

2016 CAP Summary Report Update Introduction

Overview of 2012 Climate Action Plan

Onondaga County finalized its Climate Action Plan (CAP) in April 2012. The implementation of the CAP will reduce greenhouse gas (GHG) emissions associated with County operations. The CAP is based upon a baseline greenhouse gas inventory, which was performed using County electricity and natural gas usage data from calendar year 2008 and County gasoline and diesel consumption data from calendar year 2010.

This baseline inventory established that the County emits 72,000 metric tons of CO₂ equivalent (MTCO₂e) annually. The vast majority (86%) of these emissions are associated with the use of electricity and natural gas in County-owned and operated facilities. As of the 2012 CAP, four County departments were responsible for 80% of the emissions related to electricity and natural gas use: Water Environment Protection (WEP), Facilities Management, the Metropolitan Water Board and Van Duyn Home and Hospital. The County's fleet accounted for just over 11% of total GHG emissions. Remaining emissions (approximately 2%) resulted primarily from Wastewater Treatment Plant process emissions.

The 2012 CAP set an emissions reduction target of 25% over 25 years (2036). This amounts to an average reduction in emissions of 1% per year. Said another way, the original 2012 CAP calls for a total reduction in GHG emissions of 18,000 MTCO₂e by 2036, or an average of 720 MTCO₂e per year. The CAP states that this goal, and progress toward achieving this goal, should be evaluated every five years. A discussion of the status of the 5-year update is included in the final section of this memo.

Updates to the 2012 Climate Action Plan Baseline

The CAP was never intended to be a static document – it was designed to be flexible to account for changing circumstances and new technology. It is recommended that the County revisit the CAP baseline, due to the circumstances outlined below:

- 1) The 2013 Summary Report discusses the fact that the initial CAP baseline inadvertently omitted process emissions from wastewater treatment operations. As a result, beginning in the 2013 CAP Summary Report, the annual total GHG emission baseline was revised to 75,000 MTCO₂e (up from 72,000 MTCO₂e).
- 2) Van Duyn Home & Hospital was sold at the end of November 2013, therefore is no longer a department of the County. The 2013 CAP annual update was the last to include data from Van Duyn in its analysis. Van Duyn emissions comprised 7.47% of the County's baseline GHG emissions associated with energy use and .67% of the County's baseline GHG emissions associated with vehicle fuel usage. It is recommended that Van Duyn emissions be removed both from the CAP 2012 baseline and the annual CAP Summary Reports moving forward.
- 3) The Metropolitan Water Board (MWB) is no longer a department of the County. Beginning January 1, 2017, its operations were consolidated with the Onondaga County Water Authority. MWB energy usage and emissions were still reported in the County's 2016 CAP annual update, but will not be included

moving forward. While the County invested in large scale solar projects (via Power Purchase Agreements) at two MWB properties (approximately 3.8 MW in total), it will not be able to claim the GHG emission reductions associated with these projects. However, the GHG emissions resulting from electricity and natural gas usage at MWB facilities will no longer be included in the CAP baseline or annual update reports in the future. MWB emissions comprised 10.95% of the County’s baseline GHG emissions associated with energy use and 1.28% of the County’s baseline GHG emissions associated with vehicle fuel usage. It is recommended that MWB emissions be removed both from the CAP 2012 baseline and the annual CAP updates moving forward.

The adjusted total CAP 2012 baseline (excluding electricity/natural gas and vehicle fuel emissions associated with Van Duyn Home & Hospital and the Metropolitan Water Board and including process emissions from wastewater treatment processes) now stands at 65,120.63 MTCO₂e – down from the original 2012 baseline of 72,000 MTCO₂e. Therefore, a 25% reduction in emissions by 2036 now necessitates a total reduction in GHG emissions of 16,280 MTCO₂e, or an average of 651 MTCO₂e per year.

Table 1

Original 2012 CAP Annual GHG Emissions Baseline	72,000 MTCO ₂ e 25% reduction = 18,000 MTCO ₂ e Average yearly reduction = 720 MTCO ₂ e
Revised 2012 CAP Annual GHG Emissions Baseline¹	65,120.63MTCO ₂ e 25% reduction = 16,280 MTCO ₂ e Average yearly reduction = 651 MTCO ₂ e

GHG Reductions Achieved 2012-2017

The County has implemented numerous projects during the five years since the 2010 CAP was finalized. Examples include:

- Installation of solar panels at Beaver Lake Nature Center,
- Installation of LED bulbs at numerous County facilities,
- Upgrades to HVAC systems,
- Solar power production² (via SolarCity Power Purchase Agreements) at Oak Orchard Lagoon, Oak Orchard Wastewater Treatment Plant and Jamesville Penitentiary, and
- Energy savings opportunity evaluation for WEP wastewater treatment facilities.

