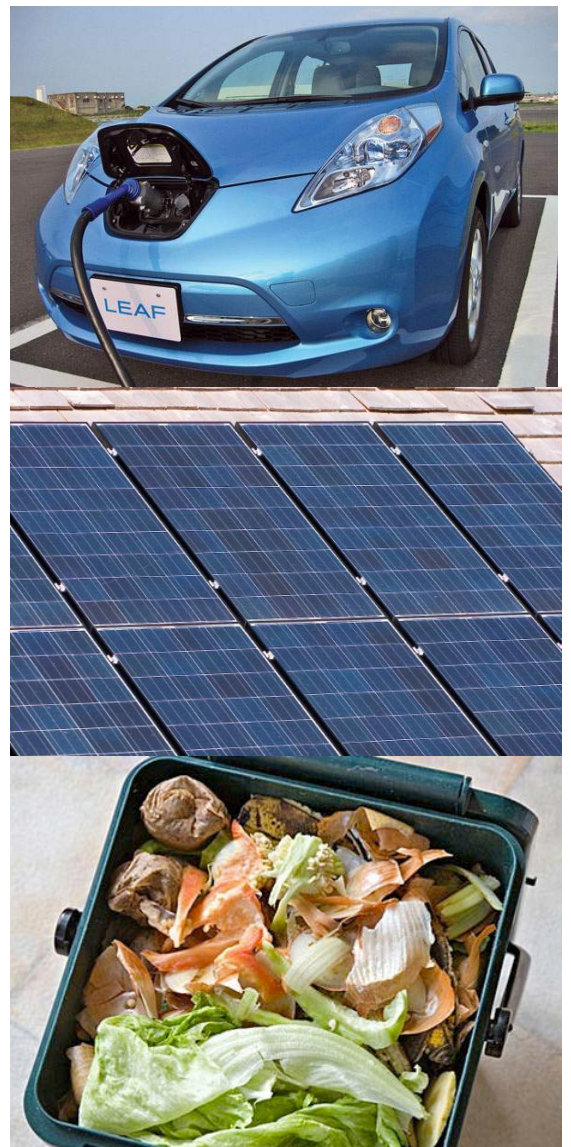


TOWN OF TIBURON

COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY FOR YEAR 2015

November 2017

Prepared by the
Marin Climate & Energy Partnership



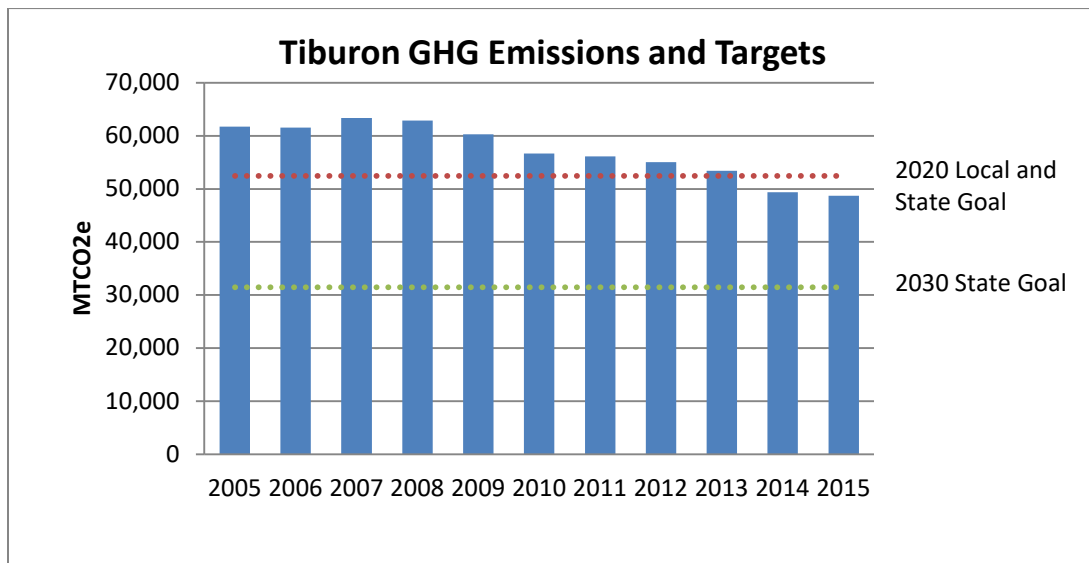
The Takeaway

Tiburon's greenhouse gas emissions dropped 21% between 2005 and 2015, meaning the Town has met local and statewide reduction goals for 2020. The largest reductions were due to decreases in electricity and natural gas use emissions as well as transportation emissions. Although Tiburon has met the local and statewide target to reduce emissions 15% by 2020, the State has enacted a longer-term goal to reduce emissions another 40% by 2030.

Introduction

Tiburon publishes annual community greenhouse gas (GHG) emissions estimates through the Marin Climate & Energy Partnership (MCEP). Annual inventories 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.

This report reviews emissions generated from the community from 2005 through 2015 (the most recent year data is available). The inventory shows that the Town has met this target, with emissions 21% below baseline emissions in 2015. Emissions dropped from about 61,720 metric tons carbon dioxide equivalent (MTCO₂e) in 2005 to 48,710 MTCO₂e in 2015. The emissions trend and targets are shown below.



Recognizing the need for a collaborative approach to greenhouse gas reductions, Town and county leaders launched the Marin Climate and Energy Partnership (MCEP) in 2007. The Town of Tiburon 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 Tiburon homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from