

# CITY OF NOVATO

## COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY FOR YEAR 2015

November 2017

Prepared by the  
Marin Climate & Energy Partnership



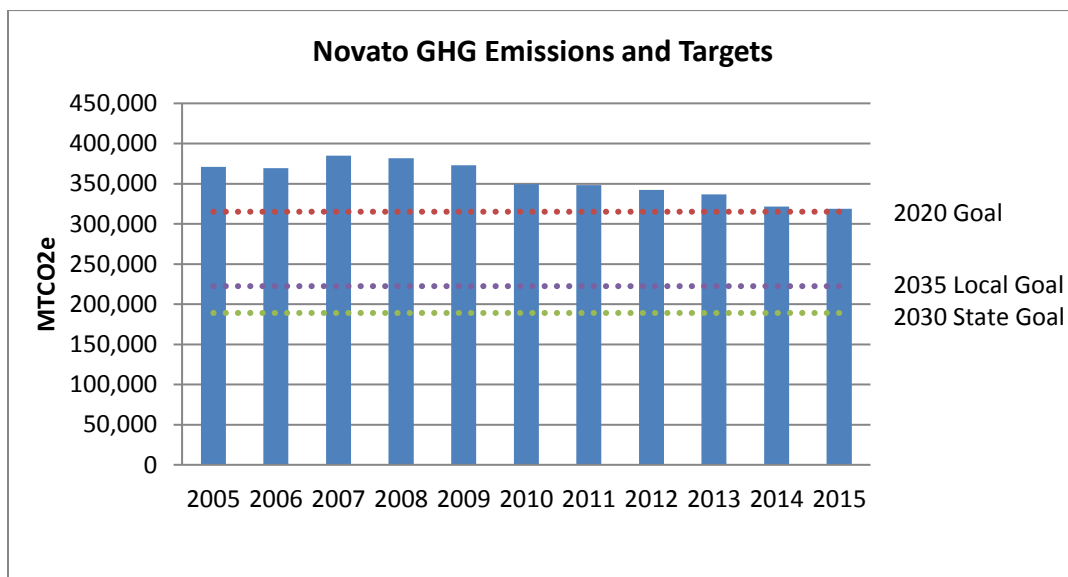
## The Takeaway

Novato's greenhouse gas emissions dropped 14% between 2005 and 2015, meaning the City is making progress towards meeting the local goal and statewide reduction goal for 2020. The largest reductions were due to decreases in electricity and natural gas use and emissions. Novato is currently integrating its Climate Change Action Plan into its General Plan Update in order to develop policies and programs that will meet the State's goal to reduce emissions 40% below 1990 levels by 2030.

## Introduction

Novato 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 and 40% below baseline emissions by 2035.

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 emissions 14% below baseline emissions in 2015. Emissions dropped from about 370,740 metric tons carbon dioxide equivalent (MTCO<sub>2</sub>e) in 2005 to 318,910 MTCO<sub>2</sub>e 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 Novato 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.

- The **Residential** and **Commercial** sectors represent emissions generated from the use of electricity, natural gas, and propane in Novato homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from passenger vehicle trips originating and ending in Novato, as well as a share of medium and heavy-duty vehicles and buses travelling on Marin County roads. 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 **Off-Road** sector represents emissions from off-road vehicles and equipment used for construction and lawn and garden maintenance.

**Table 1** shows how emissions in these sectors have changed since 2005. The greatest reductions have occurred in the Residential sector (-20,306 MTCO<sub>2</sub>e), which accounts for 41% of total reductions. There have also been significant declines in other sectors, in particular the Transportation sector (-15,956 MTCO<sub>2</sub>e). The likely reasons for the largest emissions decreases are described in further detail in the remainder of this report.

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

Year	Residential	Commercial	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	84,286	56,967	202,043	14,048	3,062	6,145	4,190	370,740	0%
2006	85,129	55,153	201,648	14,151	3,025	6,194	4,107	369,407	0%
2007	93,946	67,756	197,528	13,136	1,985	6,318	4,025	384,694	4%
2008	94,594	66,746	196,310	11,284	2,411	6,364	3,943	381,652	3%
2009	91,735	65,012	193,601	9,690	2,594	6,392	3,861	372,885	1%
2010	83,887	56,660	189,149	9,530	1,004	5,558	3,778	349,567	-6%
2011	84,264	55,023	189,535	9,292	666	5,587	3,754	348,121	-6%
2012	79,192	56,186	187,157	9,645	677	5,643	3,723	342,223	-8%
2013	78,122	54,866	183,557	9,843	731	5,710	3,695	336,525	-9%
2014	63,980	51,448	186,086	9,947	817	5,784	3,650	321,713	-13%

<b>2015</b>	64,901	50,681	183,007	10,348	513	5,814	3,648	318,911	-14%
<b>Change from 2005</b>	-20,306	-5,518	-15,956	-4,101	-2,244	-361	-540	-49,027	
<b>% Change from 2005</b>	-23%	-11%	-9%	-26%	-83%	-5%	-13%	-14%	

