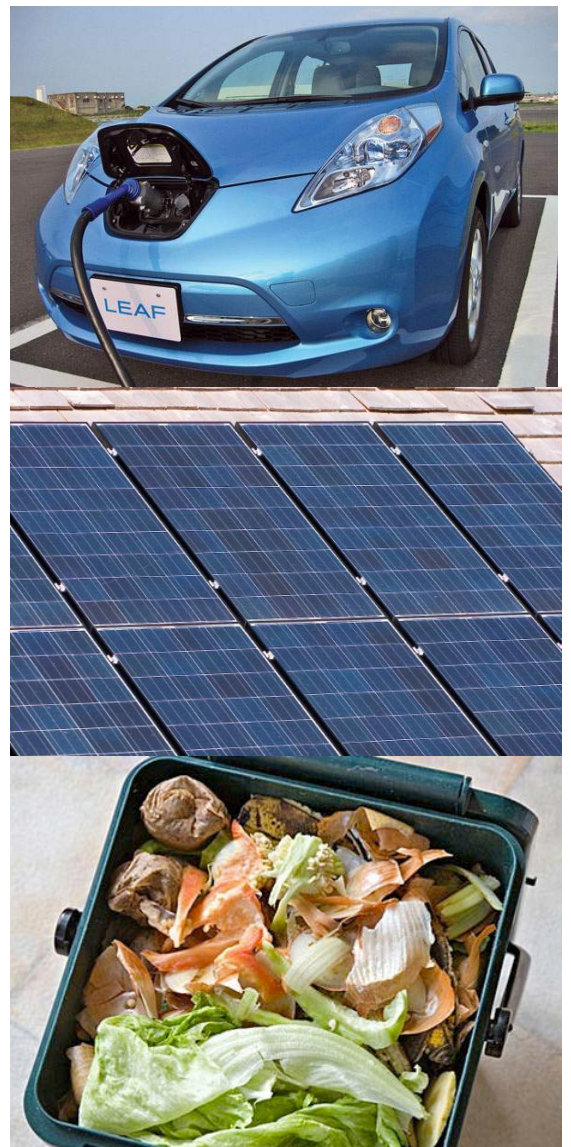


CITY OF MILL VALLEY

COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY FOR YEAR 2015

December 2017

Prepared by the
Marin Climate & Energy Partnership



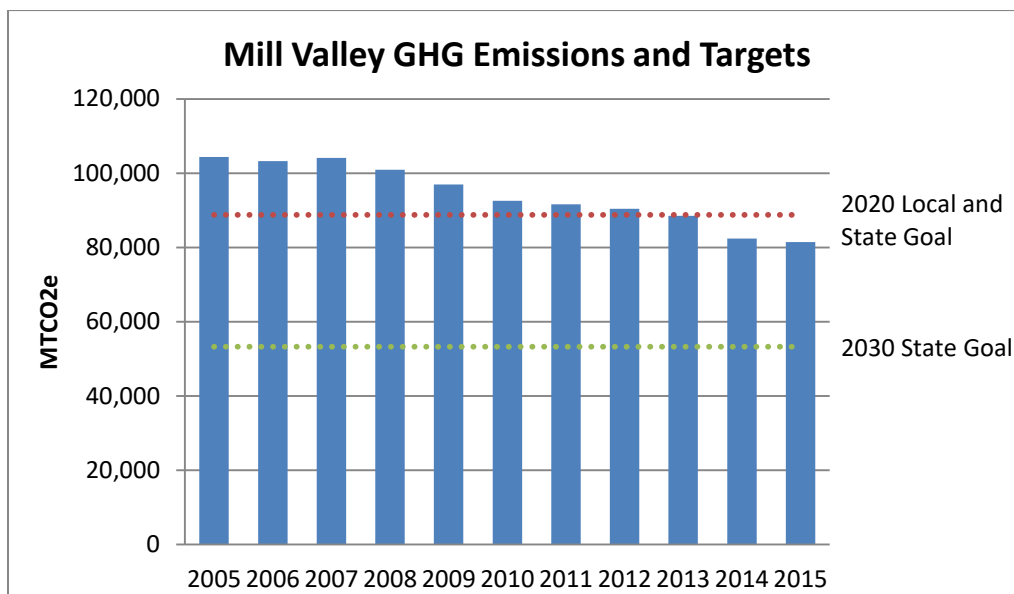
The Takeaway

Mill Valley's greenhouse gas emissions dropped 22% between 2005 and 2015, meaning the City has met local and statewide reduction goals for 2020. The largest reductions were due to decreases in electricity and natural gas use and emissions. Although Mill Valley has met its target to reduce emissions 15% by 2020, the State has enacted a longer-term goal to reduce emissions another 40% by 2030.

