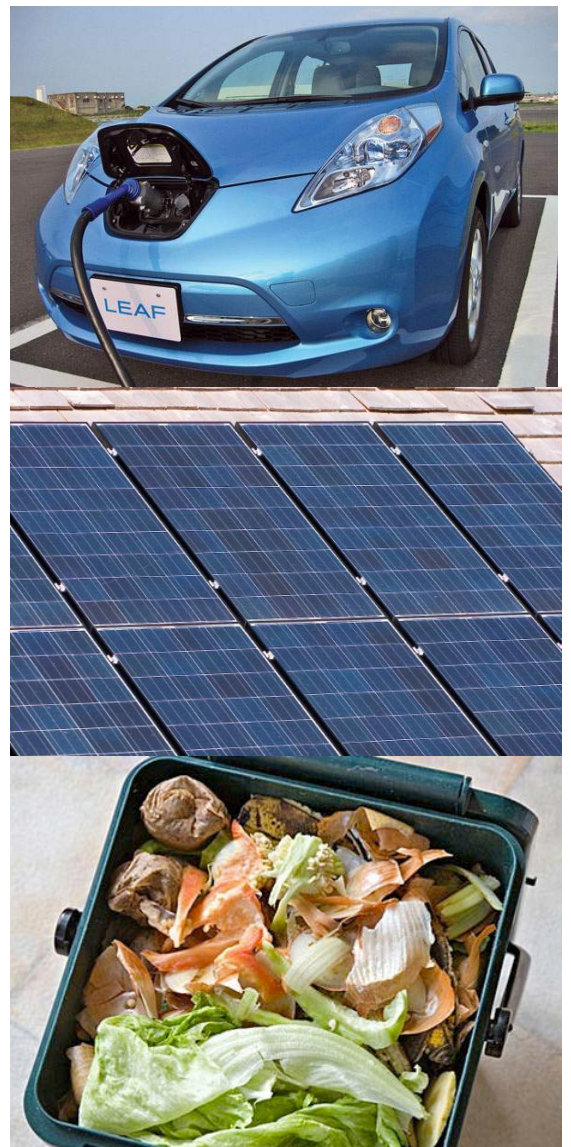


# CITY OF LARKSPUR

## COMMUNITY GREENHOUSE GAS EMISSIONS INVENTORY FOR YEAR 2015

November 2017

Prepared by the  
Marin Climate & Energy Partnership



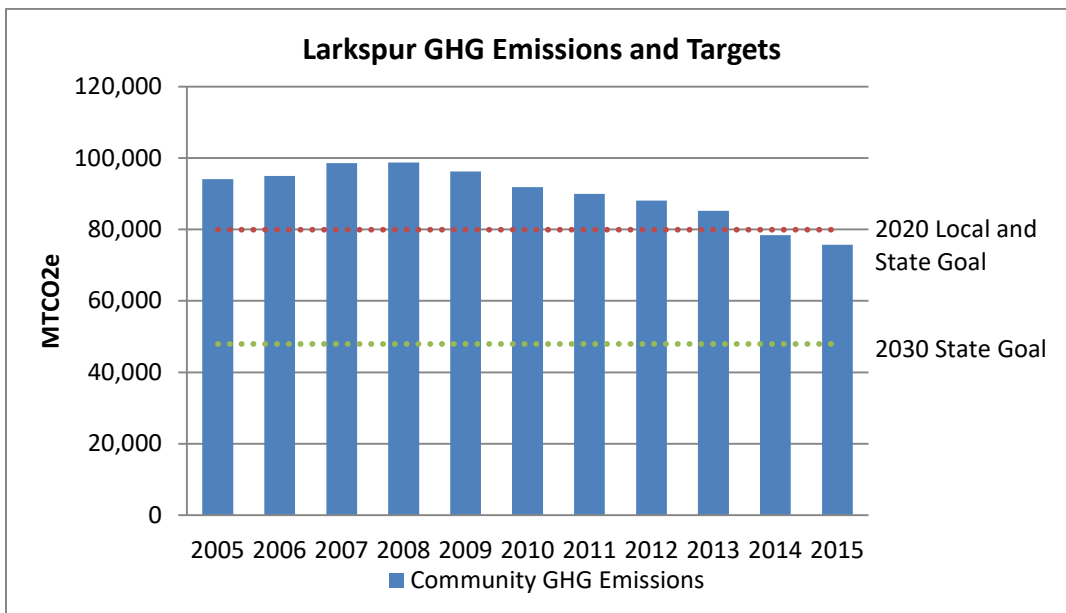
## The Takeaway

Larkspur's greenhouse gas emissions dropped 19% 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 Larkspur 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

