

CITY OF SAUSALITO

COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY FOR YEAR 2015

October 2017

Prepared by the
Marin Climate & Energy Partnership



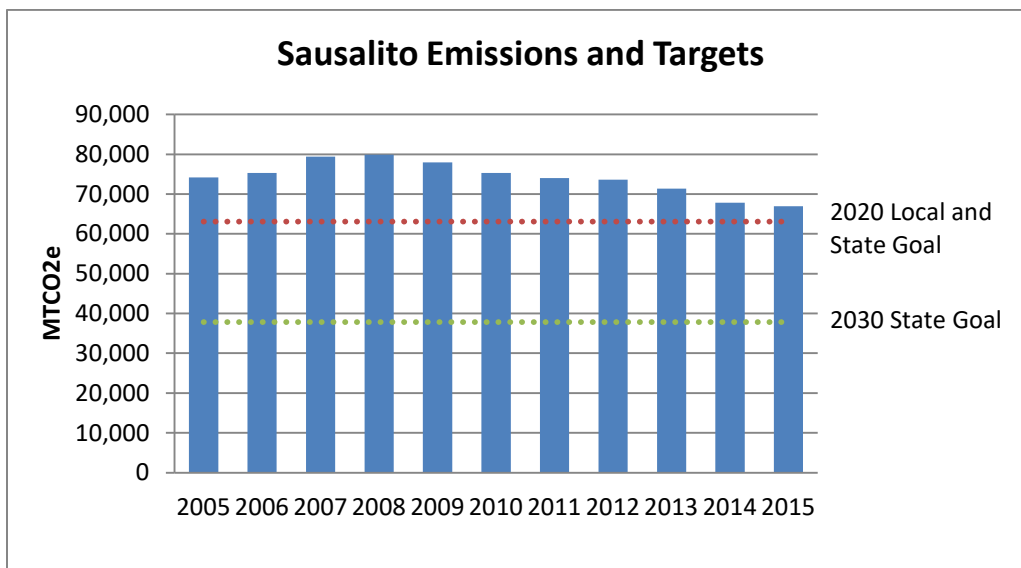
The Takeaway

Sausalito's greenhouse gas emissions dropped 10% between 2005 and 2015, meaning the City is making progress towards meeting local and statewide reduction goals for 2020. The largest reductions were due to decreases in electricity and natural gas use and emissions. While Sausalito has adopted a target to reduce emissions 15% by 2020, the State has enacted a longer-term goal to reduce emissions another 40% by 2030.

Introduction

Sausalito publishes annual community greenhouse gas (GHG) emissions estimates through the Marin Climate & Energy Partnership (MCEP). Annual inventories help the City to more closely monitor its progress in meeting its local goal to reduce community emissions 15% below baseline (2005) emissions by 2020¹.

This report reviews emissions generated from the community from 2005 through 2015 (the most recent year data is available). The inventory shows that the City is making progress toward achieving this target, with 2015 emissions 10% below the 2005 baseline emissions. Emissions dropped from about 74,220 metric tons carbon dioxide equivalent (MTCO_{2e}) in 2005 to 66,910 MTCO_{2e} in 2015. 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 City of Sausalito is a

¹ Regular meeting of the City of Sausalito City Council, October 23, 2012, Agenda Item 6A.

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.

- The **Residential** and **Commercial** sectors represent emissions generated from the use of electricity, natural gas and propane in Sausalito homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from passenger vehicle trips originating and ending in Sausalito, as well as a share of medium and heavy-duty vehicles and busses travelling on Marin County roads.
- 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 sector (-4,109 MTCO₂e), which accounts for 56% of total reductions. There have also been significant declines in other sectors. The likely reasons for the largest emissions decreases are described in further detail in the remainder of this report.

