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# TOWN OF SAN ANSELMO

## 2014 ANNUAL GREENHOUSE GAS EMISSIONS INVENTORY



March 2017

Prepared by the  
Marin Climate & Energy Partnership

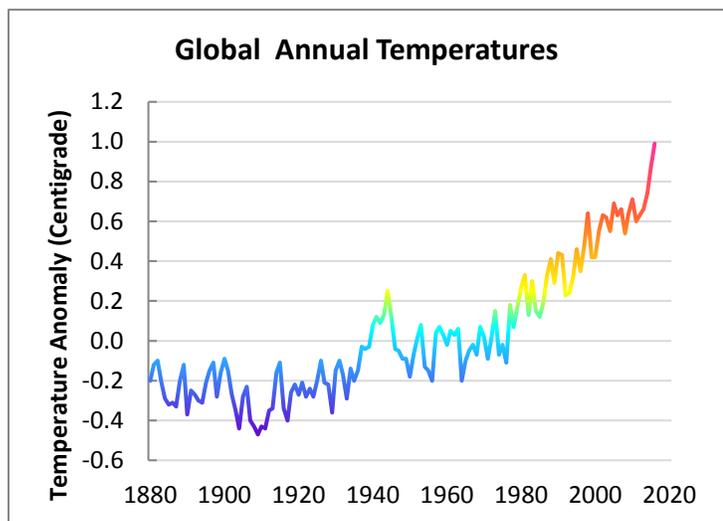


## The Takeaway

San Anselmo's community 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 was an historic year for climate change. Not only did our planet beat the 2015 record for warmest year in the modern temperature record, carbon dioxide levels 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.

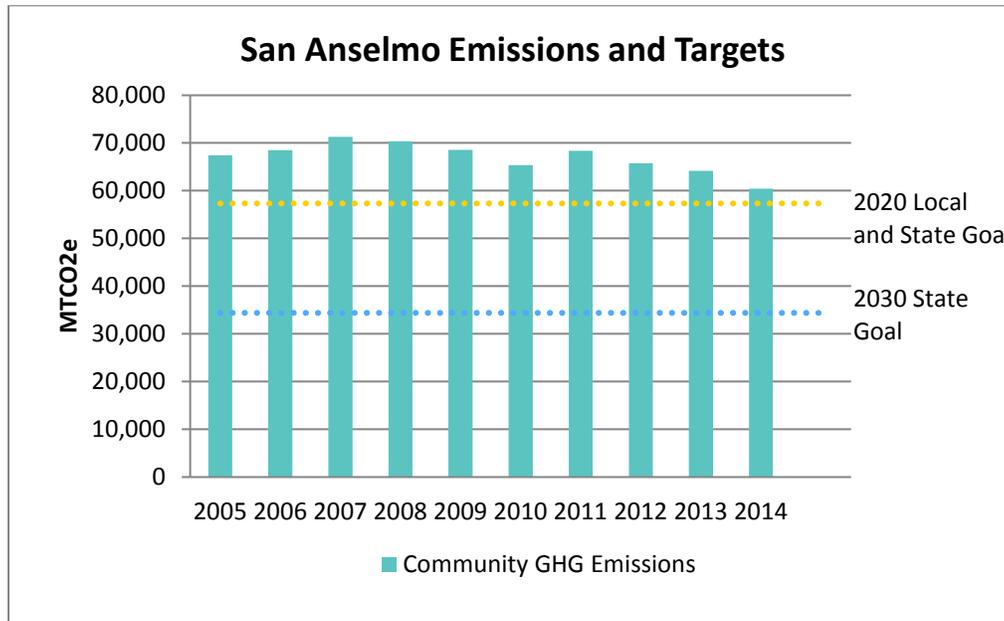


Source: NASA

Beginning in 2017, 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 CO<sub>2</sub>e (MTCO<sub>2</sub>e) in 2005 to 60,400 MTCO<sub>2</sub>e 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](http://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.

