

ONONDAGA COUNTY CLIMATE ACTION PLAN



UPDATE REPORT FOR 2014-15

CLIMATE ACTION PLAN
GHG EMISSIONS – 2014-15 SUMMARY REPORT
June 1, 2016

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 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 2015, and compares these emissions with those established in the baseline. An important change in this year's report is the removal of the Van Duyn Home and Hospital. The Van Duyn Home and Hospital was sold by the County to a private owner and is therefore no longer a part of the County operations. In order to prevent conflicting evaluation parameters within the County's Climate Action Plan, the Van Duyn energy use and emissions have been removed from both baseline and subsequent measurement years. In addition, an adjustment was made to the Water Environment Protection (WEP) 2008 baseline after identifying that multiple accounts affecting electricity usage at WEP facilities had been inadvertently left out of the baseline calculations.

Over the course of 2014-15, 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 Elevator Lobbies)
- Replacement of Curtain Wall Windows in the Civic Center
- HVAC Efficiency Upgrades at the Rosamond Gifford Zoo
- HVAC Efficiency Upgrades at the Kochian Office Building
- Lighting and HVAC Controls Upgrades on 1st and 6th Floors of Kochian Office Building
- Lighting upgrades in the Public Safety Building gymnasium
- Lighting upgrades in the Jamesville DOT Garage
- Solar Power Production at the WEP Oak Orchard Lagoons (decontamination building)
- WEP received the final energy incentive payment from NYSERDA for the Syracuse Metropolitan WWTP cogeneration unit (which uses methane from the anaerobic digestion process to generate electricity and supplies heat to the anaerobic digestion system).
- LED lighting improvement project was initiated at WEP's Baldwinsville-Seneca Knolls WWTP.
- Solicitation and award of agreements for the further purchase of electricity generated from solar panels to be installed at County WEP and MWB facilities.

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

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

TABLE 1
Onondaga County Greenhouse Gas Emissions

Emission Source	2008 Baseline (MTe)	2012 (MTe)	2013 (MTe)	2014 (MTe)	2015 (MTe)	Change from Base Year (2008)	Change from Prior Year (2014)
Gas & Electric from County Facilities/1,3	58,878	55,237	57,226	59,499	57,998	-1.50%	-2.52%
Fleet (gas & Diesel) (2010 Base Year)	8,301	7,706	8,462	8,223	7,933	-4.44%	-3.52%
Waste Water Process Emissions/2	4,817	4,525	4,525	4,525	4,525	-6.06%	0.00%
Total Emissions	71,997	67,468	70,213	72,247	70,456	-2.14%	-2.48%
Weather Data							
HDD/4	6587	5394	6504	6754	6744	2.38%	-0.15%
CDD/5	541	953	712	647	717	32.53%	10.82%
HDD + CDD	7,128	6,347	7,216	7,401	7,461	4.67%	0.81%
WTR (in)/6	41.77	35.11	40.32	40.5	41.86	0.22%	3.36%
SNW (in)/7	126.5	78.6	123.5	117.2	94.1	-25.61%	-19.71%

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. 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
5. 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
6. WTR = Total precipitation in inches of any form including the water equivalent of snow
7. 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, precipitation affects energy used for waste water processing at WEP and clean water pumping at MWB, while snow affects the amount of DOT plow miles. Therefore, assessment of progress against the GHG reduction goals needs to account 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 2015 are about 1.5% lower than in the Base Year of 2008 even though the heating and cooling demand (HDD+CDD) in 2015 was actually about 5% higher. This indicates that the actual reduction would be more than 1.5% if the heating and cooling demand had been exactly the same in 2008 and 2015. While precipitation levels affect energy use as previously described, in this case the difference in precipitation levels between 2008 and 2015 are only 0.22% and therefore likely had a negligible impact on changes in GHG emission.