Larkspur 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 19% below baseline emissions in 2015. Emissions dropped from about 94,050 metric tons carbon dioxide equivalent (MTCO<sub>2</sub>e) in 2005 to 75,720 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 Larkspur 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 Larkspur homes and commercial and governmental buildings and facilities.
- The **Transportation** sector includes tailpipe emissions from passenger vehicle trips originating and ending in Larkspur, 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 (-6,133 MTCO<sub>2</sub>e), which accounts for one-third 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: Larkspur Greenhouse Gas Emissions by Sector, 2005-2015**

Year	Residential	Commercial	Transportation	Waste	Water	Wastewater	Off-Road	Total	% Change from 2005
2005	23,538	18,302	46,904	3,309	527	482	987	94,049	
2006	23,357	17,627	48,754	3,307	498	471	963	94,977	1%
2007	25,420	18,831	49,281	3,006	579	536	939	98,593	5%
2008	25,871	18,621	49,631	2,581	611	544	916	98,775	5%
2009	25,071	17,293	49,777	2,215	520	501	892	96,269	2%
2010	23,186	15,052	49,711	2,190	350	456	868	91,813	-2%
2011	22,858	14,851	48,539	2,132	290	439	861	89,971	-4%
2012	22,073	15,065	47,084	2,210	297	467	853	88,048	-6%

<b>2013</b>	21,378	14,881	45,130	2,236	314	472	839	85,251	-9%
<b>2014</b>	17,619	14,504	42,485	2,255	250	455	828	78,396	-17%
<b>2015</b>	17,768	13,326	40,771	2,353	226	443	833	75,720	-19%
<b>Change from 2005</b>	-5,769	-4,976	-6,133	-956	-301	-39	-154	-18,329	
<b>% Change from 2005</b>	-25%	-27%	-13%	-29%	-57%	-8%	-16%	-19%	