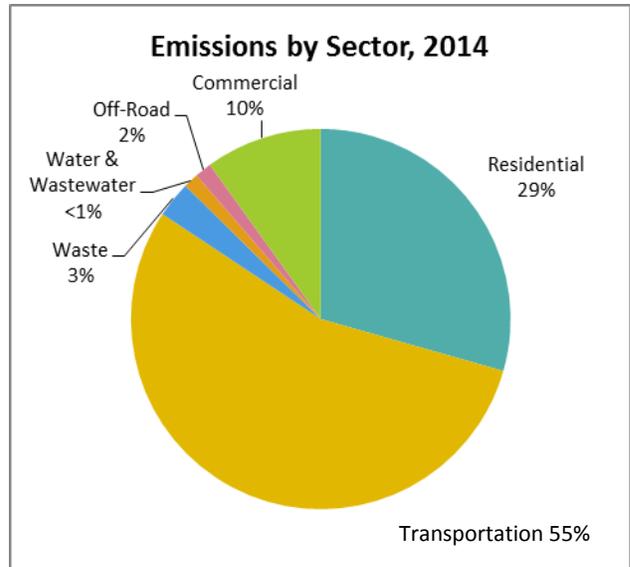
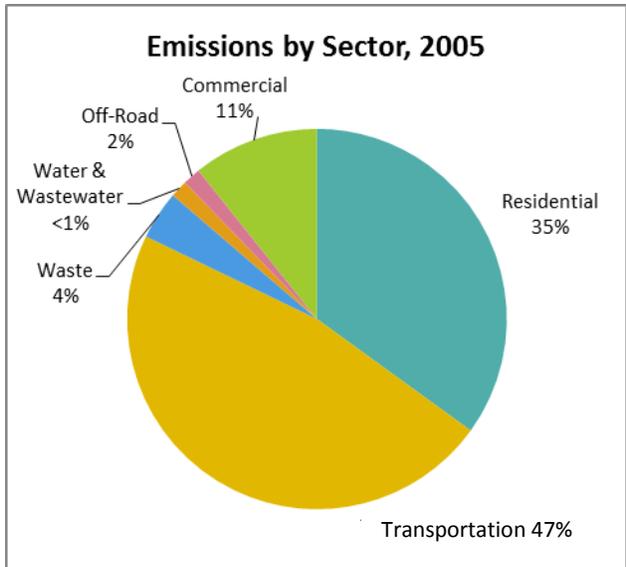
- The **Waste** sector includes fugitive methane emissions that are generated over time as organic material decomposes in the landfill.

**Table 1** shows how emissions in these sectors have changed since 2005. The greatest reductions have occurred in the Residential (-5,825 MTCO<sub>2</sub>e) and Commercial (-1,237 MTCO<sub>2</sub>e) 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
<b>2005</b>	23,588	7,242	31,822	2,790	493	498	1,021	67,453	
<b>2006</b>	23,962	7,088	32,575	2,955	465	488	996	68,529	2%
<b>2007</b>	25,598	8,201	32,652	2,691	650	556	972	71,320	6%
<b>2008</b>	25,494	7,812	32,599	2,312	666	565	947	70,395	4%
<b>2009</b>	24,762	7,519	32,364	1,947	541	520	923	68,575	2%
<b>2010</b>	23,081	6,425	32,271	1,838	403	472	898	65,387	-3%
<b>2011</b>	23,070	6,377	35,465	1,782	340	455	892	68,390	1%
<b>2012</b>	22,133	6,361	33,704	1,855	356	484	885	65,785	-2%
<b>2013</b>	21,250	6,224	33,087	1,902	373	492	875	64,211	-5%
<b>2014</b>	17,764	6,005	33,172	1,847	283	475	863	60,417	-10%
<b>Change from 2005</b>	-5,825	-1,237	1,350	-943	-209	-24	-158	-7,036	
<b>% Change from 2005</b>	-25%	-17%	4%	-34%	-42%	-5%	-15%	-10%	

The charts below illustrate how the relative share of emissions has changed over time. As emissions decreased in the Residential, Commercial and Waste sectors, emissions from the Transportation sector have taken on a larger proportionate share, increasing from 47% of emissions in 2005 to 55% of emissions in 2014.

