
TOWN OF SAN ANSELMO

2014 ANNUAL GREENHOUSE GAS EMISSIONS INVENTORY



Draft November 2016

Prepared by the
Marin Climate & Energy Partnership

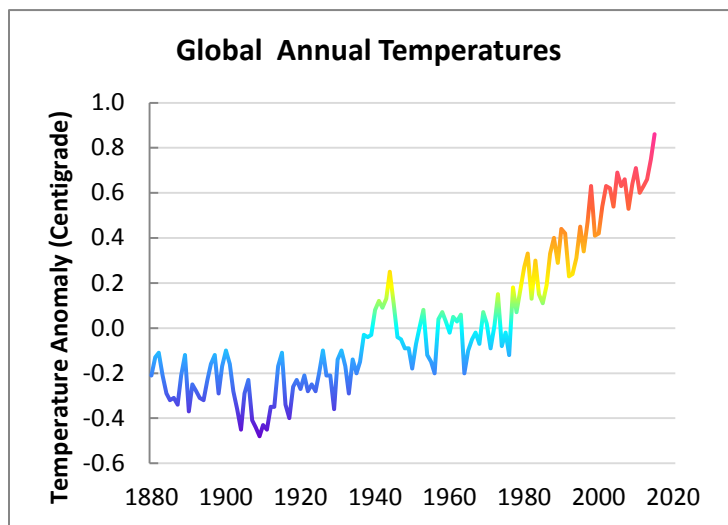


The Takeaway

San Anselmo's greenhouse gas emissions dropped 10% between 2005 and 2014, putting the Town on track to meet local and statewide reduction goals for 2020. The largest reductions were due to decreases in electricity and natural gas use and emissions. Decreases in waste disposal and water use also played a part. Although it looks like San Anselmo will meet its target to reduce emissions 15% by 2020, new State legislation has set longer-term goals to reduce emissions 40% below baseline emissions by 2030.

Introduction

2016 is shaping up to be an historic year for climate change. Not only does it look like our planet will beat the 2015 record for warmest year in the modern temperature record, carbon dioxide levels have officially passed the symbolic 400 parts per million mark. On the good news front, California has set another milestone to reduce greenhouse gas emissions with the adoption of SB 32 in 2016. This landmark legislation builds on the reduction target established for the year 2020 under AB 32 and now requires the State to reduce greenhouse gas emissions to 40% below 1990 levels by 2030. The State's long-term goal is to reduce emissions to 80% below 1990 levels by 2050, which is what scientists say is necessary to limit global warming to 2°C and avoid the most catastrophic effects of climate change. That will take a complete overhaul of our transportation and energy systems, as well as probably some innovative ways to sequester carbon dioxide. But at least we're making progress, and both California and San Anselmo are on track to meet their 2020 targets.