Introduction

Mill Valley 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 2020.

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 has achieved this target, with emissions 22% below baseline emissions in 2015. Emissions dropped from about 104,410 metric tons carbon dioxide equivalent (MTCO₂e) in 2005 to 81,450 MTCO₂e 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 Mill Valley 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.

- The **Residential** and **Commercial** sectors represent emissions generated from the use of electricity, natural gas and propane in Mill Valley homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from passenger vehicle trips originating and ending in Mill Valley, 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 Transportation sector (-12,109 MTCO₂e), which accounts for 52% 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: Mill Valley Greenhouse Gas Emissions by Sector, 2005-2015

Year	Residential	Commercial	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	28,144	13,514	56,800	3,804	606	412	1,134	104,413	
2006	28,067	13,540	55,766	3,814	574	413	1,110	103,285	-1%
2007	30,761	15,308	52,383	3,473	668	413	1,086	104,092	0%
2008	30,707	14,618	50,428	2,990	708	417	1,061	100,929	-3%
2009	30,203	13,509	48,639	2,579	606	421	1,037	96,993	-7%
2010	27,464	12,273	48,403	2,553	408	426	1,012	92,539	-11%
2011	27,814	11,703	47,829	2,499	340	430	1,010	91,625	-12%
2012	27,103	12,146	46,707	2,617	351	438	1,010	90,372	-13%

2013	25,656	11,935	46,413	2,670	375	443	1,002	88,494	-15%
2014	21,368	11,207	45,376	2,700	300	449	991	82,391	-21%
2015	21,569	10,660	44,691	2,815	269	453	992	81,448	-22%
Change from 2005	-6,575	-2,854	-12,109	-989	-337	41	-142	-22,965	
% Change from 2005	-23%	-21%	-21%	-26%	-56%	10%	-13%	-22%	

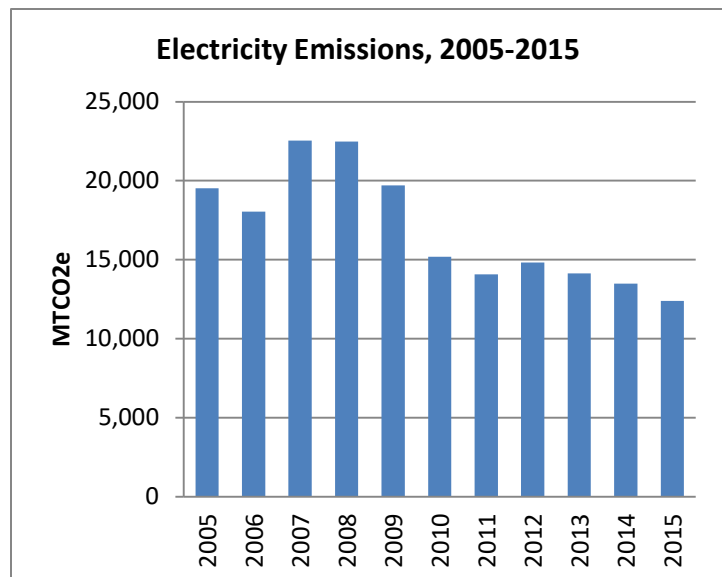
Major Emissions Sources

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 Mill Valley decreased about 2% between 2014 and 2015, and has dropped 10% since 2005, from about 71.6 million kWh in 2005 to 64.2 million kWh in 2015. The Residential sector, which uses 54% of all electricity in Mill Valley, has reduced its electricity use 11% since 2005. Electricity use decreased 9% in the Commercial sector over the same period. Electricity reductions in the Residential sector 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.

