



2005-2015

Orange County





# A Decade Of Greenhouse Gas Inventories



Orange County's climate commitment began in 2005 with the Orange to Green initiative including eight goals to reduce government greenhouse gas emissions (GHGs) by 2010. In 2012, a sustainability initiative began, *Our Home for Life*, creating a plan with goals and strategies to create a healthy, prosperous and livable community for current and future generations. Within this Sustainability Plan are specific target measures for increases in energy efficiency, renewable energy sources, alternative fuel vehicles, mass transit options, increased tree canopy and safe, walkable/bikeable neighborhoods, each playing a role in reducing community GHGs and eventually meeting a target of GHG neutral (balancing the already reduced carbon emissions with an equivalent amount of carbon offset) by 2040.

## What are GHGs?

Greenhouse gases (GHGs) are compounds released into the atmosphere. Most occur naturally, as in waste decomposition, some come from livestock and agricultural practices and others from refrigerants and coolants. A majority of the man-made GHGs are created by the combustion of fossil fuels.

<p>Methane</p>  <p>(CH<sub>4</sub>)</p>	<p>Nitrous Oxide</p>  <p>(N<sub>2</sub>O)</p>	<p>Fluorinated Gases</p>  <p>(CFCs), (HFCs), (PFCs)</p>	<p>Carbon Dioxide</p>  <p>(CO<sub>2</sub>)</p>
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## Why Measure?

GHGs trap heat in the atmosphere from the sun's radiation. This natural greenhouse effect warms the Earth to make it habitable. However, when GHGs buildup in the atmosphere, it can have altering effects on the Earth's climate. Some changes in climate can impact peoples' health, the environment and even local economies. For example, although sea-level rise directly affects Florida's coastal communities, Orange County may experience ripple-effect changes as populations shift inward. Increased population will require more energy, transportation and water, and result in more waste, wastewater and potentially more GHGs. Tracking the GHGs generated from these types of activities allows us to consider opportunities for emissions reductions and lessen climate impact.

## How To Analyze?

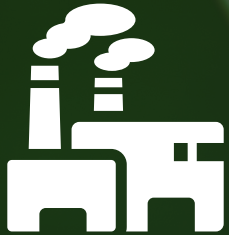
Orange County government and community emissions are tracked and inventoried in the International Council for Local Environmental Initiatives (ICLEI) ClearPath module. In measuring GHGs, tools normalize these gases into CO<sub>2</sub> equivalents. This normalization allows for comparison and contrast of the activities occurring within Orange County that are responsible for the creation of these gases.

# Orange County Community Emissions

## What do the Numbers Show?

Over the years, even with population and visitors steadily increasing and growth in the commercial and industrial sectors, GHG emissions are slightly lower in 2015 when compared to 2005.

### Total CO2 equivalent emissions



**-2.2%**



**2005** 18,694,256 metric tons

**2015** 18,286,329 metric tons

### Population



**2005** 1,002,849 residents  
46.6 million visitors

**2015** 1,288,126 residents  
60 million visitors

### Emissions in metric tons of CO2 equivalents by type

Measuring the sources of these emissions, it is evident that efficiencies in some emissions types have balanced inefficiencies in others.

## 2005

6,341,150	4,699,277	3,856,460	2,980,736	814,545	1,932	157
Mobile Transportation	Commercial	Residential	Air Transportation	Industrial	Waste	Waste Water
6,573,461	4,593,486	3,364,199	1,998,596	1,753,789	1,159	26

## 2015



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# What Does This Mean?

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**Mobile Transportation** – Despite more fuel-efficient vehicles, more alternate fuel sources such as biofuel and compressed natural gas, and an increase in registered electric vehicles, **GHGs in mobile transportation continue to rise**. With steady increases in population, decreasing mobile emissions will require improvements in mass transit options, land-use planning for workforce housing options, and incentivizing the use of alternative fuel vehicles.



**Commercial** – Although **GHGs have slightly decreased**, businesses and infrastructure continue to grow. Incorporating energy-efficient standards and building practices into the commercial sector will be necessary to effect change in these emissions. Ongoing maintenance and incorporation of new best practices will also help increase building efficiencies and reduce emissions in aging building stock.



**Residential** – Building code changes, energy-efficient appliances, energy-efficiency programs and renewable-energy incentives have helped to **decrease residential GHGs** despite an increase in number of residents and square footage of homes. It will be imperative to continually review the building codes and look for increased energy efficiencies and varied housing solutions in order to curb increases in residential GHGs as population and housing needs continue to climb.



**Air Transportation** – Changes in aircraft fuel and newer, more fuel-efficient aircraft have led to **reduced GHGs** despite the increase in number of annual visitors. Airlines are incentivized to be as fuel efficient as possible because fuel costs directly impact profitability.



**Industrial** – Growth has been positive but has resulted in **higher GHG emissions**. Plans and requirements are needed for energy efficiency and alternative-energy sources both as improvements in existing facilities and requirements for new ones.



**Waste** – Although our landfill gas reutilization system is effective at keeping **GHG emission low**, growing quantities of waste due to increased population must be matched with progress in waste reuse, repair, reduction and recycling efforts.



**Wastewater** – Although minimal impact, improved technologies along with regular maintenance and upgrades for facility anaerobic digesters have helped **reduce GHG emissions**.

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# What Does The Future Hold?