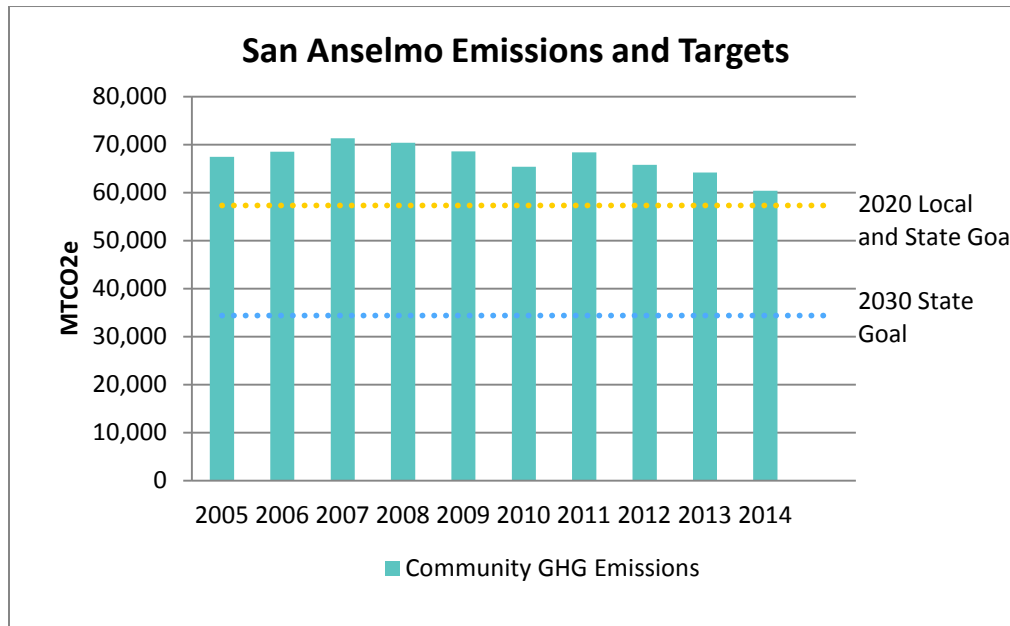


Source: NASA

Beginning in 2016, San Anselmo will publish annual community greenhouse gas (GHG) emissions estimates through the Marin Climate & Energy Partnership (MCEP). Annual inventories will help the Town to more closely monitor its progress in meeting its local goal to reduce community emissions 15% below baseline (2005) emissions by 2020. Annual inventories are intended to supplement the full emissions inventories that are conducted every five years and were last prepared for 2010 emissions.

This report reviews emissions generated from the community from 2005 through 2014 (the most recent year data is available). The inventory shows that the Town has nearly achieved this target, with

emissions 10% below baseline emissions in 2014. Emissions dropped from about 67,450 metric tons CO₂e (MTCO₂e) in 2005 to 60,400 MTCO₂e in 2014. The emissions trend and targets are shown below.



Recognizing the need for a collaborative approach to greenhouse gas reductions, city and county leaders launched the Marin Climate and Energy Partnership (MCEP) in 2007. The Town of San Anselmo is a member of MCEP and works with representatives from the County of Marin and all of the other Marin cities and towns to address and streamline the implementation of a variety of greenhouse gas reduction measures. Funding for this inventory was provided by the Marin County Energy Watch Partnership which administers public goods charges collected by PG&E. The annual inventories will be available on the MCEP website at marinclimate.org and will be used to update the [Marin Sustainability Tracker](#).

Emissions Reductions by Sector

This annual assessment tracks emissions in the seven sectors identified in the 2010 emissions inventory.

- The **Residential and Commercial** sectors represent emissions generated from the use of electricity, natural gas and propane in San Anselmo homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from vehicles travelling on roads within the town limits.
- The **Off-Road** sector represents emissions from off-road vehicles and equipment used for construction and lawn and garden maintenance.
- The **Water and Wastewater** sectors represent emissions from energy used to pump, convey and treat water and wastewater, as well as fugitive greenhouse gasses that are created during the wastewater treatment process.

- The **Waste** sector includes fugitive methane emissions that are generated over time as organic material decomposes in the landfill.

Table 1 shows how emissions in these sectors have changed since 2005. The greatest reductions have occurred in the Residential (-5,825 MTCO₂e) and Commercial (-1,237 MTCO₂e) sectors, although there have been significant declines on a percentage basis in the Waste and Water sectors. The likely reasons for the largest emissions decreases are described in further detail in the remainder of this report.