Changes in Regulation or Service Level

While GHG emissions for most departments declined from 2008 to 2015, emissions from WEP and 911 Communications increased. This increase is primarily the result of added functions associated with Onondaga Lake clean up and additional communication towers respectively. The clean-up of Onondaga Lake in response to the Amended Consent Judgment (ACJ) 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 "narrowbanding" of public safety radio systems by January 1, 2013. To meet these requirements a new, digital, UHF system and additional radio tower sites. The new digital system is more sensitive to temperature necessitating more heating and air conditioning at each site thus further increasing energy use was necessary. There was also a slight increase in emissions from the Oncenter complex over the period. This is likely attributed to an increased number of events held (i.e. increased service level) at the Convention Center and War Memorial.

Other Observations or Impacts

In 2014, the County added contracts to purchase approximately 5,000,000 kWh/yr. of solar generated electricity at its Route 31 Metropolitan Water Board and Oak Orchard Waste Water Treatment sites. The first and smallest of these projects came on line June 26, 2015 and contributed to offsetting a small portion of WEP GHG emissions associated with grid supplied power. When the remaining facilities become operational it is anticipated that they will reduce greenhouse gas emissions by nearly 2.5% annually.

Fleet emissions are down from both the prior year and baseline by approximately 4% with most of the reduction coming from Metro Water Board, Parks and the Sheriff departments. This is likely the combination of more fuel efficient vehicles and more efficient operations.

Improved Performance Tracking

As described above, changes in weather, regulations, policy and service levels can affect greenhouse gas emissions complicating the assessment of the level of progress. In order to provide another tool to measure progress levels, Appendix 1 has been added this year's report. This Appendix tracks changes in electric and gas accounts over time for Departments that are the largest contributors to emissions or in which substantial changes in operations, processes or services have occurred. In addition, the Appendix tracks energy use and emissions per unit where the units used are intended to be representative of that department's primary function. This "unitized" energy use reflects the variable outputs of county functions which should be a more accurate means of evaluation.

Additional Actions

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.