Table 1: Sausalito Greenhouse Gas Emissions by Sector, 2005-2015

Year	Residential	Commercial	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	16,572	11,789	42,620	1,998	318	323	596	74,216	
2006	16,541	11,515	44,041	1,990	300	315	580	75,282	1%
2007	18,008	14,127	44,194	1,806	348	354	563	79,400	7%
2008	18,121	14,545	44,399	1,545	366	357	547	79,880	8%
2009	17,646	13,869	43,973	1,321	310	330	530	77,980	5%
2010	16,530	12,248	44,236	1,296	207	302	514	75,334	2%
2011	16,206	10,943	44,631	1,262	172	292	510	74,016	0%
2012	15,821	11,059	44,460	1,301	175	307	502	73,625	-1%

2013	15,105	10,847	43,089	1,306	183	307	490	71,328	-4%
2014	12,494	10,288	42,812	1,317	146	298	483	67,837	-9%
2015	12,463	10,274	41,892	1,375	131	289	485	66,908	-10%
Change from 2005	-4,109	-1,515	-728	-624	-187	-33	-111	-7,308	
% Change from 2005	-25%	-13%	-2%	-31%	-59%	-10%	-19%	-10%	

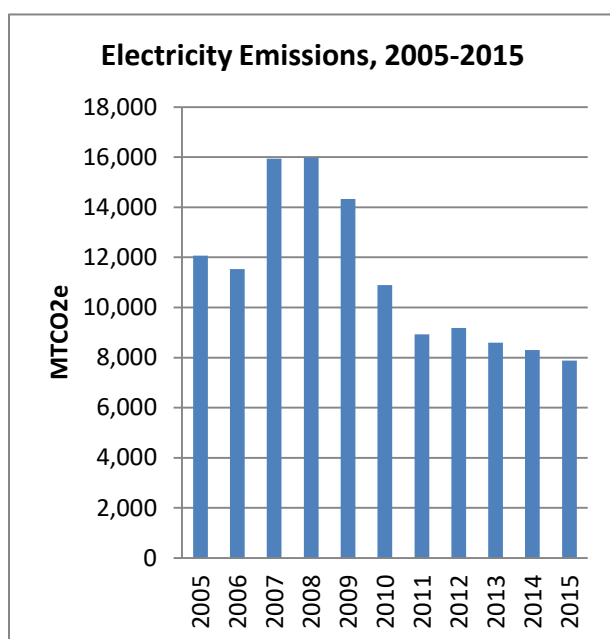
Major Emissions Sources

The following sections provide a year-by-year analysis of the changes in GHG emissions from the City's largest sources: electricity, natural gas, transportation, waste, and water use. 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 Sausalito decreased about 2% between 2014 and 2015, and has dropped 15% since 2005, from about 53.0 million kWh in 2005 to 45.3 million kWh in 2015. The Residential sector, which uses 44% of all electricity in Sausalito, has reduced its electricity use 9% since 2005. Electricity use decreased 18% in the Commercial sector over the same period. Electricity reductions have most likely occurred due to improved energy efficiency, conservation, and solar installation. Countywide, distributed (i.e., rooftop, ground-mount and carport) solar systems have been growing at about 20% annually. Distributed solar currently generates about 4% of the County's electricity needs.