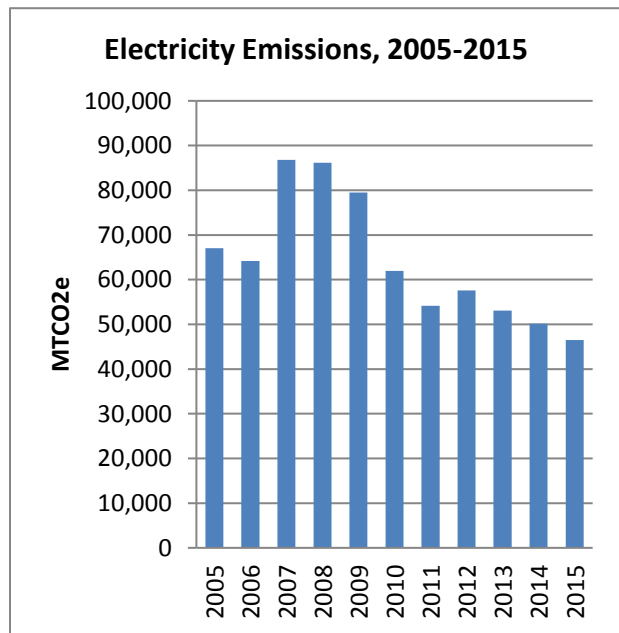
## Major Emissions Sources

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 Novato decreased about 2% between 2014 and 2015, and has dropped 3% since 2005, from about 285 million kWh in 2005 to 276 million kWh in 2015. The Residential sector, which uses 44% of all electricity in Novato, has reduced its electricity use 6% since 2005. Electricity use remained flat 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 solar systems (i.e. rooftop, ground-mount and carport) have been growing at about 20% annually. Distributed solar currently generates about 4% of the County’s electricity needs.

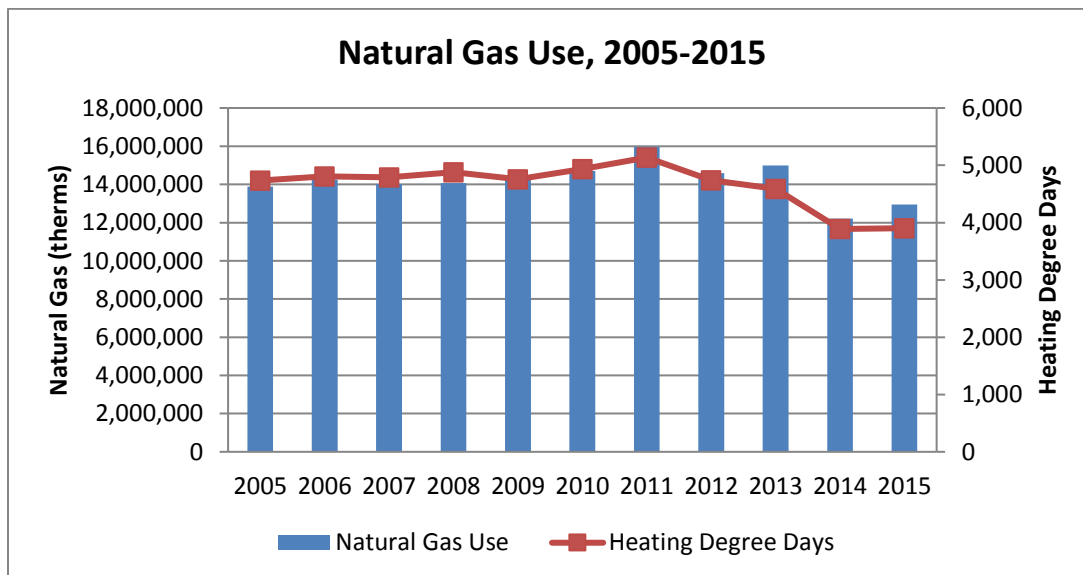
Electricity-related greenhouse gas emissions in the Residential and Commercial sectors decreased 7% between 2014 and 2015 and emissions have dropped 31% since 2005. This is primarily due to the lower carbon intensity of electricity. PG&E has been steadily increasing the amount of renewable energy in its electricity mix which was 17% less carbon intensive in 2015 than it was in 2005. MCE Clean Energy (MCE), which began providing electricity to Novato customers in 2012, 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 66% of the electricity load in Novato. In 2015, about 0.4% of MCE electricity purchased by Novato 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 Novato to fluctuate from year to year, from a high of 16.0 million therms in 2011 to a low of 12.2 million therms in 2014. Emissions from natural gas consumption increased 6% between 2014 and 2015, most likely due to colder temperatures. The chart below compares natural gas usage in Novato 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 57% of the Novato's emissions in 2015. Vehicle miles travelled have decreased approximately 7% since 2005. Transportation emissions have decreased 9% 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 1,000 residents. ZEVs include battery electric cars, plug-in hybrid electric cars, hydrogen fuel cell cars, and zero-emission motorcycles.