Table 1: San Anselmo Greenhouse Gas Emissions by Sector, 2005-2014

Year	Residential Energy	Commercial Energy	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	23,588	7,242	31,822	2,790	493	498	1,021	67,453	
2006	23,962	7,088	32,575	2,955	465	488	996	68,529	2%
2007	25,598	8,201	32,652	2,691	650	556	972	71,320	6%
2008	25,494	7,812	32,599	2,312	666	565	947	70,395	4%
2009	24,762	7,519	32,364	1,947	541	520	923	68,575	2%
2010	23,081	6,425	32,271	1,838	403	472	898	65,387	-3%
2011	23,070	6,377	35,465	1,782	340	455	892	68,390	1%
2012	22,133	6,361	33,704	1,855	356	484	885	65,785	-2%
2013	21,250	6,224	33,087	1,902	373	492	875	64,211	-5%
2014	17,764	6,005	33,172	1,847	283	475	863	60,417	-10%
Change from 2005	-5,825	-1,237	1,350	-943	-209	-24	-158	-7,036	
% Change from 2005	-25%	-17%	4%	-34%	-42%	-5%	-15%	-10%	

Major Emissions Sources

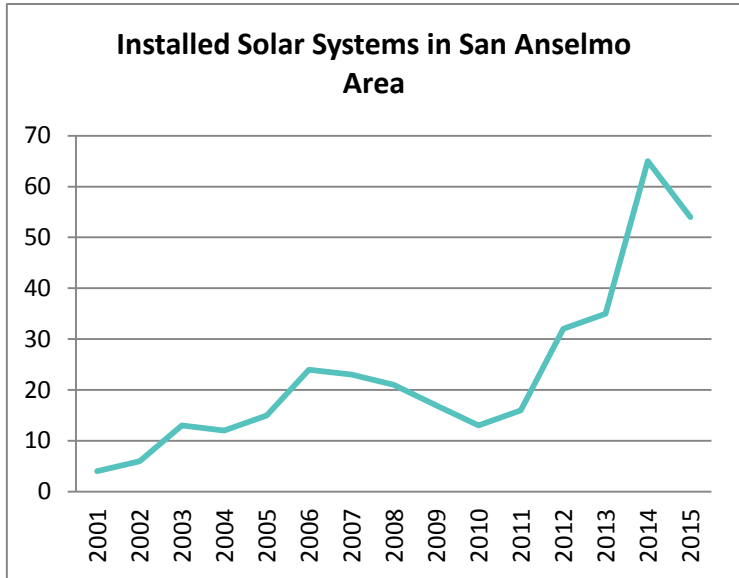
The following sections provide a year-by-year analysis of the changes in GHG emissions from the Town's largest sources: electricity, natural gas, transportation, and waste. Whenever possible, each section discussion includes the change in emissions from previous years and the likely influence of state and local programs or policies and external factors on reducing emissions.

Electricity Use and GHG Emissions

Electricity use in homes and businesses in San Anselmo declined less than 1% between 2013 and 2014 and dropped 9% since 2005, from about 50.0 million kWh in 2005 to 45.6 million kWh in 2014. The

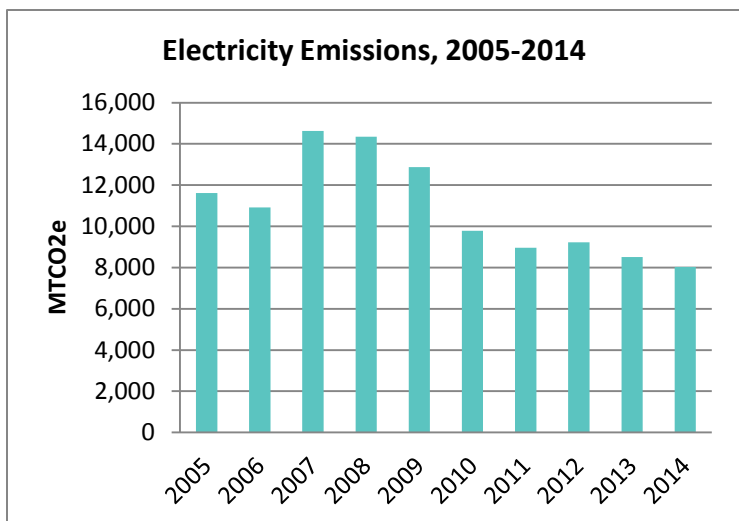
Residential sector, which uses 65% of all electricity in San Anselmo, has reduced its electricity use by 9% since 2005. Electricity use declined 8% in the Commercial sector over the same period, despite an improved economy. This suggests that electricity reductions have occurred due to improved energy efficiency, conservation, and solar installation.