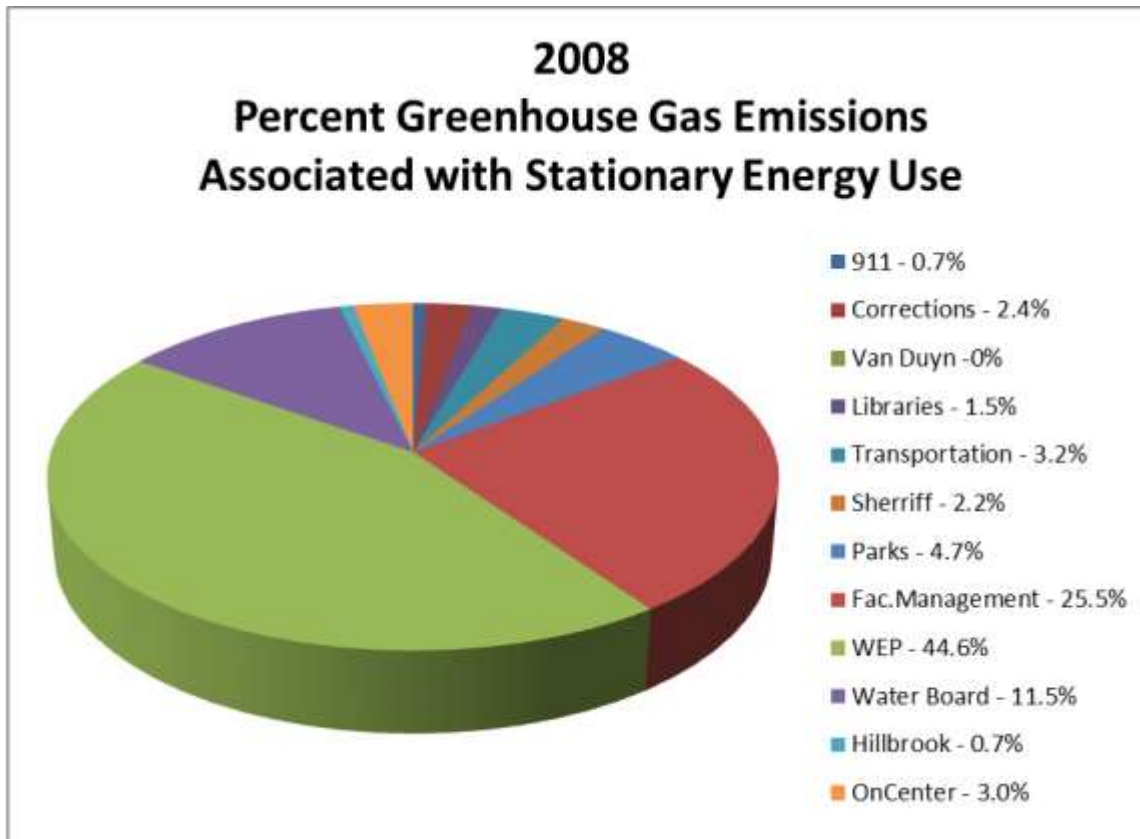
Details

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)	CO ₂ Emissions (Mton/yr)	CH ₄ Emissions (Mton/yr)	N ₂ O Emissions (Mton/yr)	CO ₂ e 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%

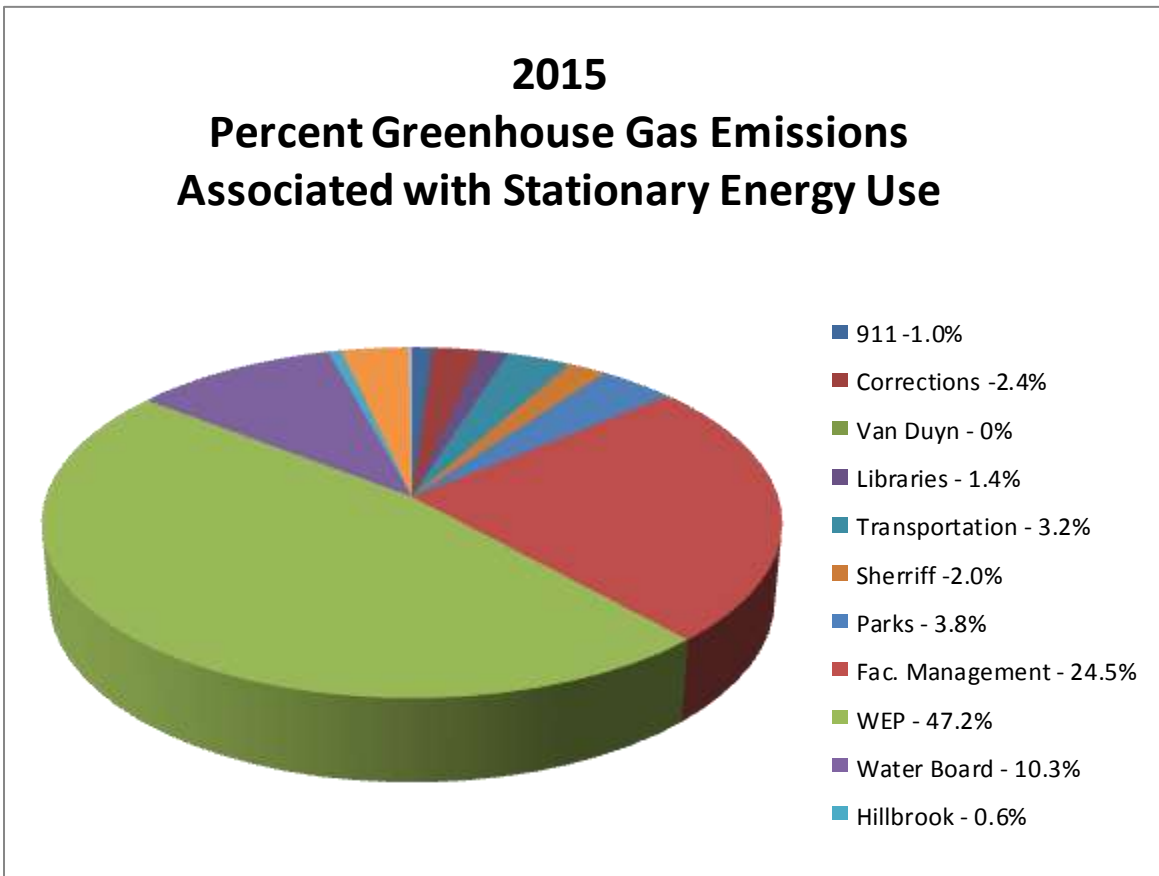
* CO₂e Carbon dioxide equivalency is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential