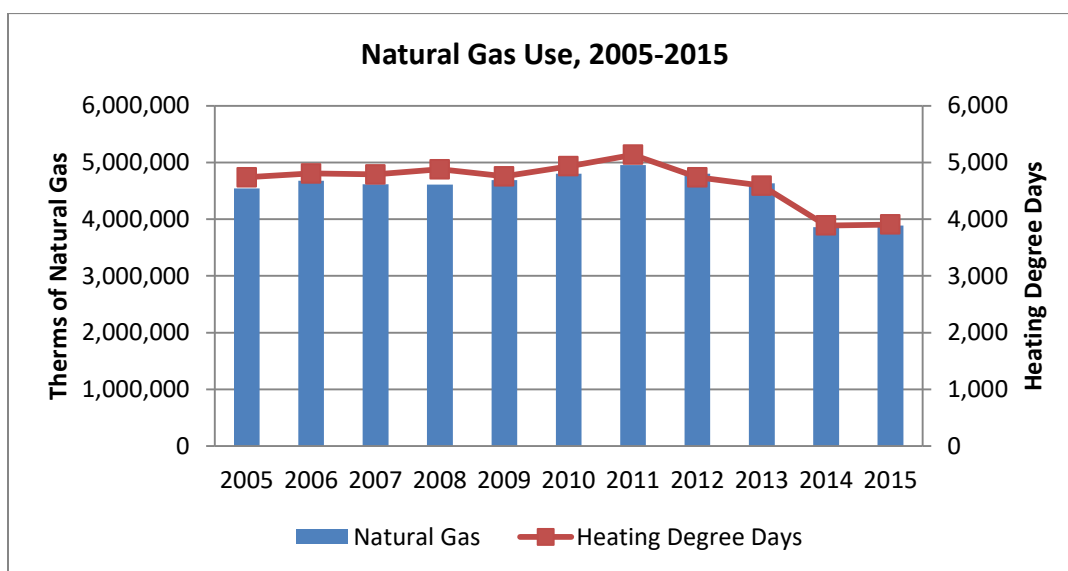
Electricity-related greenhouse gas emissions in the Residential and Commercial sectors decreased 4% between 2014 and 2015. Emissions dropped 35% since 2005. This is primarily due to the lower carbon intensity of electricity. PG&E electricity has been steadily increasing the amount of renewable energy 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 Mill Valley 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 69% of the electricity load in Mill Valley. In 2015, about 1.9% of MCE electricity purchased by Mill Valley 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 Mill Valley to fluctuate from year to year, from a high of 4.96 million therms in 2011 to a low of 3.86 million therms in 2014. Emissions from natural gas consumption increased 1% between 2014 and 2015, most likely due to colder temperatures. The chart below compares natural gas usage in Mill Valley 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 55% of the Mill Valley’s emissions in 2015. Vehicle miles travelled have decreased approximately 19% since 2005. Transportation emissions have decreased 21% due 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.

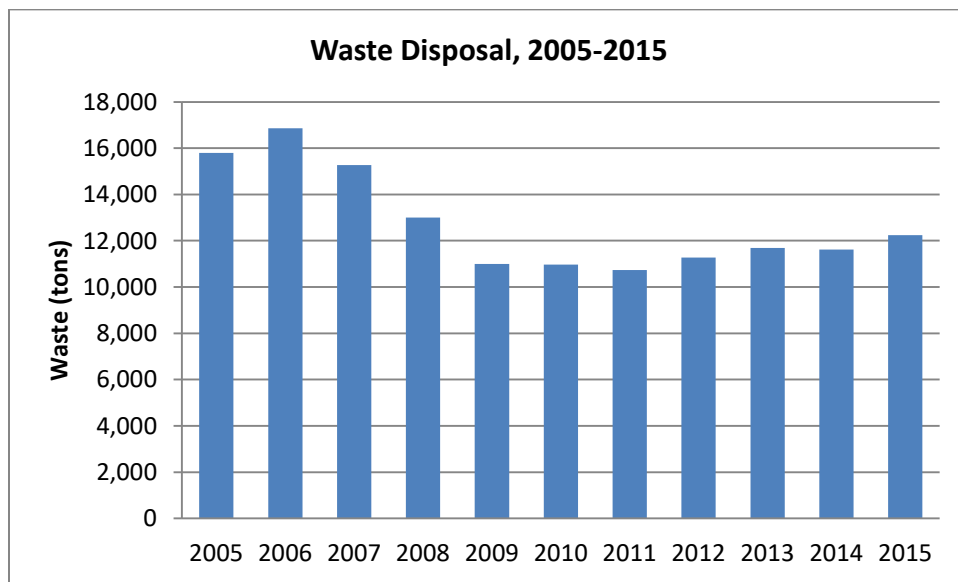
While it is difficult to pinpoint exactly how each land use and transportation policy affects emissions, the City has undertaken many efforts to reduce emissions from transportation to encourage workforce