Table 2 on the following page outlines the reduction in GHG emissions (energy and vehicle fuel) that the County has realized to date, including MWB emissions and excluding Van Duyn emissions. This table includes MWB emissions because these sites were part of County operations during 2016. This table can also be found on Page 8 of the 2016 CAP Summary Report.

¹ Excluding emissions associated with the Metropolitan Water Board and Van Duyn Home & Hospital. Including the initially omitted process emissions associated with wastewater treatment operations.

² As previously mentioned, solar power production also began at the Metro Water Board Soule Road Terminal Tank Site and the Metro Water Board Clearwater Treatment Plant.

Table 2

Department	2008	2012	2013	2014	2015	2016	% Change from Prior Year	% Change from Base Year
911	384	568	680	632	604	620	2.7%	61.4%
DOC	1,422	1,240	1,355	1,495	1,398	1,276	-8.8%	-10.3%
Van Duyn	0	0	0	0	0	0	0.0%	0.0%
OCPL	856	786	842	843	812	827	1.9%	-3.3%
DOT	1,905	1,554	1,762	2,173	1,881	1,852	-1.5%	-2.8%
Sheriff	1,291	1,145	1,130	1,170	1,144	1,159	1.3%	-10.2%
Parks	2,772	2,367	2,498	3,007	2,860	3,024	5.8%	9.1%
Facilities Management	15,015	13,971	13,663	14,712	14,190	14,127	-0.4%	-5.9%
WEP	26,275	24,899	27,231	27,960	27,373	26,852	-1.9%	2.2%
MWB	6,770	6,363	5,775	5,881	5,967	5,632	-5.6%	-16.8%
Hillbrook	412	475	419	374	377	387	2.8%	-6.0%
OnCtr	1,777	1,924	2,031	1,891	1,951	1,975	1.2%	11.1%
BOE	NA	101	105	118	111	102	-8.0%	NA
Total	58,878	55,394	57,491	60,257	58,668	57,834	-1.4%	-1.8%
Vehicle Emissions	8,301	7,706	8,462	8,223	7,933	8,795	10.9%	5.9%
Waste Water Process Emissions	4,817	4,525	4,525	4,525	4,525	4,525	0.0%	-6.1%
Total GHG Emissions	71,996.75	67,624.58	70,478.37	73,005.00	71,125.84	71,153.70	0.0%	-1.2%

Table 3 on the following page outlines the reductions in GHG emissions to date, excluding *both* MWB and Van Duyn emissions. This table excludes data from MWB and Van Duyn in order to show the magnitude of the adjusted baseline and subsequent yearly emissions moving forward. It is important to note that the “Total GHG Emissions” row in Table 3 has been adjusted to include emissions associated with the Baseball Stadium from 2008 to 2016. Furthermore, 2016 includes emissions associated with the St. Joseph’s Health Amphitheater, which did not exist in prior years. Explanations for annual GHG emissions can be found in the corresponding Summary Report for each year.

Table 2 (above), which includes emissions data for the MWB, shows a total 5-year reduction in GHG emissions of 1.2%. The MWB saw a reduction in emissions of approximately 17% during this timeframe. This is largely due to the fact that the County entered into two solar Power Purchase Agreements at MWB sites. Unfortunately, the County is no longer able to claim these emissions reductions moving forward, as MWB is now a part of the Onondaga County Water Authority.

Table 3 (below), which does not include emissions data for MWB, shows a total 5-year reduction in GHG emissions of .5%.

Table 3

Department	2008	2012	2013	2014	2015	2016	% Change from Prior Year	% Change from Base Year
911	384	568	680	632	604	620	2.7%	61.4%
DOC	1,422	1,240	1,355	1,495	1,398	1,276	-8.8%	-10.3%
Van Duyn	0	0	0	0	0	0	0.0%	0.0%
OCPL	856	786	842	843	812	827	1.9%	-3.3%
DOT	1,905	1,554	1,762	2,173	1,881	1,852	-1.5%	-2.8%
Sheriff	1,291	1,145	1,130	1,170	1,144	1,159	1.3%	-10.2%
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WEP	26,275	24,899	27,231	27,960	27,373	26,852	-1.9%	2.2%
MWB	0	0	0	0	0	0	0.0%	0.0%
Hillbrook	412	475	419	374	377	387	2.8%	-6.0%
OnCtr	1,777	1,924	2,031	1,891	1,951	1,975	1.2%	11.1%
BOE	NA	101	105	118	111	102	-8.0%	NA
Total	52,109	49,031	51,716	54,376	52,701	52,202	-0.9%	0.2%
Vehicle Emissions	8,195	7,635	8,395	8,158	7,862	8,720	10.9%	6.4%
Waste Water Process Emissions	4,817	4,525	4,525	4,525	4,525	4,525	0.0%	-6.1%
Total GHG Emissions	65,120.63	61,190.52	64,635.67	67,058.84	65,087.91	65,446.12	0.6%	0.5%