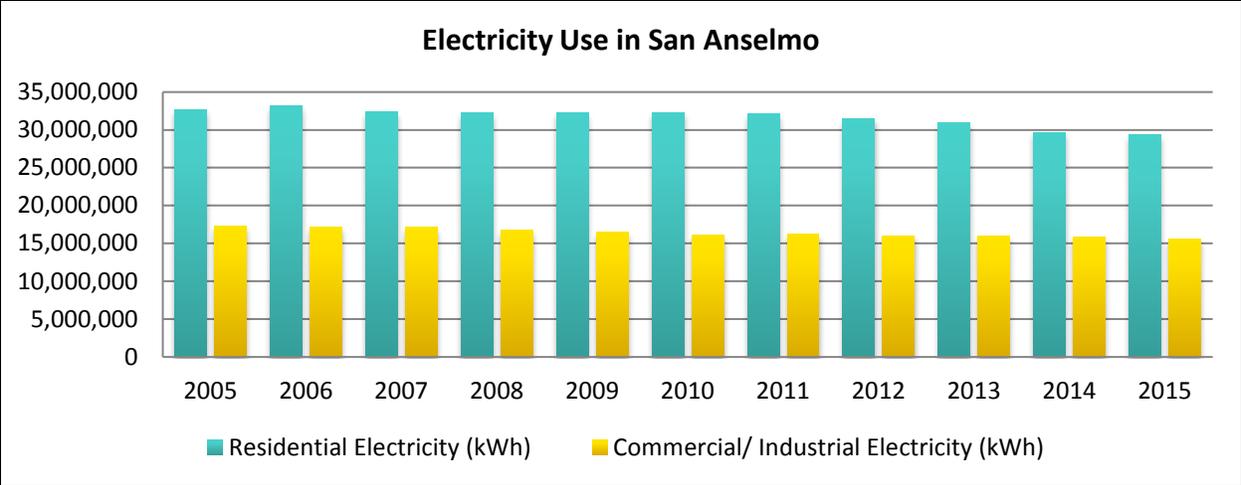


## Major Emissions Sources

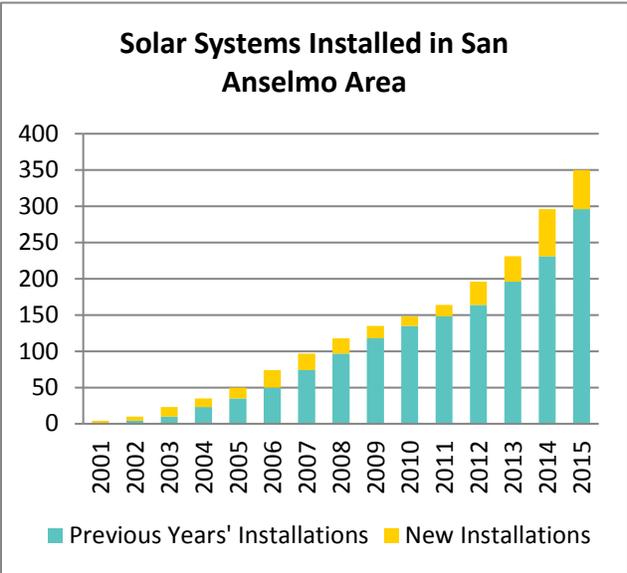
The following sections provide a year-by-year analysis of the changes in GHG emissions from the Town's largest sources: electricity, natural gas, transportation, waste and water. Whenever possible, each section discussion includes the change in emissions from previous years and the likely influence of 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 the unincorporated area of Sleepy Hollow) connected to the grid. As of September 2016, there were 394 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.<sup>1, 2</sup> San Anselmo has adopted solar permit streamlining procedures and reduced fees 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. In 2016, PACE programs provided over \$400,000 in funding for 18 projects for San Anselmo property owners for energy related improvements (through September 2016).



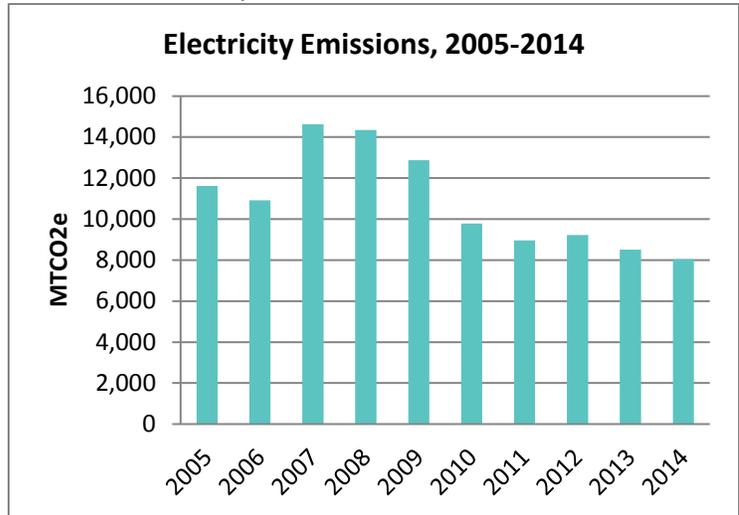
Source: California Solar Statistics

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

<sup>1</sup> 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](http://energy.gov/sites/prod/files/2016/09/f33/Revolutiona%CC%82%E2%82%ACNow%202016%20Report_2.pdf).  
<sup>2</sup> 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.