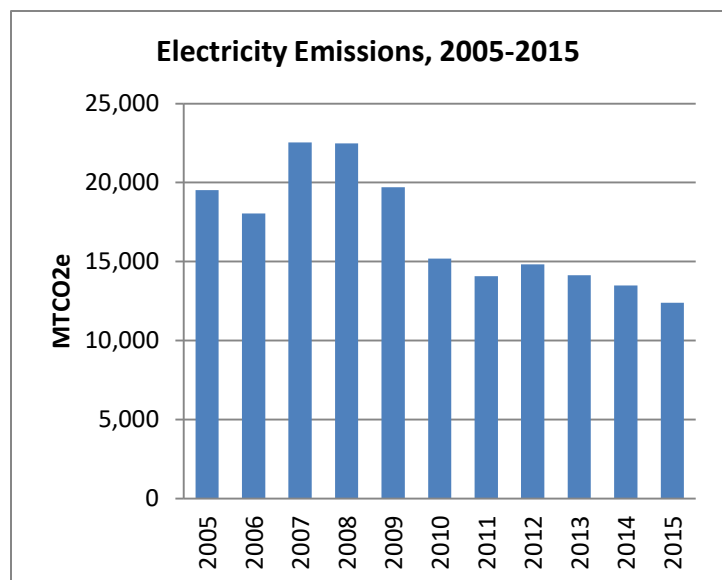
## Major Emissions Sources

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

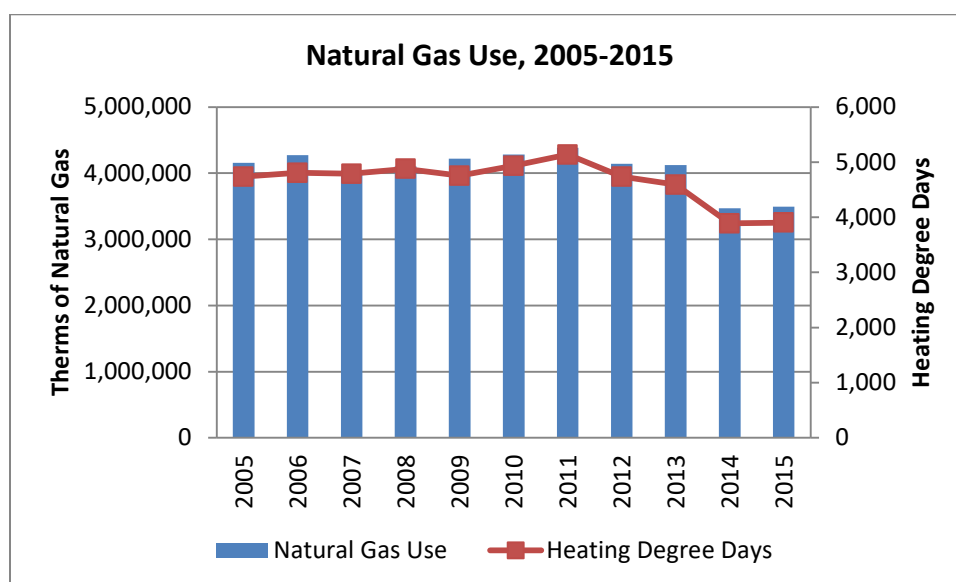
Electricity use in homes and businesses in Larkspur decreased about 1% between 2014 and 2015, and has dropped 9% since 2005, from about 77.2 million kWh in 2005 to 70.2 million kWh in 2015. The Residential sector, which uses 46% of all electricity in Larkspur, has reduced its electricity use 8% since 2005. Electricity use decreased 10% 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 8% between 2014 and 2015. Emissions dropped a 36% 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 Larkspur 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 76% of the electricity load in Larkspur. In 2015, about 10.2% of MCE electricity purchased by Larkspur 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 Larkspur to fluctuate from year to year, from a high of 4.38 million therms in 2011 to a low of 3.47 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 Larkspur 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. The City encourages energy efficiency retrofits and has enabled PACE providers to offer property owners a way to finance projects as an assessment on their tax bills.



Source (heating degree days): U.S. Department of Commerce, National Climatic Data Center

## Transportation and GHG Emissions

Transportation activities accounted for approximately 54% of the Larkspur's emissions in 2015. Vehicle miles travelled have decreased approximately 3% since 2005, while transportation emissions have decreased 13% 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. These include:

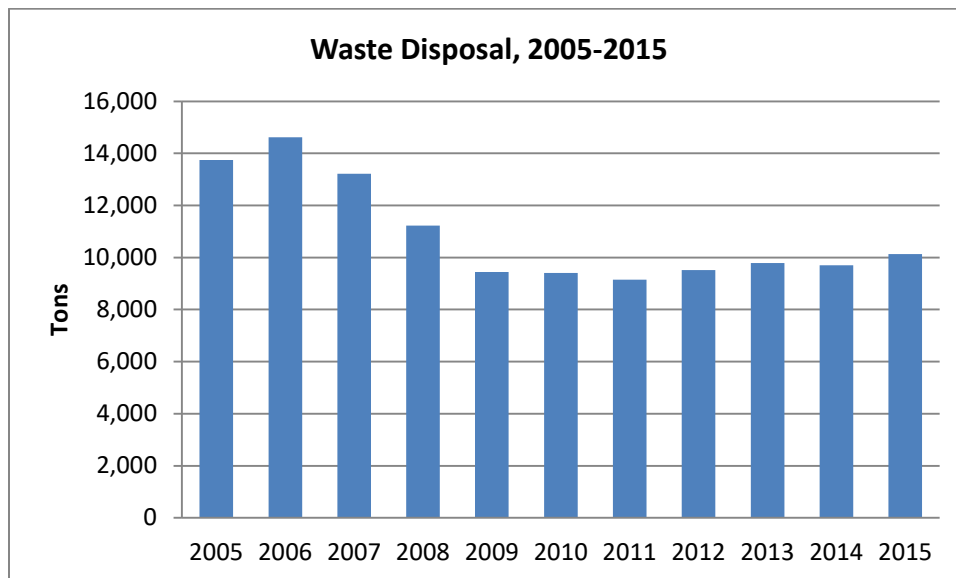
- Installed three electric vehicle charging stations for public use;
- Pursued grants for enhancement and expansion of active transportation infrastructure including bike paths and sidewalks (Safe Pathways to Schools, Transportation Development Act);
- Conditioned private projects to include construction of active transportation infrastructure (Rose Lane); and
- Supported TAM with development of the North-South Greenway bike and pedestrian pathway.