Five-Year Evaluation

While great effort was made to achieve its stated goals, the County has not met its annual emissions reduction targets during the first five years of the CAP. The County implemented large scale renewable energy and efficiency improvement projects at multiple facilities which are no longer owned and operated by the County. Regardless of ownership, these projects will result in a reduction of greenhouse gas emissions and will generate a positive impact County-wide.

The County is currently in the process reviewing the first five-year CAP evaluation. Experts from SUNY ESF and Syracuse University³ provided a review of the 2012 CAP. Examples of the recommended changes for improvements to the CAP can be seen below:

- Clearly track the progress of the Key Recommendations presented on Pages 3 and 4 of the 2012 CAP,
- Expand the scope of the CAP beyond County operations to include a community-wide GHG inventory,
- Include an assessment of Climate Change Hazards and Resiliency.

³ Dr. Rick Smardon (SUNY ESF), Dr. Temir Teron (SUNY ESF), Janet Marsden (Syracuse University), Christa Kelleher (Syracuse University) and Cliff Davidson (Syracuse University) provided comments for the 5-year CAP Evaluation

The County is in the process of reviewing all of the recommendations provided by SUNY ESF and Syracuse University.

Furthermore, beginning with the 2017 update, the County will restructure the annual CAP Summary Reports. Currently the Summary Reports include a bulleted list of projects that were completed during the reported year. This list will be expanded to include a more in depth description of each project. Updates will be provided on each of the Key Recommendations included on Pages 3 and 4 of the 2012 CAP. The revamped Reports will also include a discussion of projects that are planned for the next year. In the future, a 1 or 2 page fact sheet will be produced to accompany each Summary Report.

CLIMATE ACTION PLAN
GHG EMISSIONS – 2016 SUMMARY REPORT
June 14, 2017

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. Gasoline and diesel consumption data by department were not readily available for 2008. Therefore, 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 72,000 metric tons per year¹.

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 from 2012 through 2016 and compares these emissions with those established in the baseline described above. As changes to the scope and scale of County Operations occur, changes to the baseline are made to maintain a true comparison. In 2015 the county vacated public association with Van Duyn and therefore the energy use and emissions were removed from both baseline and subsequent measurement years. Beginning January 1, 2017, the Metropolitan Water Board left County operations consolidated with Onondaga County Water Authority removing this function from County operations. The Metropolitan Water Board energy usage and emissions are included in this 2016 report but will be removed from both the baseline and actuals in the 2017 report. Two other changes in this year's report are that; (i) the baseball stadium, which was included in the base year but not subsequent years, however, is now included in this and prior years actuals due to contractual changes and, (ii) the usage of the new Lakeview Park is included in 2016. Minor changes also occur for the addition or deletions of other County accounts².

Over the course of 2016, the County continued its efforts to reduce energy use and GHG emissions. These efforts include:

- Lighting upgrades and LEDs in numerous County buildings (e.g. Civic Center Vital Statistics and Cafeteria, Convention Center, Galleries Library, War Memorial)
- 372,321 kWh of Solar Power Production at the WEP Oak Orchard Lagoons site
- 970,907 kWh of Solar Power Production at the Metro Water Board Soule Road Terminal Tank Site
- Construction of approximately 6 MW of solar systems at WEP Oak Orchard WWTP, Jamesville Penitentiary and Metro Water Board Clearwater Treatment Plant nearing completion and expected to be in operation 2017 and 2018.
- In January of 2016, a New York State Energy Research and Development Authority (NYSERDA) Flextech evaluation was completed for WEP wastewater treatment plants. The evaluation identified several different areas of energy saving opportunities, including, improvements to treatment plant aeration systems, pumping systems, heating and ventilation systems, and other

¹ After adjusting for the sale of Van Duyn Home & Hospital

² No adjustments to the baseline were made to account for the lack of Lakeview Park

measures. The expected annual energy savings and emissions reduction for the chosen Energy Conservation Measures (ECMs) are as follows: 8,100,000 kWh and 86,000 therms of fuel savings: with a corresponding aggregate CO2 emissions reduction of over 5 million pounds. An Energy Performance Contract is now being developed with the selected ESCO provider. Design is expected to begin in late summer 2017.