housing and make it easier for residents to use alternative modes of transportation, including bicycling, walking and public transportation.

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 26% below 2005 levels in 2015.

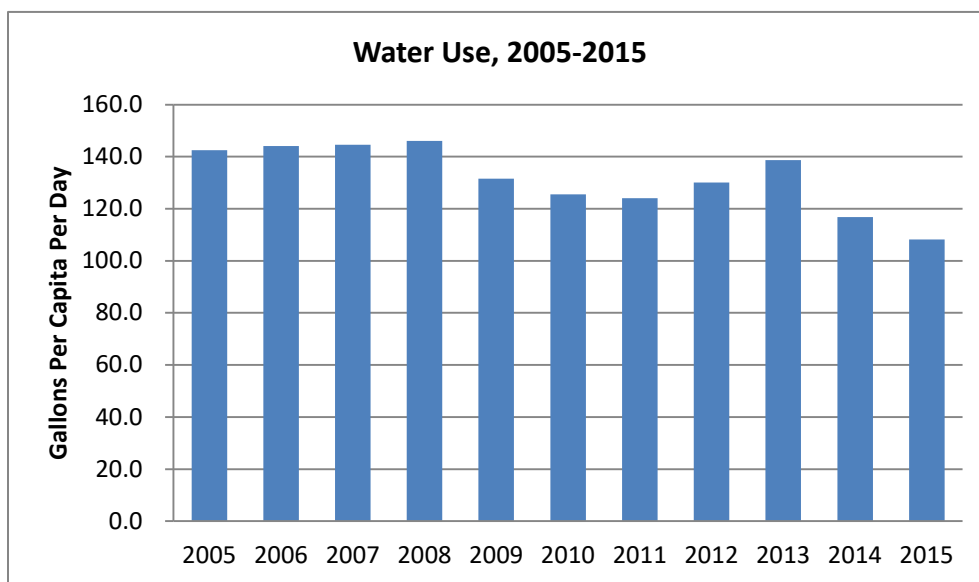
The decrease in emissions from waste disposal is a result of the community's and County's goals to move toward Zero Waste by 2025. Ongoing waste diversion programs include a residential food waste composting program and mandatory food waste recycling service for large commercial producers.



Source: CalRecycle

Water Use and GHG Emissions

Water use declined 7% between 2014 and 2015, and 16% 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 Mill Valley, dropped 56% 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.
- 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 Mill Valley households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions.
- Participated in countywide sea level rise adaptation planning.

- Participation in the League of Cities, BEACON program that recognizes and celebrates achievements of cities and counties that reduce greenhouse gas emissions and save energy. Most recently (2016), the City has won an award for a 5% reduction in energy reduction through such efforts and retrofitting City lights with LED lighting.

Summary, Priorities and Next Steps

Mill Valley has made significant progress in reducing GHG emissions since 2005 and has met the local and statewide 2020 reduction target. However, the City will need to continue to implement policies and programs that further reduce emissions to achieve statewide targets for 2030. Priority programs include:

- Completing construction of Miller Avenue multi-modal features that will create a pedestrian and bicycle connection from Downtown to the County's Bay Trail
- Green building update
- Commercial composting, and
- Further coordination with Transportation Authority of Marin and MCEP members to address creative incentives for reducing vehicular travel.

Staff is also working with MCEP members to address new targets for 2030 and to revise the City's Climate Action Plan, as needed.