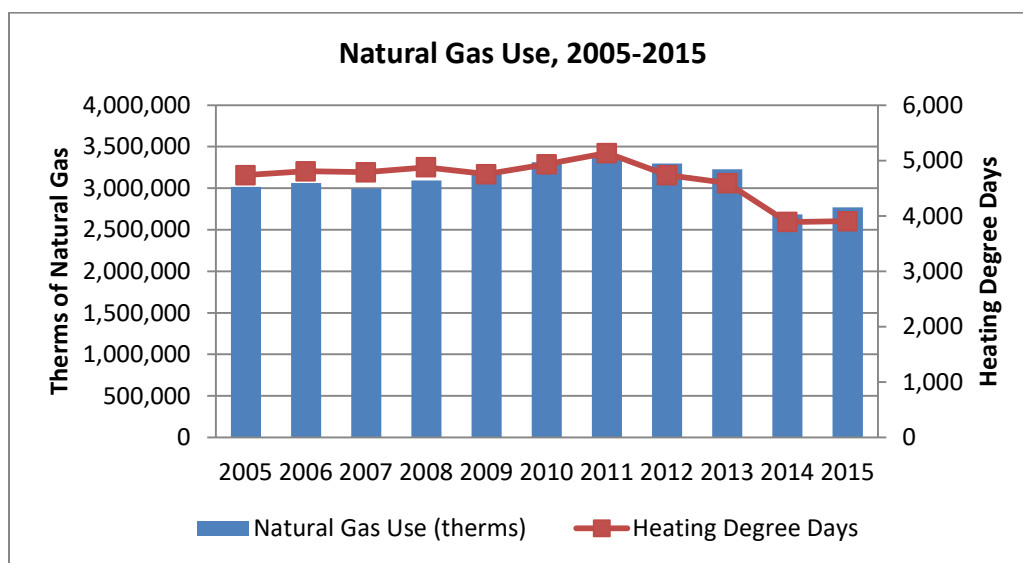
Electricity-related greenhouse gas emissions in the Residential and Commercial sectors decreased 5% between 2014 and 2015. Emissions dropped 35% since 2005. This is primarily due to the lower carbon intensity of electricity. PG&E electricity has been steadily increasing the amount of renewable energy in its power mix, and its electricity was 17% less carbon intensive in 2015 than it was in 2005. MCE, which began providing electricity to Sausalito customers in 2010, has historically provided electricity that is less carbon intensive than PG&E electricity. In 2015, MCE electricity was 18% less carbon intensive than PG&E. MCE carries about 71% of the electricity load in Sausalito. In 2015, about 4.8% of MCE electricity purchased by Sausalito customers was Deep Green.



Natural Gas Use and GHG Emissions

Natural gas is used in residential and commercial buildings to provide space and water heating and power appliances. 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 Sausalito to fluctuate from year to year, from a high of 3.38 million therms in 2011 to a low of 2.69 million therms in 2014. Emissions from natural gas consumption increased 3% between 2014 and 2015, most likely due to colder temperatures. The chart below compares natural gas usage in Sausalito 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 net zero electricity use 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 62% of the Sausalito's emissions in 2015. Vehicle miles travelled have decreased approximately 1% since 2005. Transportation emissions have decreased 2% due, in part, to more fuel-efficient and alternatively fueled cars. Marin County continues to be a leader in zero emission vehicles (ZEVs) – second only to Santa Clara County – with an estimated 18 ZEVs per thousand residents. ZEVs include battery electric cars, plug-in hybrid electric cars, hydrogen fuel cell cars, and zero-emission motorcycles.

While it is difficult to pinpoint exactly how each land use and transportation policy affects emissions, the City has undertaken many efforts to reduce emissions from transportation to encourage workforce housing and make it easier for residents to use alternative modes of transportation, including bicycling, walking and public transportation. The City of Sausalito provides a matching contribution to employees who use mass transportation to offset 50% of fare cost.

An estimated 43% of vehicle miles travelled by passenger cars originating or ending in Sausalito are attributed to commuters who work in Sausalito but live outside the city, as shown in Table 2. Programs to encourage workers to carpool, take public transit, and telecommute, as well as to build affordable housing in Sausalito, will help to reduce emissions from this sector.

Table 2: Passenger Vehicle Trips, 2015

Population Segment		% of Passenger Vehicle VMT
Live in area	Works in area	2%
Live in area	Works out of area	30%
Live in area	Works from home/other	10%
Live out of area	Works in area	43%
Live out of area	Works out of area	8%
Live out of area	Works from home/other	7%

