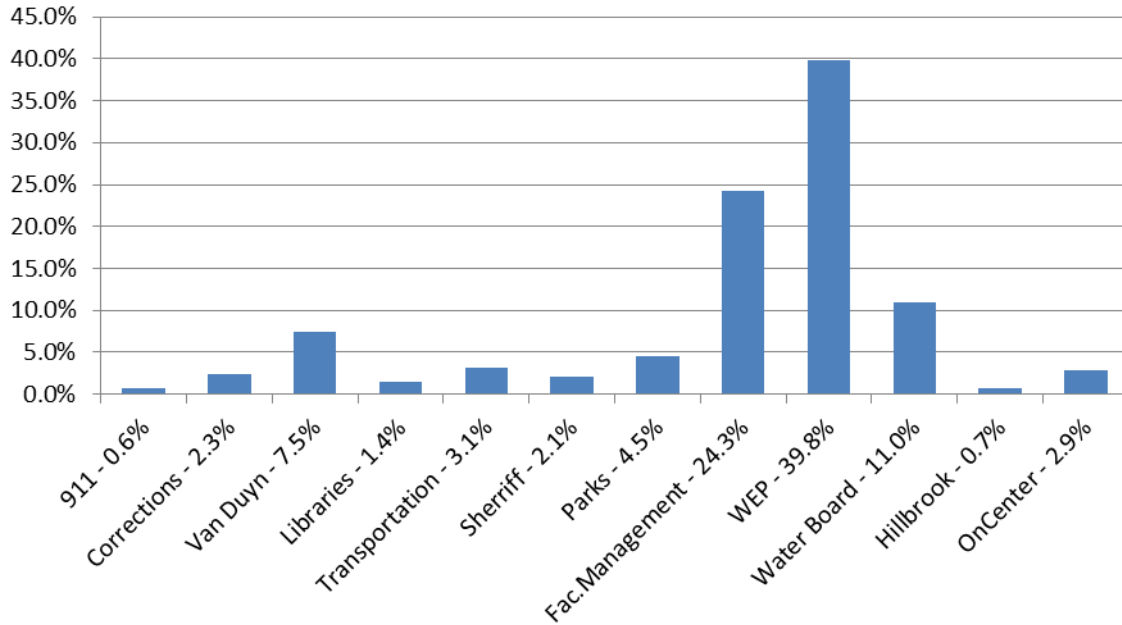
The following pages provide a more detailed breakdown of the numbers summarized above.

Onondaga County Climate Action Plan 2008 Greenhouse Gas Emissions Associated With Energy Use

Department	Electrical Usage (kWhr)	Nat. Gas Usage (Therms)	CO₂ Emissions (Mton/yr)	CH₄ Emissions (Mton/yr)	N₂O Emissions (Mton/yr)	CO₂e* Emission (Mton/yr)	%
911	984,431	11,393	382	0.02	0.01	384	0.6%
Corrections	1,760,864	158,747	1,417	0.10	0.01	1,422	2.3%
Van Duyn	6,423,187	471,102	4,597	0.31	0.04	4,615	7.5%
Libraries	1,711,617	55,112	852	0.05	0.01	856	1.4%
Transportation	1,682,208	254,493	1,899	0.15	0.01	1,905	3.1%
Sherriff	3,509,151	25,862	1,284	0.05	0.02	1,291	2.1%
Parks	5,235,229	197,743	2,760	0.16	0.03	2,772	4.5%
Fac.Management	20,529,342	1,555,656	14,957	1.00	0.12	15,015	24.3%
WEP	63,043,361	705,940	24,453	1.04	0.32	24,575	39.8%
Water Board	18,407,709	135,196	6,735	0.27	0.09	6,770	11.0%
Hillbrook	816,960	26,998	410	0.02	0.00	412	0.7%
OnCenter	4,590,005	50,478	1,768	0.08	0.02	1,777	2.9%
Total County Emissions	128,694,064	3,648,720	61,515	3.23	0.68	61,793	100.00%