passenger vehicle trips originating and ending in Tiburon, 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 (-5,958 MTCO₂e), which accounts for 46% 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: Tiburon Greenhouse Gas Emissions by Sector, 2005-2015

Year	Residential	Commercial	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	22,113	5,496	30,335	2,457	392	190	733	61,716	
2006	22,042	5,298	30,499	2,471	372	188	717	61,587	0%
2007	23,930	6,176	29,702	2,255	434	205	701	63,403	3%
2008	24,298	6,226	29,086	1,937	459	207	685	62,899	2%
2009	23,403	5,416	28,587	1,665	391	197	668	60,327	-2%
2010	21,767	4,642	27,525	1,645	263	189	652	56,684	-8%
2011	21,243	4,536	27,693	1,605	219	186	649	56,130	-9%
2012	20,211	4,740	27,350	1,676	225	194	647	55,043	-11%
2013	19,288	4,554	26,778	1,709	240	197	642	53,408	-13%
2014	16,144	4,413	26,104	1,728	192	194	634	49,408	-20%

2015	16,155	4,180	25,572	1,802	172	190	635	48,707	-21%
Change from 2005	-5,958	-1,316	-4,763	-655	-220	0	-98	-13,009	
% Change from 2005	-27%	-24%	-16%	-27%	-56%	0%	-13%	-21%	

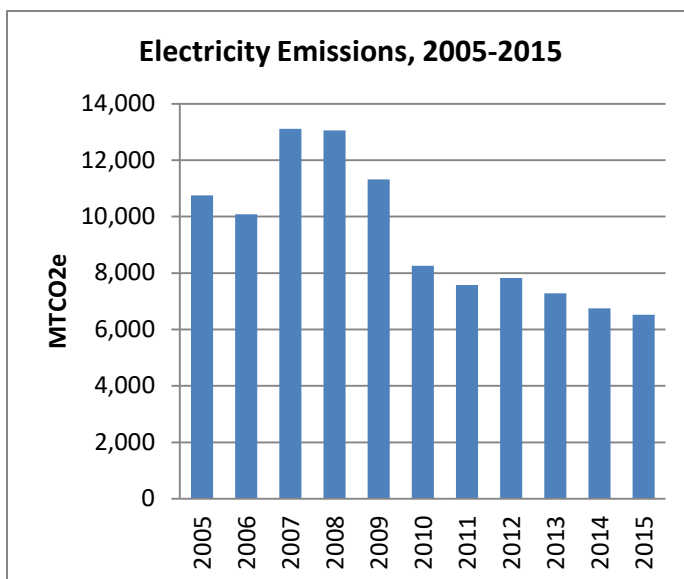
Major Emissions Sources

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 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 Tiburon decreased about 1% between 2014 and 2015, and has dropped 13% since 2005, from about 45.5 million kWh in 2005 to 39.7 million kWh in 2015. The Residential sector, which uses 70% of all electricity in Tiburon, has reduced its electricity use 14% since 2005. Electricity use decreased 11% 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.