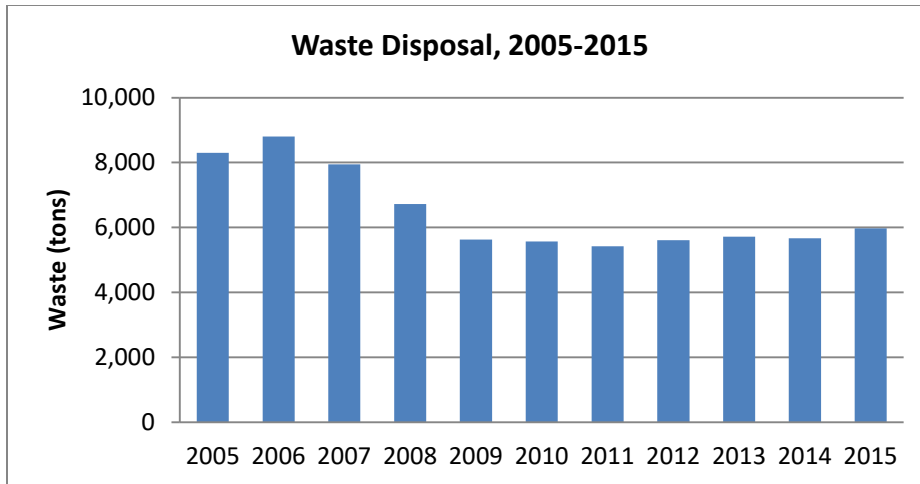
Source: Metropolitan Transportation Commission

Waste Disposal and GHG Emissions

Waste generated by the community hit a low in 2011 but has since increased as shown in the chart below (based on countywide disposal data). Emissions from waste disposal were 31% below 2005 levels in 2015.

The decrease in emissions from waste disposal is a result of the community’s and County’s goals to move toward Zero Waste by 2025. Ongoing waste diversion programs include a residential food waste composting program and mandatory food waste recycling service for large commercial producers which produce four or more cubic yards of organic waste per week².

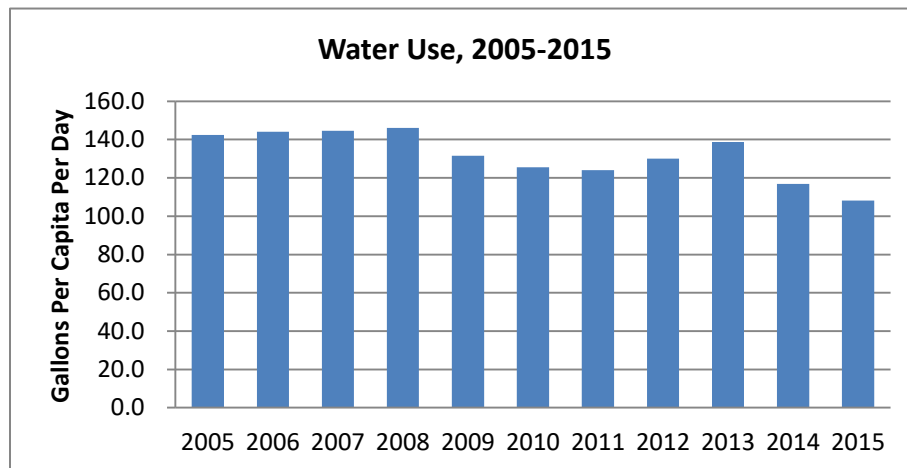
² Assembly Bill 1826 Chesbro (Chapter 727, Statutes of 2014)



Source: CalRecycle

Water Use and GHG Emissions

Water use declined 7% between 2014 and 2015, and 22% since 2005 (based on district-wide data). Emissions, which are based on an estimate of energy used to pump, treat and convey water to users in Sausalito, dropped 59% between 2005 and 2015 due to the lower carbon intensity of electricity. The Marin Municipal Water District began purchasing MCE Light Green electricity in 2010 and switched to MCE Deep Green electricity in July 2017.



Source: Marin Municipal Water District

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 City pursued a range of outreach activities and participated in several multi-agency efforts, including:

- Utilized the City's newsletter, social media, and press to promote sustainability efforts.
- Participated in and supported the Marin Climate and Energy Partnership.
- Partnered with Resilient Neighborhoods to enroll Sausalito households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions.
- The Sausalito Sustainability Commission performs outreach and education in a variety of ways to reduce landfilled materials, including using Zero Waste Marin grant funding to support this effort. In 2017/18 grant funds are being directed towards residents of multi-family homes.

Summary and Next Steps

Sausalito has made significant progress in reducing GHG emissions since 2005. However, the City will need to continue to implement policies and programs that further reduce emissions to achieve local goals for 2020 and statewide targets for 2030.