- WEP completed a lighting conversion project at the Baldwinsville WWTP in which older, less efficient, outside lighting fixtures were replaced with more efficient LED lighting - reducing energy use, cost, and maintenance costs.
- Participation in a Central New York Regional Planning and Development Joint Solicitation with 30 other municipalities for solar site development contracts.

The following table summarizes the Greenhouse Gas Emissions from County operations and meteorological conditions since 2012 along with the Baseline year of 2008.

TABLE 1								
Onondaga County Greenhouse Gas Emissions								
Emission Source	2008 Baseline (MTe)	2012 (MTe)	2013 (MTe)	2014 (MTe)	2015 (MTe)	2016 (MTe)	Change from Baseline	Change from Prior Year
Gas & Electric from County Facilities/1,3,4	58,878	55,394	57,491	60,257	58,668	57,834	-1.77%	-1.42%
Fleet (gas & Diesel)/1	8,301	7,706	8,462	8,223	7,933	8,795	5.94%	10.86%
Waste Water Process Emissions/2	4,817	4,525	4,525	4,525	4,525	4,525	-6.06%	0.00%
Total Emissions	71,997	67,625	70,478	73,005	71,126	71,154	-1.17%	0.04%
Weather Data								
HDD/5	6587	5394	6504	6754	6744	6320	-4.05%	-6.29%
CDD/6	541	953	712	647	717	809	49.54%	12.83%
HDD + CDD	7,128	6,347	7,216	7,401	7,461	7129	0.01%	-4.45%
WTR (in)/7	41.77	35.11	40.32	40.5	41.86	40.53	-2.97%	-3.18%
SNW (in)/8	126.5	78.6	123.5	117.2	94.1	140	10.67%	48.78%
Notes:								
1. Van Duyn Home & Hospital contribution removed from baseline and subsequent years								
2. 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.								
3. 2008 Baseline (Mte) for Gas & Electric from County Facilities adjusted to account for additional WEP accounts that had been inadvertently not included in the Baseline calculation								
4. Gas & Electric from County Facilities adjusted to include Baseball Stadium from 2008 to present. Also 2016 includes usage from Amphitheater that did not exist in prior years.								
5. 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								
6. 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								
7. WTR = Total precipitation in inches of any form including the water equivalent of snow								
8. SNW = Snow inches								

ASSESSMENT

Energy use and associated Greenhouse Gas emissions for many aspects of County operations are strongly correlated to prevailing weather conditions. For example, heating and cooling demand has a major effect on County building (stationary) energy use and precipitation affects energy used for waste water processing at WEP and clean water pumping at MWB. The most noteworthy change in this report is snowfall, which impacts the amount of DOT plow miles and therefore drives up fuel consumption for County operations. The assessment of progress against the GHG reduction goals accounts for the variation caused by weather factors. Another major factor that needs to be considered is when changing regulatory or service level standards cause changes in energy use or Greenhouse Gas Emissions.

Weather

Table 1 shows that GHG emissions from County facilities in 2016 are about 1.8% lower than in the Base Year of 2008. This is particularly informative since the combined heating and cooling demand (HDD+CDD) in 2016 was almost exactly the same as in 2008. This indicates real progress in emissions reductions particularly when one considers additional WEP and Parks facilities were added to the County building portfolio. As previously described precipitation levels affect energy use. The precipitation levels were approximately 3% lower in 2016 than in 2008. This reduction in precipitation does not necessarily correlate with a net reduction in water pumped both because Metro Wastewater Treatment Facility has invested in upgrades over that time period to capture and treat more water and because MWB would be pumping more potable water during dry climate periods for watering.

Changes in Regulation or Service Level

While GHG emissions for most departments declined from 2008 to 2016, emissions from WEP, E911 Communications and Parks increased. The clean-up of Onondaga Lake in response to the Amended Consent Judgment has required additional treatment and pumping facilities along with process changes. Similarly, in the case of E911 Communications, the Federal Communications Commission (FCC) mandated the "narrow banding" of public safety radio systems by January 1, 2013. To meet these requirements required a new, digital, UHF system and additional radio tower sites. The new digital system needs more heating and air conditioning at each site which is driving increased energy use. The remainder of the increase is the result of added facilities as well as expanded number of events at County venues.

Other Observations or Impacts

Since 2014, the County added contracts to purchase approximately 11,000,000 kWh/yr. of solar generated electricity at what where four County sites: (1) Route 31 Metropolitan Water Board, (2) Oak Orchard Waste Water Treatment Plant, (3) MWB Clearwater Treatment Plant, (4) Jamesville Penitentiary. A small part of the Oak Orchard site came on line June 26, 2015 and the Route 31 MWB site began production in March 1, 2016. In 2016 these two sites produced 1,343,227 kWh, slightly more than 1% of total County usage. Effective January 1, 2017, the Metropolitan Water Board was consolidated with the Onondaga County Water Authority (OCWA). As a result of this consolidation, the contracts for the solar power produced at the MWB sites have been assigned to OCWA and neither the energy usage nor the solar energy production associated with the former MWB sites will be included in the Onondaga County Climate Action Plan in 2017 and beyond.