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**Solar** – Investments in residential solar energy have doubled kilowatt capacity in just the last two years and GHG emissions for 2016 and 2017 are expected to reflect reduced energy usage. **However, commercial and industrial investments in solar and solar farms for GHG offsets are a ready opportunity.**



**Recycling** – As Florida's goal for 75% recycling by 2020 approaches, expanded efforts in waste reduction and recycling are underway. Setbacks in County, residential recycling are not likely to affect overall 2016 and 2017 GHG data. **Commercial and multi-family recycling are areas where County programs need to mature and expand.**

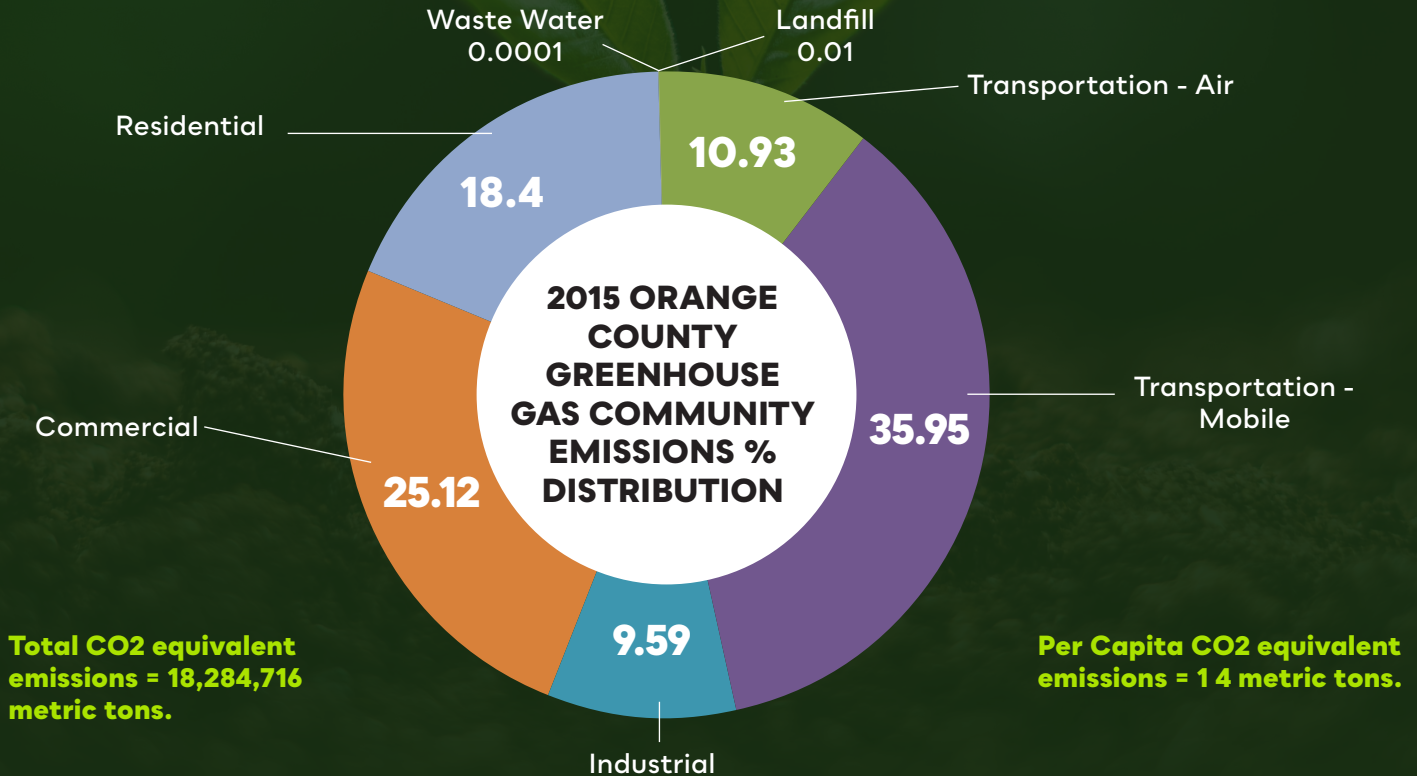


**Natural Resources** – As water conservation programs continue and Florida Friendly Landscaping practices are shared and utilized, reduced energy usage can be realized. **Understanding the benefits of trees and expanding the County tree canopy has further potential for reducing community carbon dioxide emissions and energy use.**

**Planning** – Effective land-use planning is important to mobile transportation. The new development code – *OrangeCode* – will incorporate infill and redevelopment opportunities, transit-oriented development goals, affordable workforce housing strategies and a Complete Streets Policy, all aimed at improving our land-use and mobility.



**Expanded efforts are needed to increase the availability of mass-transit opportunities, the use of alternative-fuel vehicles and more transit-oriented development** to reduce what equals **more than one-third of the GHGs emissions within the Community** – mobile transportation.



## Want to Learn More?

A more detailed version of this report on Orange County Community emissions will be available soon on the sustainability webpage, [www.ochomeforlife.net](http://www.ochomeforlife.net). It offers in-depth analysis of changes and trends throughout the 10 years of GHG inventories along with stories of successful programs and technologies to reduce emissions.

Additionally, data for Orange County Government emissions are available on the sustainability webpage within the focus areas. Analysis of this data will be available soon.