### 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 29% 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 countywide waste diversion programs include a residential food waste composting program and mandatory food waste recycling services for large commercial producers. [Larkspur participates in the curbside collection of food scraps and green waste through Marin Sanitary Service](#) Local actions include:

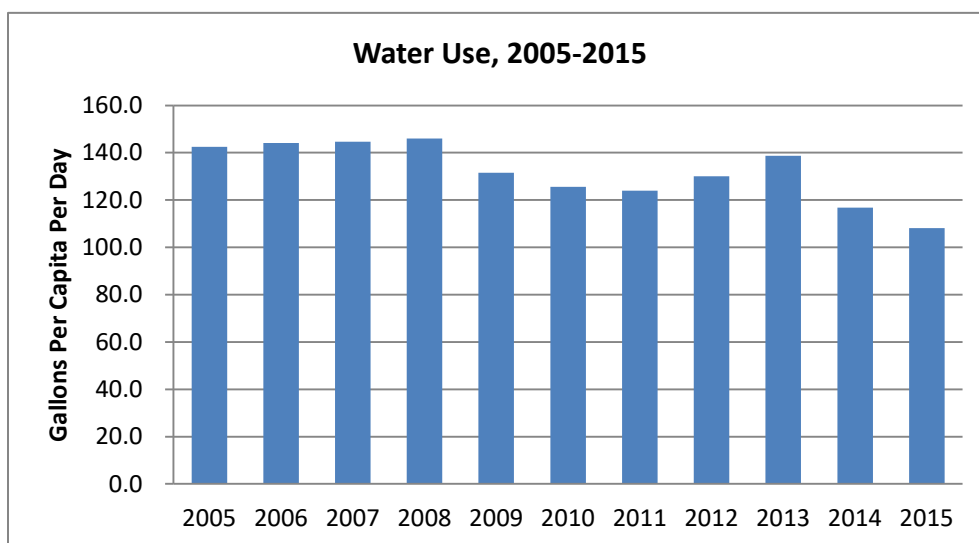
- Adopted a Zero Waste Goal in 2012 (Resolution 15/12)
- Adopted a Construction and Demolition Debris Ordinance (LMC Chapter 15.26, 2012)
- Adopted a Plastic Bag Ordinance (LMC Chapter 6.18, 2014)



Source: CalRecycle

## Water Use and GHG Emissions

Water use declined 6% between 2014 and 2015, and 19% 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 Larkspur, dropped 57% 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. The City helps enforce MMWD's water-efficient landscaping requirements through coordinated review of applicable planning projects and building permits.

## 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 events and activities.
- Participated in and supported the Marin Climate and Energy Partnership.
- Partnered with Resilient Neighborhoods to enroll Larkspur households in a program to learn about sustainability and take actions to reduce household greenhouse gas emissions.

## Summary and Next Steps

Larkspur has made significant progress in reducing GHG emissions since 2005 and has met the local and statewide 2020 reduction target. However, to achieve statewide targets for 2030 the City will need to pursue policies and programs that further reduce emissions. Examples of such policies and programs include:

- Adoption of “Reach Codes” to standardize implementation of EV infrastructure and solar energy systems for new residential and commercial development, and in conjunction with substantial remodels where practicable.
- Promote energy efficiency retrofit programs and the use of renewable energy within the community through 100% renewable energy providers programs such as MCE “Deep Green” and PG&E’s “Solar Choice” programs.
- Installation of LED lights and light fixtures on streetlights, parking lot lights, and signal lights throughout the City.
- “Greening” City operations through further retrofitting of City facilities, installation of solar systems, replacing City fleet with alternative fuel vehicles, and implementing green purchasing policies.

The City is working with MCEP to prepare an inventory of municipal emissions and an update to the City’s Climate Action Plan to address the State’s newly adopted 2030 GHG reduction target. Climate Action Plan programs will be inserted in the Draft General Plan to establish consistency between these planning documents and fully reflect community policies and goals in regard to sustainability.