Fleet emissions were up by approximately 11% from the prior year of 2015 and about 6% from the baseline. The primary contributor to the increase was DOT resulting from the increased snowfall in 2016 over 2015.

Performance Tracking

As previously noted, changes in weather, regulations, policy and service levels can affect greenhouse gas emissions complicating the assessment of the level of progress. Appendix 1 Unitized Performance Metrics, tracks emissions per unit where the units used are intended to be representative of that department's primary function. This "unitized" energy use or emissions may provide a useful way to track performance over time.

In addition 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 will be developing a plan for the five year evaluation as well as additional emissions reductions strategies and monitoring improvements.

Details

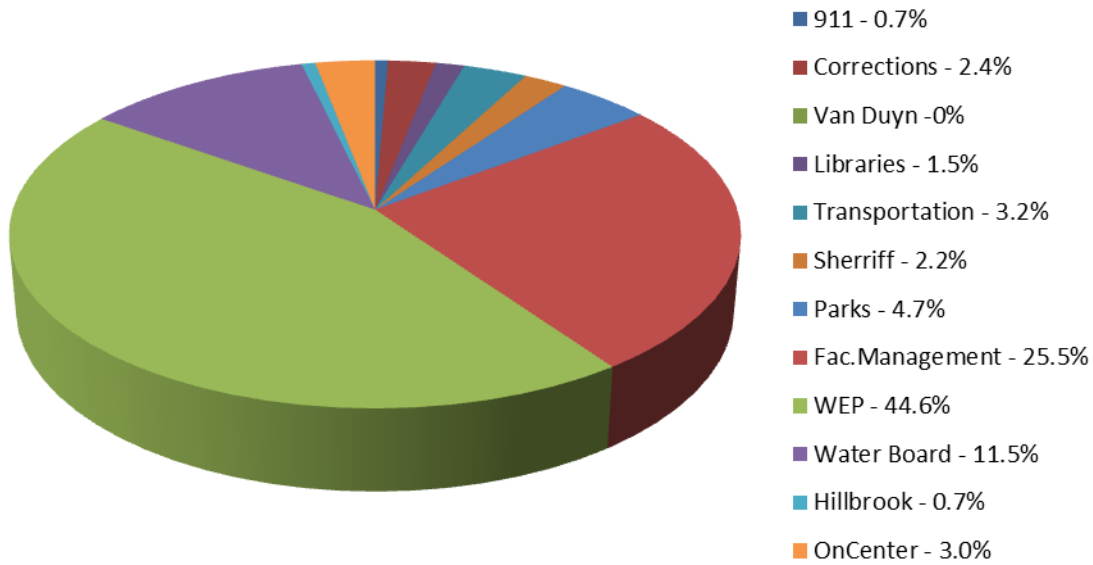
The following pages provide a more detailed breakdown of the numbers summarized above.

Table 1
Onondaga County Climate Action Plan
2008 Greenhouse Gas Emissions Associated With Stationary 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 - 0.7%	984,431	11,393	382	0.02	0.01	384	0.7%
Corrections - 2.4%	1,760,864	158,747	1,417	0.10	0.01	1,422	2.4%
Van Duyn - 0%	0	0	0	0.00	0.00	0	0.0%
Libraries - 1.5%	1,711,617	55,112	852	0.05	0.01	856	1.5%
Transportation - 3.2%	1,682,208	254,493	1,899	0.15	0.01	1,905	3.2%
Sherriff - 2.2%	3,509,151	25,862	1,284	0.05	0.02	1,291	2.2%
Parks - 4.7%	5,235,229	197,743	2,760	0.16	0.03	2,772	4.7%
Fac.Management - 25.5%	20,529,342	1,555,656	14,957	1.00	0.12	15,015	25.5%
WEP - 44.6%	68,518,188	749,387	26,144	1.10	0.35	26,275	44.6%
Water Board - 11.5%	18,407,709	135,196	6,735	0.27	0.09	6,770	11.5%
Hillbrook - 0.7%	816,960	26,998	410	0.02	0.00	412	0.7%
OnCenter - 3.0%	4,590,005	50,478	1,768	0.08	0.02	1,777	3.0%
Total County Emissions	127,745,704	3,221,065	58,608	2.98	0.67	58,878	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 Stationary Energy Use