**Onondaga County Climate Action Plan
2015 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 -1.0%	1,561,834	16,998	601	0.03	0.01	604	1.0%
Corrections -2.4%	1,900,638	145,545	1,393	0.09	0.01	1,398	2.4%
Van Duyn - 0%	0	0	0	0.00	0.00	0	0.0%
Libraries - 1.4%	1,615,265	52,916	809	0.04	0.01	812	1.4%
Transportation - 3.2%	1,608,318	254,422	1,874	0.14	0.01	1,881	3.2%
Sherriff -2.0%	3,065,006	25,745	1,139	0.05	0.02	1,144	2.0%
Parks - 3.8%	4,124,397	156,993	2,181	0.12	0.02	2,190	3.8%
Fac. Management - 24.5%	20,015,524	1,432,271	14,135	0.93	0.11	14,190	24.5%
WEP - 47.2%	68,513,095	912,964	27,239	1.20	0.35	27,373	47.2%
Water Board - 10.3%	16,481,237	103,317	5,936	0.23	0.08	5,967	10.3%
Hillbrook - 0.6%	691,200	28,126	375	0.02	0.00	377	0.6%
OnCenter - 3.4%	5,380,981	34,245	1,941	0.08	0.03	1,951	3.4%
BOE 0.2%	123,440	13,243	111	0.01	0.00	111	0.2%
Total County Emissions	125,080,935	3,176,785	57,733	3	1	57,998	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



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

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

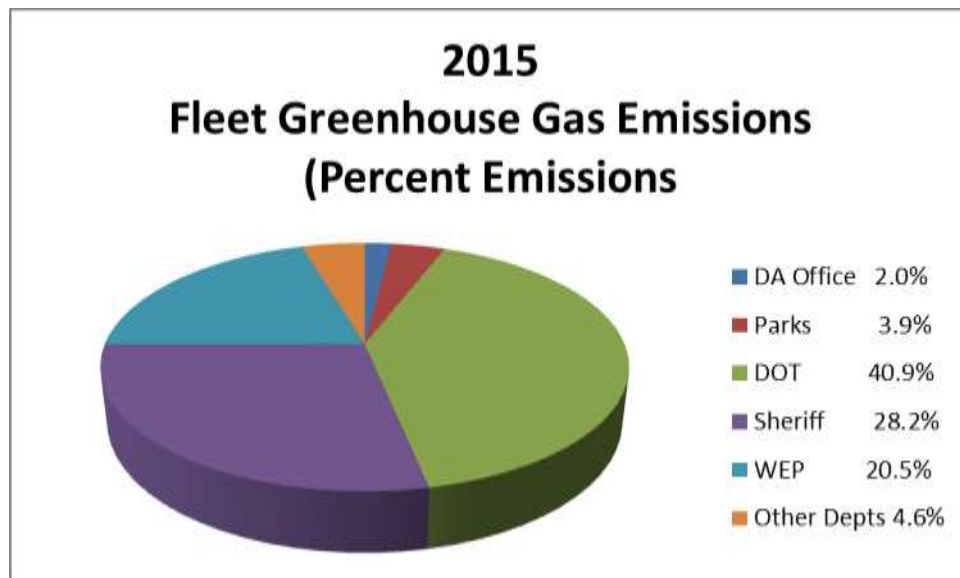
**2010
Fleet Greenhouse Gas Emissions
Percent Emissions**