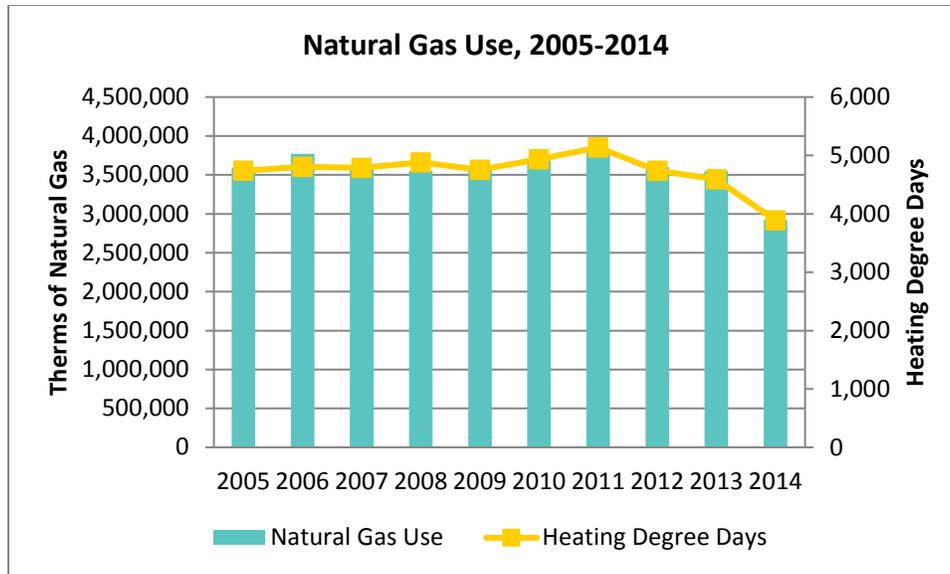
renewable energy in its power mix, and its electricity was 11% less carbon intensive in 2014 than it was in 2005. MCE, which began providing electricity to San Anselmo customers in 2010, has historically provided electricity that is less carbon intensive than PG&E electricity. In 2014, MCE electricity was 23% 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 MCE customers was Deep Green. That percentage increased to 4% in 2015.

The Town has also taken steps to reduce energy use and greenhouse gas emissions from energy use within government operations. In 2014, the Town began purchasing Deep Green electricity for all government operations. The Town has converted nearly all (96%) of its streetlights to LED and energy-efficient induction lights, and has installed LED traffic signals and an energy-efficient water heater at Town Hall.



### Natural Gas Use and GHG Emissions

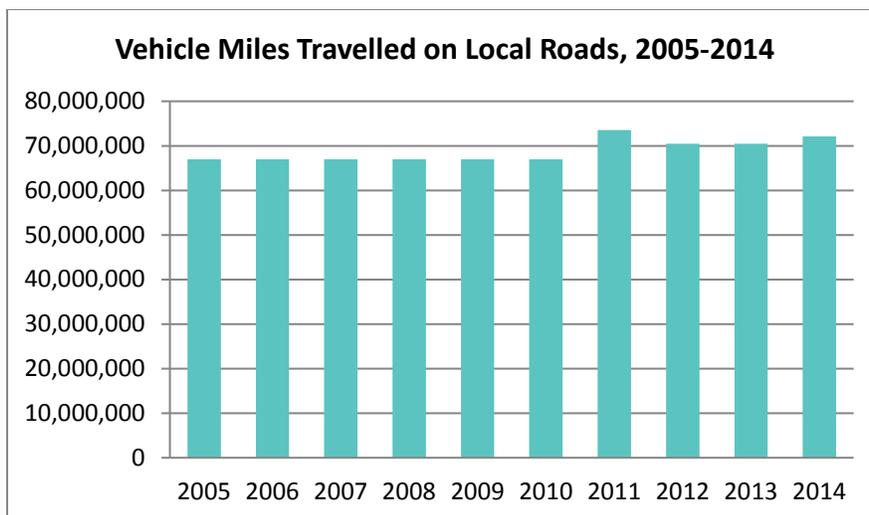
Natural gas is used in residential and commercial buildings to provide space heating and power equipment. Use of natural gas is highly variable depending on the weather conditions in a given year. This variability has led natural gas use consumption in San Anselmo to fluctuate from year to year, from 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 San Anselmo’s emissions in 2014. Vehicle miles travelled on local roads 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  
 Note: Data for years 2012-2014 was adjusted according to the growth factor for total countywide VMT.