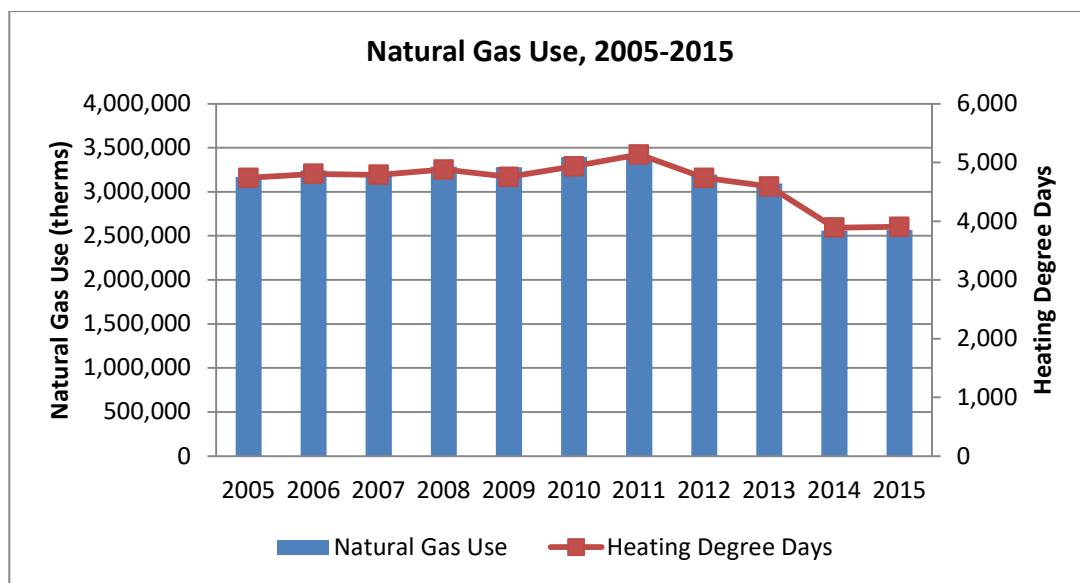
Electricity-related greenhouse gas emissions in the Residential and Commercial sectors decreased 3% between 2014 and 2015. Emissions dropped 39% since 2005. This is primarily due to the lower carbon intensity of electricity. PG&E electricity has been steadily increasing the amount of renewable energy 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 Tiburon 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 74% of the electricity load in Tiburon. In 2015, about 0.7% of MCE electricity purchased by Tiburon customers was Deep Green. In October 2017, the Town switched from MCE Light Green electricity to MCE Deep Green electricity.



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 Tiburon to fluctuate from year to year, from a high of 3.40 million therms in 2011 to a low of 2.56 million therms in 2014. Emissions from natural gas consumption were flat between 2014 and 2015, and were 19% below 2005 levels.

The chart below compares natural gas usage in Tiburon 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