**Onondaga County Climate Action Plan
2015 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	17,571	0	155	0.0044	0.0016	155	2.0
Corrections	4,995	692	51	0.0013	0.0005	51	0.6
Transportation	53,718	271,774	3,232	0.0455	0.0283	3,241	40.9
E911	391	0	3	0.0001	0.0000	3	0.0
Emergency Management	3,409	354	34	0.0009	0.0003	34	0.4
Facilities	9,412	718	90	0.0024	0.0009	91	1.1
Fire Coord	0	0	0	0.0000	0.0000	0	0.0
Health	6,236	0	55	0.0016	0.0006	55	0.7
Hillbrook	297	0	3	0.0001	0.0000	3	0.0
Library	4,808	0	42	0.0012	0.0004	43	0.5
Mental Health	202	0	2	0.0001	0.0000	2	0.0
MWB	7,410	543	71	0.0019	0.0007	71	0.9
ON Center	989	26	9	0.0002	0.0001	9	0.1
Parks	23,333	10,319	310	0.0070	0.0030	311	3.9
Sheriff	251,375	1,425	2,229	0.0629	0.0229	2,237	28.2
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	111,044	62,981	1,618	0.0351	0.0155	1,623	20.5
BOE	25	0	0	0.0000	0.0000	0	0.0
Purchasing	0	0	0	0.0000	0.0000	0	0.0
Probation	310	0	3	0.0001	0.0000	3	0.0
Total	495,524	348,831	7,906	0.1648	0.0750	7,933	100.00



APPENDIX 1

Department		Units	2015	2014	2013	2012	2008
WEP	Energy Unit	kWh	68,513,095	70,747,207	68,198,034	64,634,520	68,518,188
	Performance Unit	Millions of Gallons	31,919.6	34,423.6	34,452.2	27,540.5	31,468.0
	Unitized Performance	kWh/Mgal	2,146.4	2,055.2	1,979.5	2,346.9	2,177.4
	MTCO ₂ e		27,373	27,960	27,231	24,899	26,275
	MTCO ₂ e/Mgal		0.858	0.812	0.790	0.904	0.835
MWB	Energy Unit	kWh	16,481,237	15,951,380	15,616,532	17,755,739	18,407,709
	Performance Unit	Millions of Gallons	7084.679	6893.339	6646.222	7188.02	7605.516
	Unitized Performance	kWh/Mgal	2,326.32	2,314.03	2,349.69	2,470.18	2,420.31
	MTCO ₂ e		5,967	5,881	5,775	6,363	6,770
	MTCO ₂ e/Mgal		0.842	0.853	0.869	0.885	0.890
Facilities							
	Energy Unit	Kbtu	364,837,276	369,083,693	350,209,779	355,649,443	383,297,811
	Performance Unit	Square Feet	1,320,649	1,320,649	1,320,649	1,320,649	1,277,068
	Energy Use Intensity (EUI kBTU/ft ²)	kBTU/ft ²	276.3	279.5	265.2	269.3	300.1
	Combined HDD+CDD		7461	7401	7216	6347	7128
	HDD_CDD Factor		0.96	0.96	0.99	1.12	1
	Adjusted Energy Use Intensity (EUI kBTU/ft ²)		263.9	269.2	261.9	302.4	300.1
	MTCO ₂ e		14,190	14,712	13660.2	13971.1	15014.7
	MTCO ₂ e/Ft ²		0.01074	0.01114	0.01034	0.01058	0.01176
	Adjusted MTCO ₂ e/Ft ²		0.01027	0.01073	0.01022	0.01188	0.01176
E911							
	Energy Unit	kWh	1,561,834	1,621,078	1,737,896	1,522,457	984,431
	Performance Unit	Calls+Dispatches	1,128,640	1,075,025	1,060,249	1,057,019	1,024,539
	Unitized Performance	kWh/Call+ Dispatches	1.38	1.51	1.64	1.44	0.96
	MTCO ₂ e		604	632	680	568	384
	MTCO ₂ e/Calls+Dispatches		0.000535	0.000588	0.000641	0.000537	0.000375