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:

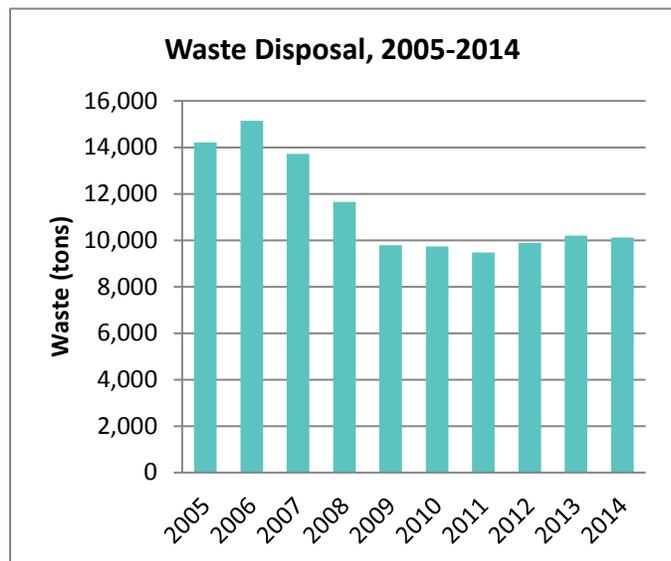
- Supported Safe Routes to Schools programs by adding bike lanes and constructing new sidewalks, curb ramps and crossings.
- Installed bicycle detection cameras at intersections and bicycle racks and encouraged new development and uses to add bicycle parking.
- Approved a Bicycle and Pedestrian Master Plan in 2016.
- Installed four Electric vehicle charging stations at Magnolia Avenue parking lot and provides free parking for electric vehicles downtown.
- Replaced three 1984 and one 2001 trucks with 2014-2015 models.
- Purchased two electric bicycles for staff use.
- Supported the school yellow bus program.
- Approving housing development close to transit, shopping, schools and services

### 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. The Town encourages waste reduction by:

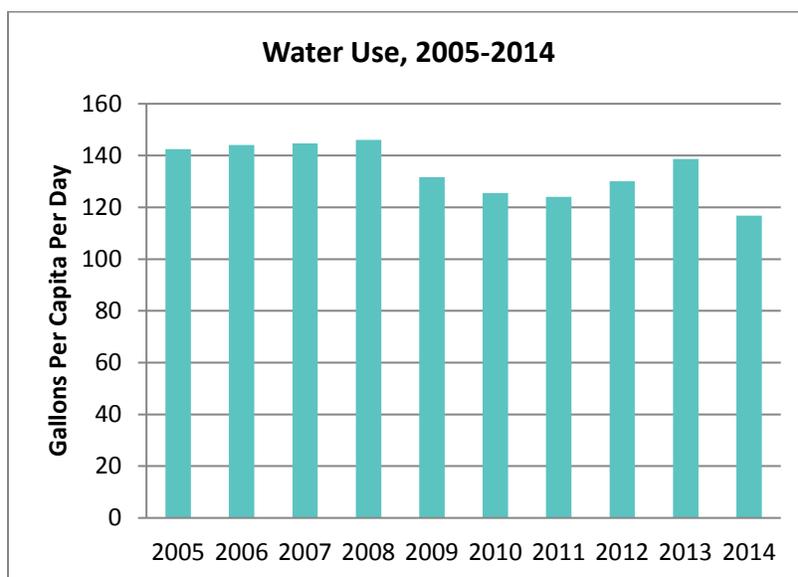
- Maintaining recycling containers in public areas.
- Providing compost buckets and reusable shopping bags to residents.
- Installing water bottle refilling stations in public areas.
- Providing recycling and composting receptacles at Town events.
- Requiring construction and demolition debris to be recycled. The diversion requirement increased from 70% to 85% between 2011 and 2016.
- Adopting a ban on plastic bags.
- Purchasing office paper with 30% recycled content and setting all printers to print double sided by default.