Property owners continued to install solar panels in 2014, with 65 residential systems in the San Anselmo area (including unincorporated areas) connected to the grid. As of June 2016, there were 384 solar energy systems in the San Anselmo area. The vast majority (96%) are residential systems. The rise in installation of distributed solar has been enabled in part by a 54% reduction in installed solar cost since 2008 and a recently-extended 30% federal tax credit.^{1, 2} San Anselmo has adopted solar permit streamlining procedures and fee waivers in order to encourage solar installation, and the Town has enabled PACE programs that offer property owners a way to finance solar installations and energy efficiency projects as an assessment on property tax bills. PACE programs provided just over \$221,000 in funding to San Anselmo property owners by the end of 2015.



Source: California Solar Statistics

Electricity-related greenhouse gas emissions in the Residential and Commercial sectors decreased 6% between 2013 and 2014. Emissions dropped an impressive 31% since 2005. This is primarily due to the lower carbon intensity of electricity. PG&E electricity has been steadily increasing the amount of renewable energy in its power mix, and its electricity was 11% less carbon intensive in 2014 than it was in 2005. MCE, which began providing electricity



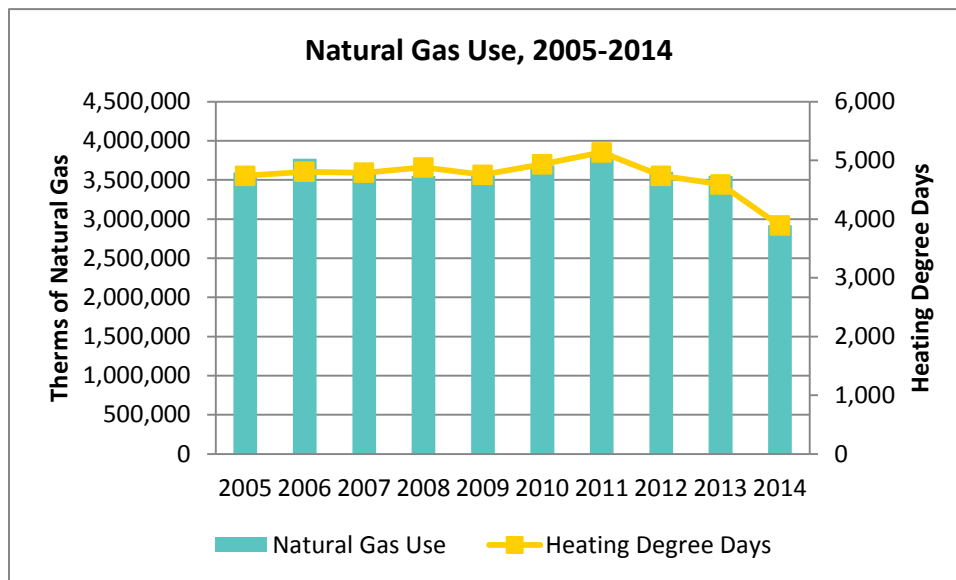
¹ U.S. Department of Energy, "Revolution...Now: The Future Arrives for Five Clean Energy Technologies – 2016 Update," September 2016, http://energy.gov/sites/prod/files/2016/09/f33/Revolutiona%CC%82%E2%82%ACNow%202016%20Report_2.pdf.

² The Solar Investment Tax Credit was been extended in 2015 through 2019. The tax credit will drop to 26% in 2020 and 22% in 2021.

to San Anselmo customers in 2010, has historically provided electricity that is less carbon intensive than PG&E electricity. In 2014, MCE electricity was 25% less carbon intensive than PG&E. MCE carries about 70% of the electricity load in San Anselmo. In 2014, about 2.7% of the energy purchased by San Anselmo customers was Deep Green. That percentage increased to 4% in 2015.