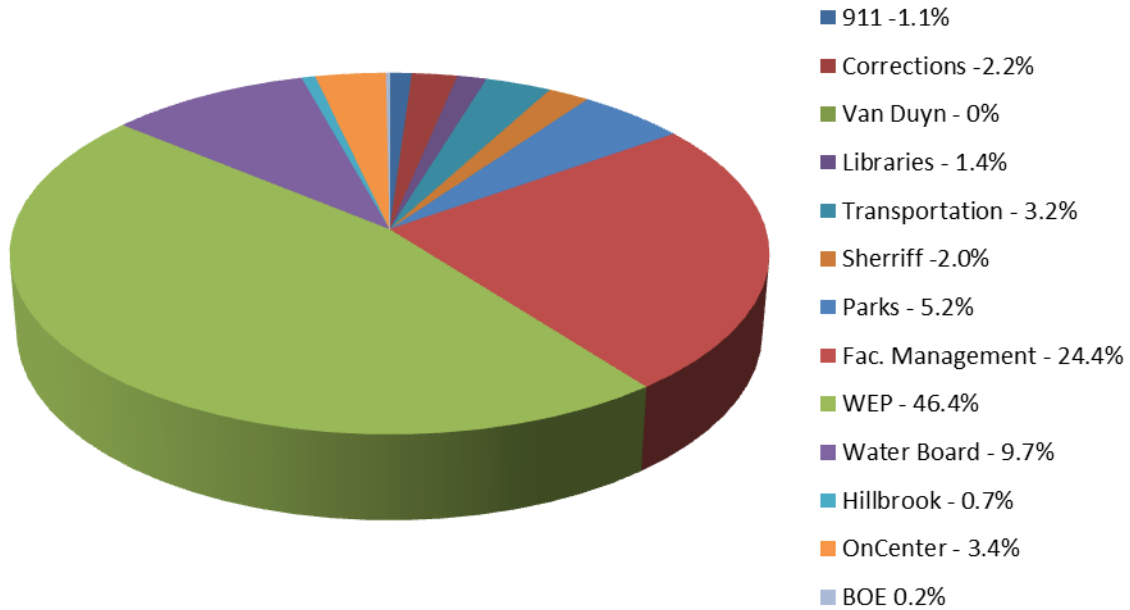


Onondaga County Climate Action Plan

2016 Greenhouse Gas Emissions Associated With Stationary 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 -1.1%	1,555,744	20,463	617	0.03	0.01	620	1.1%
Corrections -2.2%	1,885,668	123,440	1,271	0.08	0.01	1,276	2.2%
Van Duyn - 0%	0	0	0	0.00	0.00	0	0.0%
Libraries - 1.4%	1,664,597	52,736	824	0.04	0.01	827	1.4%
Transportation - 3.2%	1,521,406	254,383	1,846	0.14	0.01	1,852	3.2%
Sherriff -2.0%	3,152,359	23,040	1,153	0.05	0.02	1,159	2.0%
Parks - 5.2%	6,003,127	197,810	3,011	0.16	0.03	3,024	5.2%
Fac. Management - 24.4%	19,945,006	1,424,758	14,072	0.93	0.11	14,127	24.4%
WEP - 46.4%	68,439,989	819,330	26,719	1.15	0.35	26,852	46.4%
Water Board - 9.7%	15,584,853	95,825	5,603	0.22	0.08	5,632	9.7%
Hillbrook - 0.7%	674,560	31,121	385	0.02	0.00	387	0.7%
OnCenter - 3.4%	5,746,667	16,163	1,965	0.07	0.03	1,975	3.4%
BOE 0.2%	127,600	11,317	102	0.01	0.00	102	0.2%
Total County Emissions	126,301,576	3,070,386	57,568	3	1	57,834	100.00%

2016 Percent Greenhouse Gas Emissions Associated with Stationary Energy Use



CO ₂ e Mt emission Trend								
Department	2008	2012	2013	2014	2015	2016	% Change from Prior Year	% Change from Base Year
911	384	568	680	632	604	620	2.7%	61.4%
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Total	58,878	55,394	57,491	60,257	58,668	57,834	-1.4%	-1.8%
Vehicle Emissions	8,301	7,706	8,462	8,223	7,933	8,795	10.9%	5.9%
Waste Water Process Emissions	4,817	4,525	4,525	4,525	4,525	4,525	0.0%	-6.1%
Total GHG Emissions	71,996.75	67,624.58	70,478.37	73,005.00	71,125.84	71,153.70	0.0%	-1.2%