Source: CalRecycle

## Water Use and GHG Emissions

Water conservation efforts not only save water but reduce demand for electricity to pump, treat and convey water from the water source to water users in San Anselmo. Water use declined 15% between 2013 and 2014, and 13% 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 41% 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. In January 2014, the Governor declared a drought state of emergency and asked all Californians to reduce water consumption 20%. Water use reductions became mandatory in 2015. The Marin Municipal Water District (MMWD) adopted more stringent water-efficient landscape regulations that the Town adopted in 2016. MMWD continues to enforce the water efficient landscape requirements for applicable Town projects.

The Marin Municipal Water District (MMWD) provides rebates and programs to reduce water use. Rebates are available to replace fixtures with high-efficiency toilets and clothes washers, and to purchase pool covers, hot water recirculating systems, organic mulch, laundry-to-landscape system components, and rain barrels. MMWD also provides rebates for irrigation improvements for commercial and multi-family customers. MMWD provides free high-efficiency shower heads and faucet aerators, and free home, business, and landscape water use evaluations.

## 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:

- Supported the Quality of Life Commission in its work to implement the Town’s Climate Action Plan. The Commission’s education work includes having a booth at the Country Day Fair, presenting a Speaker Series, publishing articles in the Ross Valley Reporter to highlight environmental efforts, supporting student efforts to have local restaurants provide plastic straws only on demand and a solar fair at Town Hall.
- Utilized the Town’s newsletter, social media, and press to promote sustainability efforts including, but not limited to, green waste pick up and participation in Marin Clean Energy.
- Supported and promoted local green festivals, lectures, workshops and activities including, but not limited to, allowing two farm stands at Town Hall and providing publicity and town hall meeting space for Quality of Life speaker series.
- Participated in and supported the Marin Climate and Energy Partnership. Planning Department staff attends monthly MCEP meetings and has served on MCEP subcommittees and Executive Committee. The Town contributes \$2,000 per year of financial support to MCEP.
- 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. Between 2011 and 2016, ten Resilient Neighborhood Teams with 67 people reduced CO2 by 183,288 pounds.

### **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 from the Climate Action Plan to further reduce emissions to achieve the 2020 GHG reduction target of 15% for community-related emissions.

The Quality of Life Commission subcommittee for the annual Greenhouse Gas Inventory and Climate Action Plan review has set 2017 goals to:

1. Explore what is entailed to shift to 100% Renewable Energy and make Deep Green the default option for residents; and
2. Encourage a certain number of residential and commercial properties to have free home/business energy audits.

Staff plans to act on the following new and ongoing Climate Action Plan programs in 2017:

1. Implement remainder of Safe Routes to School project.
2. Create an interdepartmental Green Team to review and implement a Green Purchasing Policy & Implementation Plan and engage Town staff in support and implementation of green purchasing goals and processes.
3. Install water bottle filling stations at Memorial Park and Robson Park (Town already purchased stations) with Zero Waste Grant funds.
4. Include sustainability elements in Memorial Park Master Plan (low water use plants, new trees and water conserving fixtures and technology).
5. Include sustainability elements in Master Median Plan (low water use plants, new trees and water conserving fixtures and technology).

6. Adopt and implement San Francisco Boulevard and Lincoln Park traffic calming plans.
7. Include and install bicycle racks and energy efficient lighting as part of public works LID projects that will be reviewed by Town Council in 2017
8. Begin tracking number of trees removed as well as trees replaced for Town tree permits.
9. Participate in any VW Settlement grant to promote EV, through Town's membership with ICLEI, who has applied for the grant.
10. Inform Planning Commission of Annual GHG update and report.
11. Review drafts and advertise completion of County Marin Bay Shoreline Vulnerability Assessment (April 2017) and associated public workshops.
12. Update the Climate Action Plan with a Town volunteer or Marin Climate Energy Partnership.

The Town Council plans to begin an update of the Town General Plan in 2017-2018, which provides an opportunity to incorporate policies and programs from the Climate Action Plan into the General Plan.