Natural Gas Use and GHG Emissions

Natural gas is used in residential and commercial buildings to provide space heating and power equipment. Use of natural gas is highly variable depending on the weather conditions in a given year. This variability has led natural gas use consumption in San Anselmo to fluctuate from year to year, from a high of 3.8 million therms in 2006 to a low of 2.9 million therms in 2014. Emissions from natural gas consumption fell 18% between 2013 and 2014, most likely due to a warmer year than usual. The chart below compares natural gas usage in San Anselmo to regional heating degree days, a measure of how much energy is required to warm the interior of a building relative to the outside temperature. Warmer days result in fewer heating degree days. As shown below, natural gas consumption is highly correlated to heating degree days. Reduction in energy use may also be attributed to energy efficiency programs and rebates, local green building ordinances, and State building codes. California’s goal is to require all new residential buildings to be zero net energy by 2020 and all new commercial buildings to be zero net energy by 2030.

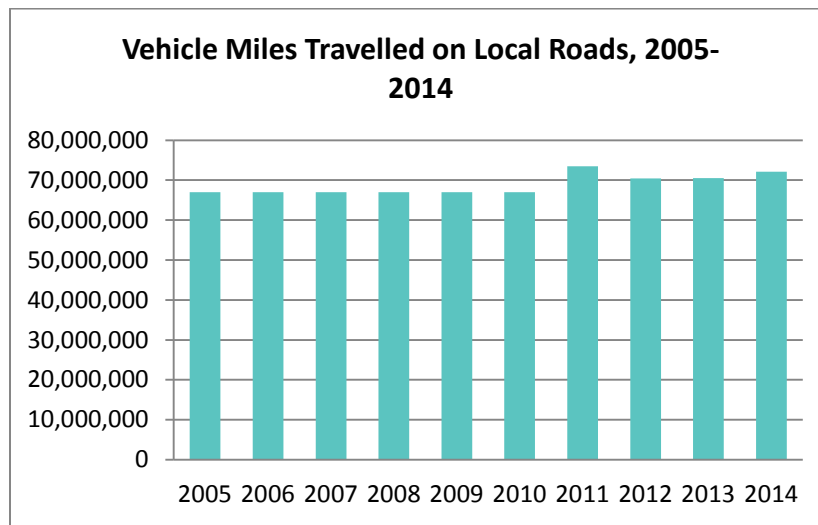


Source (heating degree days): U.S. Department of Commerce, National Climatic Data Center

Transportation and GHG Emissions

Transportation activities accounted for approximately 55% of the San Anselmo’s emissions in 2014. Vehicle miles travelled on local road have increased nearly 8% since 2005, but emissions have increased 4% due to more fuel-efficient and alternatively fueled cars. The California clean car fuel standards and

regular turnover of the vehicle fleet have lowered emissions from 1.05 pounds per mile in 2005 to 1.01 pounds per mile in 2014.



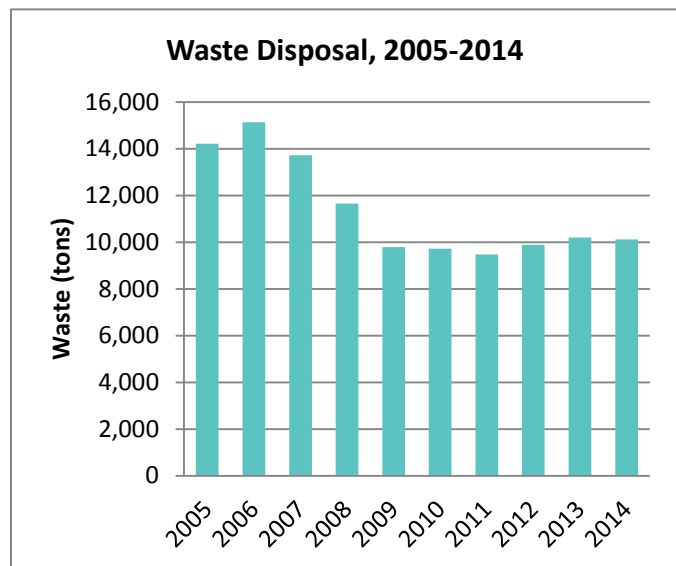
Source: Caltrans Highway Performance Monitoring System Public Roads Data

While it is difficult to pinpoint exactly how each land use and transportation policy affects emissions, the Town has undertaken many efforts to reduce emissions from transportation, including...