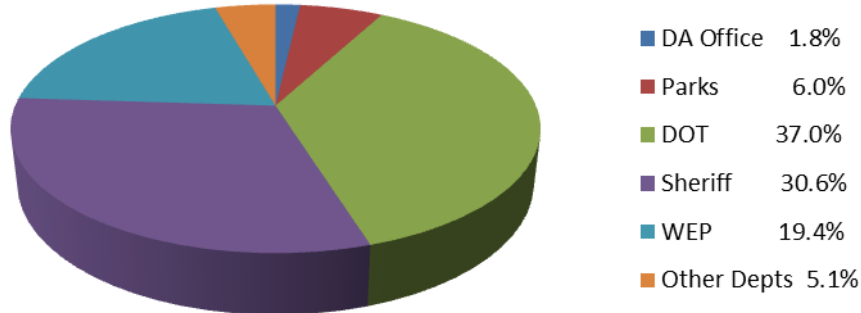
Department Contribution to Total Stationary Energy Use CO ₂ e emissions									
Department	2008	2012	2013	2014	2015	2016	Change in Contribution to Total from Prior Year	Change in Contribution to Total from Base Year	
911	0.7%	1.0%	1.2%	1.0%	1.0%	1.1%	-2%	58%	
DOC	2.4%	2.2%	2.4%	2.5%	2.4%	2.2%	-4%	-1%	
Van Duyn	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-	-	
OCPL	1.5%	1.4%	1.5%	1.4%	1.4%	1.4%	-1%	-5%	
DOT	3.2%	2.8%	3.1%	3.6%	3.2%	3.2%	-11%	-1%	
Sheriff	2.2%	2.1%	2.0%	1.9%	2.0%	2.0%	0%	-11%	
Parks	4.7%	4.3%	4.3%	5.0%	4.9%	5.2%	-2%	4%	
Facilities Management	25.5%	25.2%	23.8%	24.4%	24.2%	24.4%	-1%	-5%	
WEP	44.6%	44.9%	47.4%	46.4%	46.7%	46.4%	1%	5%	
MWB	11.5%	11.5%	10.0%	9.8%	10.2%	9.7%	4%	-12%	
Hillbrook	0.7%	0.9%	0.7%	0.6%	0.6%	0.7%	3%	-8%	
OnCtr	3.0%	3.5%	3.5%	3.1%	3.3%	3.4%	6%	10%	
BOE		0.2%	0.2%	0.2%	0.2%	0.2%	-3%	NA	
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%			

**Onondaga County Climate Action Plan
2010 County Fleet Fuel Usage and Greenhouse Gas Emissions**

Total Greenhouse Gas from Vehicles

Department	Gasoline (Gallons)	Diesel (Gallons)	CO2 (Mtons)	CH4 (Mtons)	N2O (Mtons)	CO2e (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	37.3
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
Library	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	6.1
Sheriff	289,194	407	2,552	0.0722	0.0263	2,562	30.9
Social Services	0	0	0	0.0000	0.0000	0	0.0
Van Duyn	-						
WEP	113,992	60,584	1,619	0.0356	0.0156	1,625	19.6
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	545,761	341,374	8,273	0.1764	0.0789	8,301	100.00