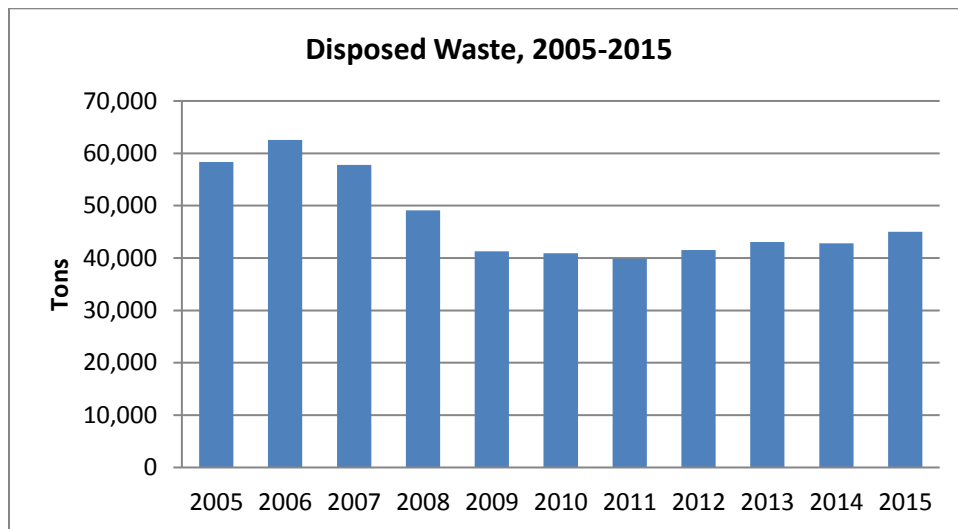
While it is difficult to pinpoint exactly how each land use and transportation policy affects emissions, the City has undertaken many efforts to reduce emissions from transportation to encourage workforce housing and make it easier for residents to use alternative modes of transportation, including bicycling,

walking, and public transportation. The City has undertaken many efforts to reduce emissions from transportation, including providing free electricity at 6 municipal EV charging stations with a combined total of 17 charging ports.

### 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.

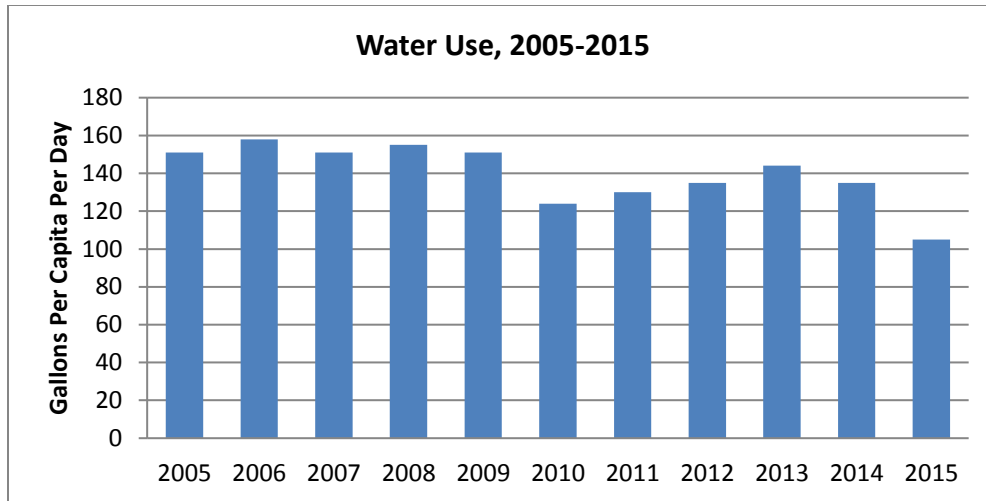
The decrease in emissions from waste disposal is most likely a result of community and County goals to move toward Zero Waste. Ongoing waste diversion programs include a residential food waste composting program and mandatory food waste recycling for large commercial producers.



Source: CalRecycle

### Water Use and GHG Emissions

Water use declined nearly 22% between 2014 and 2015, and 24% since 2005. Emissions, which are based on an estimate of energy used to pump, treat, and convey water to users in Novato, dropped 83% between 2005 and 2015 due to the lower carbon intensity of electricity. The Sonoma County Water Agency, which supplies approximately 80% of Novato’s water, uses renewable and carbon-free sources for all of its electricity needs.



Source: North Marin Water District

The North Marin Municipal Water District (NMWD) 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, water-efficient landscapes, graywater systems, and rain barrels. NMWD provides free home and landscape water-use evaluations.

### Outreach and Coordination

In addition to the programs and actions described above, the City pursues a range of outreach activities and participates in several multi-agency efforts, including:

- Utilizing the City’s newsletter, social media, and press to promote sustainability efforts.
- Participating in and supporting the Marin Climate and Energy Partnership.
- Partnering with Resilient Neighborhoods to enroll Novato households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions.

### Summary and Next Steps

Novato 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 statewide targets for 2030.