Waste Disposal and GHG Emissions

Waste disposal from the community declined 33% between 2005 and 2011, but has since increased as shown in the chart. Nonetheless, it is encouraging to see that disposal tonnage has held on to most of the declines despite a strong local economy. Emissions from waste disposal decreased 3% between 2013 and 2014, and were 34% below 2005 levels in 2014.

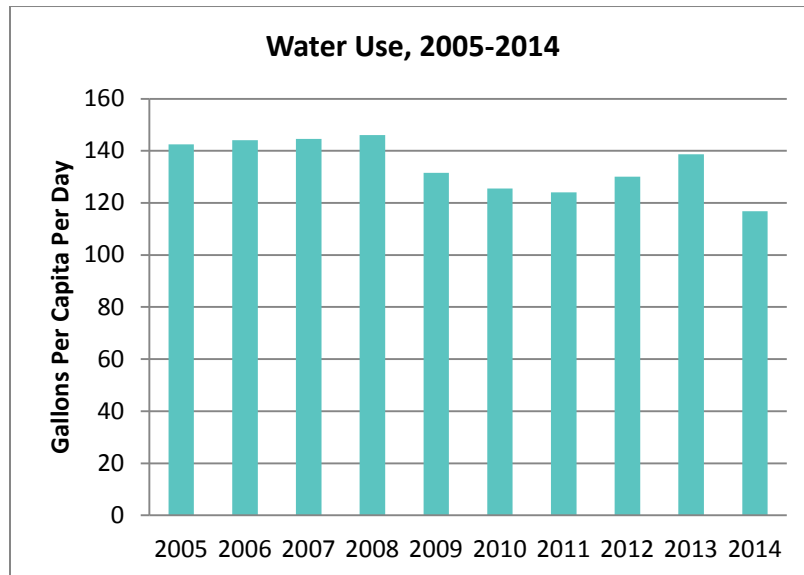
The associated decrease in emissions from waste disposal is a result of the community's and County's goals to move toward Zero Waste by 2025, including a residential food waste composting program.



Water Use and GHG Emissions

Water use declined 5% between 2013 and 2014, and 18% since 2005. Emissions, which are based on an estimate of electricity used to pump, treat and convey water to users in San Anselmo, dropped by 42% between 2005 and 2014 due to the lower carbon intensity of the electricity. The Marin Municipal Water

District began purchasing MCE Light Green electricity in 2010 and plans to begin using MCE Deep Green electricity in July 2017.



Source: Marin Municipal Water District

The decrease in water consumption is a result of local and statewide goals in response to a prolonged drought. Recent local actions to reduce water use include adoption of water efficient landscape regulations.

Outreach and Coordination

In addition to the programs and actions described above, the Town pursued a range of outreach activities and participated in several multi-agency efforts, including:

- Utilized the Town’s newsletter, social media, and press to promote sustainability efforts
- Supported and promoted local green festivals, lectures, workshops and activities
- Participated in and supported the Marin Climate and Energy Partnership
- Partnered with Resilient Neighborhoods to enroll San Anselmo households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions

Summary, Priorities and Next Steps

San Anselmo has made significant progress in reducing GHG emissions since 2005. However, the Town will need to continue to implement policies and programs that further reduce emissions to achieve the 2020 GHG reduction target of 15% for community-related emissions. [Discuss CAP update here?](#)