2010 Fleet Greenhouse Gas Emissions Percent Emissions



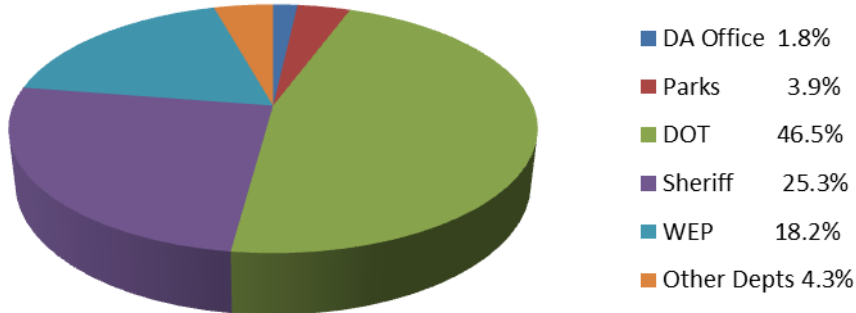
Onondaga County Climate Action Plan

2016 County Fleet Fuel Usage and Greenhouse Gas Emissions

Total Greenhouse Gas from Vehicles

Department	Gasoline (Gallons)	Diesel (Gallons)	CO2 (Mtons)	CH4 (Mtons)	N2O (Mtons)	CO2e (Mtons)	Percent of Total (%)
District Attorney	17,745	0	156	0.0044	0.0016	157	1.8
Corrections	6,584	471	63	0.0017	0.0006	63	0.7
Transportation	53,657	354,852	4,074	0.0552	0.0355	4,087	46.5
E911	935	0	8	0.0002	0.0001	8	0.1
Emergency Management	3,474	34	31	0.0009	0.0003	31	0.4
Facilities	9,181	705	88	0.0024	0.0009	88	1.0
Fire Coord	0	0	0	0.0000	0.0000	0	0.0
Health	5,789	0	51	0.0014	0.0005	51	0.6
Hillbrook	189	0	2	0.0000	0.0000	2	0.0
Library	4,836	0	43	0.0012	0.0004	43	0.5
Mental Health	148	0	1	0.0000	0.0000	1	0.0
MWB	7,055	1,257	75	0.0019	0.0007	75	0.9
ON Center	1,549	64	14	0.0004	0.0001	14	0.2
Parks	27,505	9,577	340	0.0080	0.0033	341	3.9
Sheriff	251,141	789	2,221	0.0627	0.0229	2,229	25.3
Social Services	0	0	0	0.0000	0.0000	0	0.0
Van Duyn	0	0	0	0.0000	0.0000	0	0.0
WEP	110,699	61,121	1,596	0.0348	0.0153	1,601	18.2
BOE	50	0	0	0.0000	0.0000	0	0.0
Purchasing	0	0	0	0.0000	0.0000	0	0.0
Probation	312	0	3	0.0001	0.0000	3	0.0
Total	500,849	428,870	8,766	0.1755	0.0824	8,795	100.00

2016 Fleet Greenhouse Gas Emissions (Percent Emissions)



Appendix 1								
Unitized Performance Metrics								
Department		Units	2008	2012	2013	2014	2015	2016
WEP	Energy Unit	kWh	68,518,188	64,634,520	68,198,034	70,747,207	68,513,095	68,397,013
	Performance Unit	Millions of Gallons	31,468.0	27,540.5	34,452.2	34,423.6	31,919.6	31,710.8
	Unitized Performance	kWh/Mgal	2,177.4	2,346.9	1,979.5	2,055.2	2,146.4	2,156.9
	MTCO ₂ e		26,275	24,899	27,231	27,960	27,373	26,852
	MTCO ₂ e/Mgal		0.835	0.904	0.790	0.812	0.858	0.847
MWB	Energy Unit	kWh	18,407,709	17,755,739	15,616,532	15,951,380	16,481,237	15,584,853
	Performance Unit	Millions of Gallons	7605.516	7188.02	6646.222	6893.339	7084.679	7160.502
	Unitized Performance	kWh/Mgal	2,420.31	2,470.18	2,349.69	2,314.03	2,326.32	2,176.50
	MTCO ₂ e		6,770	6,363	5,775	5,881	5,967	5,632
	MTCO ₂ e/Mgal		0.890	0.885	0.869	0.853	0.842	0.787
Facilities	Energy Unit	Kbtu	383,297,811	355,649,443	350,209,779	369,083,693	364,837,276	363,292,873
	Performance Unit	Square Feet	1,277,068	1,320,649	1,320,649	1,320,649	1,320,649	1,320,649
	Energy Use Intensity (EUI kBTU/ft2)	kBTU/ft2	300.1	269.3	265.2	279.5	276.3	275.1
	Combined HDD+CDD		7128	6347	7216	7401	7461	7129
	HDD_CDD Factor		1	1.12	0.99	0.96	0.96	1.00
	Adjusted Energy Use Intensity (EUI kBTU/ft2)		300.1	302.4	261.9	269.2	263.9	275.0
	MTCO ₂ e		15014.7	13971.1	13663.3	14,712	14,190	14,127
	MTCO ₂ e/Ft ²		0.01176	0.01058	0.01035	0.01114	0.01074	0.01070
	Adjusted MTCO ₂ e/Ft ²		0.01176	0.01188	0.01022	0.01073	0.01027	0.01070
E911	Energy Unit	kWh	984,431	1,522,457	1,737,896	1,621,078	1,561,834	1,555,744
	Performance Unit	Calls+Dispatches	1,024,539	1,057,019	1,060,249	1,075,025	1,128,640	
	Unitized Performance	kWh/Call+Dispatches	0.96	1.44	1.64	1.51	1.38	
	MTCO ₂ e		384	568	680	632	604	620
	MTCO ₂ e/Calls+Dispatches		0.000375	0.000537	0.000641	0.000588	0.000535	
Figure 1 – Source-Site Ratios for all Portfolio Manager Energy Meter Types								
Energy Type	U.S. Ratio	Canadian Ratio						
Electricity (Grid Purchase)	3.14	2.05						
Electricity (on-Site Solar)	1	1						
Natural Gas	1.05	1.02						
BTU/kWh	3,412.1416416							
BTU/therm	100000							