* CO₂e Carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential

2008 Percent Greenhouse Gas Emissions Associated with Energy Use

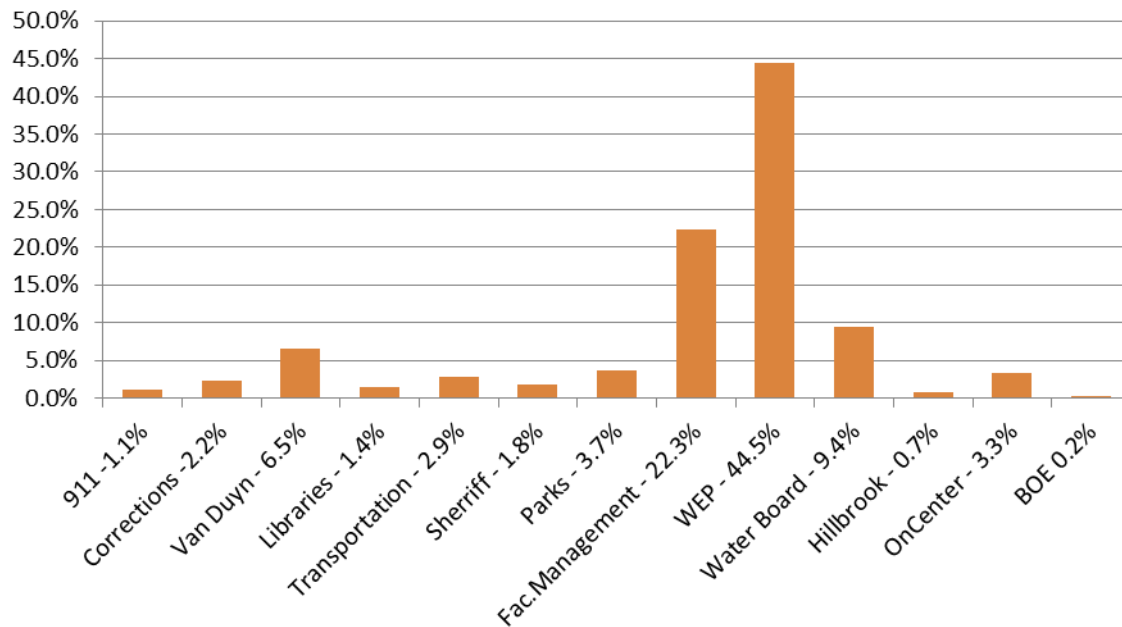


Onondaga County Climate Action Plan 2013 Greenhouse Gas Emissions Associated With Energy Use

Department	Electrical Usage (kWhr)	Nat. Gas Usage (Therms)	CO ₂ Emissions (Mton/yr)	CH ₄ Emissions (Mton/yr)	N ₂ O Emissions (Mton/yr)	CO ₂ e Emission (Mton/yr)	%
911	1,736,416	20,558	677	0.03	0.01	680	1.1%
Corrections	1,872,090	139,156	1,350	0.09	0.01	1,355	2.2%
Van Duyn	5,873,823	380,410	3,937	0.25	0.03	3,952	6.5%
Libraries	1,717,105	52,175	838	0.04	0.01	842	1.4%
Transportation	1,470,580	240,627	1,756	0.14	0.01	1,762	2.9%
Sherriff	3,040,722	24,527	1,124	0.05	0.02	1,130	1.8%
Parks	4,002,021	173,204	2,226	0.13	0.02	2,236	3.7%
Fac. Management	19,006,925	1,394,915	13,607	0.90	0.11	13,660	22.3%
WEP	68,177,714	905,714	27,091	1.20	0.35	27,225	44.5%
Water Board	15,616,532	120,694	5,746	0.23	0.08	5,775	9.4%
Hillbrook	797,760	29,418	417	0.02	0.00	419	0.7%
OnCenter	5,325,364	52,835	2,021	0.08	0.03	2,031	3.3%
BOE	119,800	12,393	105	0.01	0.00	105	0.2%
Total County Emissions	128,756,852	3,546,626	60,895	3	1	61,172	100.00%

* CO₂e Carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential.