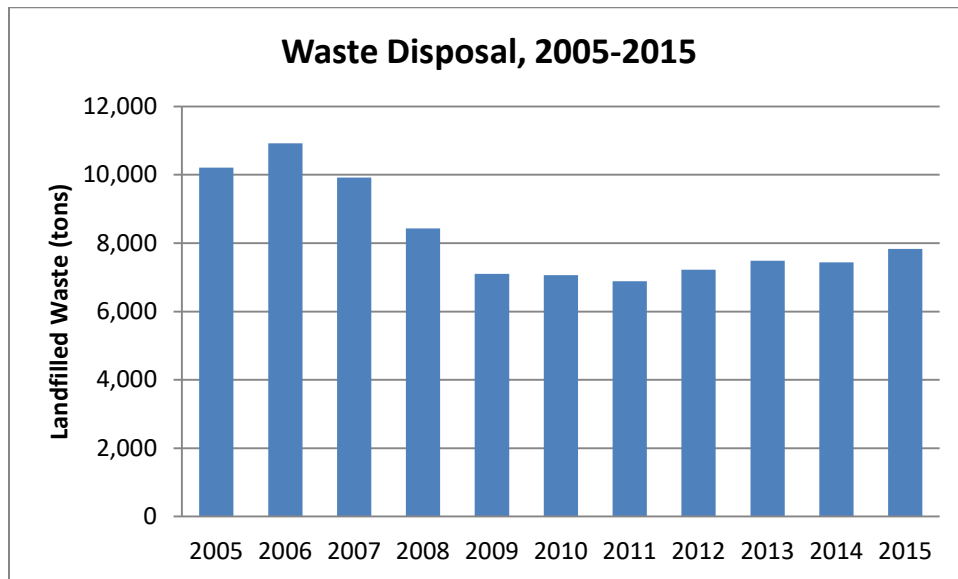
Transportation activities accounted for approximately 52% of the Tiburon’s emissions in 2015. Vehicle miles travelled have decreased approximately 13% since 2005, and transportation emissions have decreased 16% due, in part, to more fuel-efficient and alternatively fueled cars. Marin County continues 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 Town 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, including continued participation and support for the Yellow School Bus challenge with the Reed Union School district, which helps reduced school related congested on Tiburon Boulevard.

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 27% below 2005 levels in 2015.

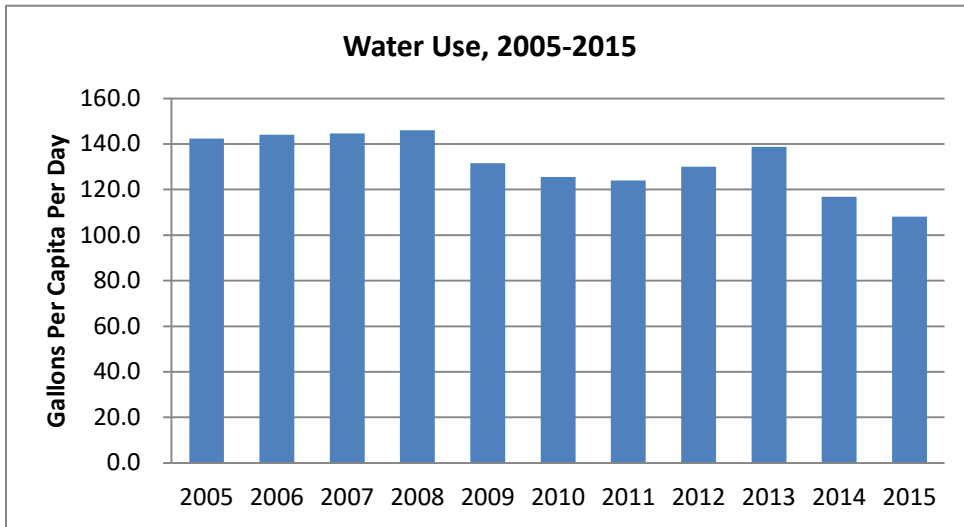
The decrease in emissions from waste disposal is a result of the community’s and County’s goals to move toward Zero Waste by 2025. Ongoing waste diversion programs include a residential food waste composting program and mandatory food waste recycling for large commercial producers. Local actions include promoting the Zero Waste Marin goals, informing residents of different ways to reduce waste in the Town, and adding additional recycle receptacles in parks, open space, and downtown.



Source: CalRecycle

Water Use and GHG Emissions

Water use declined 7% between 2014 and 2015, and 17% 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 Tiburon, 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 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 lectures, workshops and activities.
- Participated in and supported the Marin Climate and Energy Partnership.
- Partnered with Resilient Neighborhoods to enroll Tiburon households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions.

Summary and Next Steps

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