2013 Percent Greenhouse Gas Emissions Associated with Energy Use



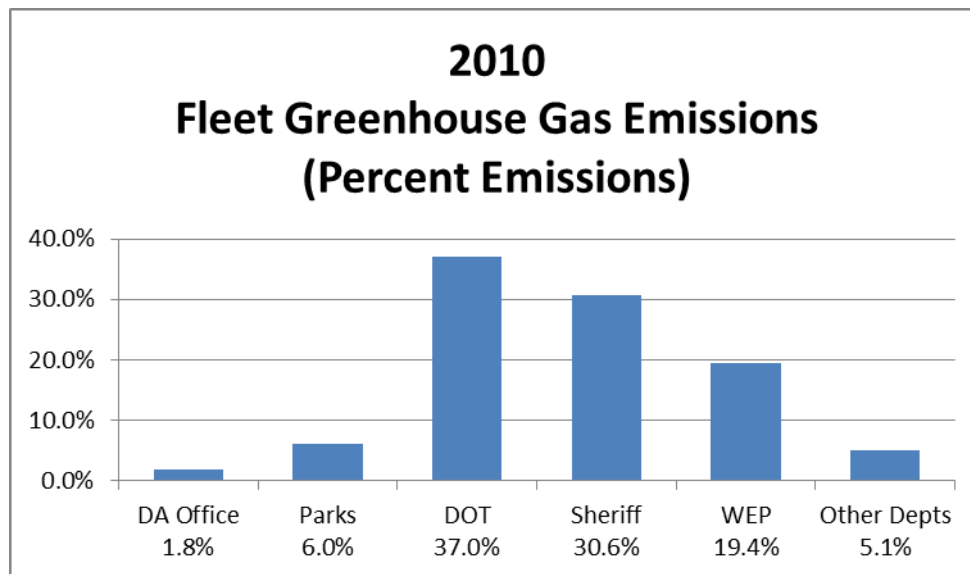
Department CO ₂ e Mt emissions					
Department	2008	2012	2013	% Change from Prior Year	% Change from Base Year
911	384	568	680	20%	77%
DOC	1,422	1,240	1,355	9%	-5%
Van Duyn	4,615	4,458	3,952	-11%	-14%
Libraries	856	786	842	7%	-2%
DOT	1,905	1,554	1,762	13%	-8%
Sheriff	1,291	1,145	1,130	-1%	-12%
Parks	2,772	2,211	2,236	1%	-19%
Facilities Management	15,015	14,020	13,660	-3%	-9%
WEP	24,575	24,612	27,225	11%	11%
MWB	6,770	6,363	5,775	-9%	-15%
Hillbrook	412	475	419	-12%	2%
OnCtr	1,777	1,924	2,031	6%	14%
BOE	NA	101	105	5%	NA
Total	61,793	59,456	61,172	3%	-1%

Department Contribution to Total CO₂e emissions

Department	2008	2012	2013	Change in Contribution to Total from Prior Year	Change in Contribution to Total from Base Year
911	0.6%	1.0%	1.1%	16%	79%
DOC	2.3%	2.1%	2.2%	6%	-4%
Van Duyn	7.5%	7.5%	6.5%	-14%	-13%
Libraries	1.4%	1.3%	1.4%	4%	-1%
DOT	3.1%	2.6%	2.9%	10%	-7%
Sheriff	2.1%	1.9%	1.8%	-4%	-12%
Parks	4.5%	3.7%	3.7%	-2%	-19%
Facilities Management	24.3%	23.6%	22.3%	-5%	-8%
WEP	39.8%	41.4%	44.5%	8%	12%
MWB	11.0%	10.7%	9.4%	-12%	-14%
Hillbrook	0.7%	0.8%	0.7%	-14%	3%
OnCtr	2.9%	3.2%	3.3%	3%	15%
BOE		0.2%	0.2%	2%	NA
Total	100.0%	100.0%	100.0%		

**GAS & DIESEL CONSUMPTION AND ASSOCIATED CO₂e EMISSIONS (Metric tons)
BY DEPARTMENT 2010**

Department	Gasoline (Gallons)	Diesel (Gallons)	CO ₂ (Mtons)	CH ₄ (Mtons)	N ₂ O (Mtons)	CO ₂ e (Mtons)	Percent of Total (%)
District Attorney	16,829	0	148	0.0042	0.0015	149	1.8
Corrections	6,176	630	61	0.0016	0.0006	61	0.7
Transportation	41,856	267,735	3,086	0.0420	0.0269	3,095	37.0
E911	1,301	0	11	0.0003	0.0001	12	0.1
Emergency Management	3,664	0	32	0.0009	0.0003	32	0.4
Facilities	7,618	0	67	0.0019	0.0007	67	0.8
Fire Coord	0	0	0	0.0000	0.0000	0	0.0
Health	2,379	0	21	0.0006	0.0002	21	0.3
Hillbrook	235	0	2	0.0001	0.0000	2	0.0
Libraries	5,355	0	47	0.0013	0.0005	47	0.6
Mental Health	253	0	2	0.0001	0.0000	2	0.0
MWB	11,797	220	106	0.0030	0.0011	107	1.3
ON Center	1,071	0	9	0.0003	0.0001	9	0.1
Parks	43,441	11,798	502	0.0122	0.0050	504	6.0
Sheriff	289,194	407	2,552	0.0722	0.0263	2,562	30.6
Social Services	0	0	0	0.0000	0.0000	0	0.0
Van Duyn	4,817	1,345	56	0.0014	0.0006	56	0.7
WEP	113,992	60,584	1,619	0.0356	0.0156	1,625	19.4
BOE	78	0	1	0.0000	0.0000	1	0.0
Purchasing	287	0	3	0.0001	0.0000	3	0.0
Probation	235	0	2	0.0001	0.0000	2	0.0
Total	550,578	342,719	8,329	0.1778	0.0795	8,358	100.00



**GAS & DIESEL CONSUMPTION AND ASSOCIATED CO₂e EMISSIONS (Metric tons)
BY DEPARTMENT 2013**

Department	Gasoline (Gallons)	Diesel (Gallons)	CO2 (Mtons)	CH4 (Mtons)	N2O (Mtons)	CO2e (Mtons)	Percent of Total (%)
District Attorney	17,900	0	158	0.0045	0.0016	158	1.9
Corrections	4,636	812	49	0.0013	0.0005	49	0.6
Transportation	47,746	303,035	3,496	0.0477	0.0304	3,507	41.2
E911	1,481	0	13	0.0004	0.0001	13	0.2
Emergency Management	4,257	53	38	0.0011	0.0004	38	0.4
Facilities	8,725	264	80	0.0022	0.0008	80	0.9
Fire Coord	0	0	0	0.0000	0.0000	0	0.0
Health	6,978	0	61	0.0017	0.0006	62	0.7
Hillbrook	986	0	9	0.0002	0.0001	9	0.1
Library	4,854	0	43	0.0012	0.0004	43	0.5
Mental Health	128	0	1	0.0000	0.0000	1	0.0
MWB	6,777	768	828	0.0018	0.0007	68	0.8
ON Center	951	0	8	0.0002	0.0001	8	0.1
Parks	27,110	9,073	331	0.0078	0.0032	332	3.9
Sheriff	279,155	1,064	2,470	0.0698	0.0254	2,479	29.1
Social Services	0	0	0	0.0000	0.0000	0	0.0
Van Duyn	4,941	588	49	0.0013	0.0005	50	0.6
WEP	108,964	63,920	1,609	0.0347	0.0154	1,614	19.0
BOE	43	0	0	0.0000	0.0000	0	0.0
Purchasing	0	0	0	0.0000	0.0000	0	0.0
Probation	0	0	0	0.0000	0.0000	0	0.0
Total	525,630	379,577	9,244	0.1759	0.0804	8,512	100.00

