

Appendix A.8

City of Thousand Oaks

CLIMATE ON THE MOVE

Ventura County Regional Energy Alliance



2015

2010-2012 Greenhouse Gas Inventories
2020 Forecasts
And Reduction Target Options

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1 Introduction



The inventory described in detail in this chapter is the first step to reducing greenhouse gas (GHG) emissions. These efforts to reduce emissions are consistent with State policy as well as current regulation from Assembly Bill (AB) 32 which directs the State of California to reduce GHG emissions to 1990 levels by 2020. The City of Thousand Oaks, incorporated in 1964, is nestled against the Santa Monica Mountains and boasts more than 15,000 acres of natural publicly owned open space located within the City's boundaries. The City is 56 square miles and has a population of approximately 129,000 residents according to the California Department of Finance.¹

The majority of Thousand Oaks' GHG emissions are produced through the burning of fossil fuels. The City's Community GHG Inventory includes GHG emissions from direct and indirect sources. A direct emission source is defined as an on-site source of emissions such as the combustion of fossil fuel in a vehicle engine or burning of natural gas for heating facilities. An indirect emission source is defined as an emissions source generated offsite, such as electricity generated by power plants that is used in facility operations.

GHG emissions were inventoried for sources within the City of Thousand Oaks' geographical boundaries (i.e. city limits) for calendar years 2010 through 2012. The City's Community GHG Inventory includes GHG emissions from residential, commercial, industrial, transportation, and waste sectors. The government GHG inventory is described separately, and is a subset of the Community GHG Inventory. The government analysis divides emissions among buildings, vehicle fleet, streetlights, water deliveries, wastewater/sewage, and waste sectors. A description of the methodologies used to estimate GHG emissions is provided in Appendix B, Methodological Considerations.

Government GHG emissions for the City of Thousand Oaks were inventoried for the years 2010 through 2012. The City has not established a baseline year for its inventories.

¹ <http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/2011-20/view.php>

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Thousand Oaks' Community Inventory



The City of Thousand Oaks' Community GHG Inventory encompasses emissions from residential, commercial, and industrial activities within the city limits. Stationary combustion data was provided by Southern California Gas Company (SCG). Southern California Edison (SCE) provided electricity data.



Table 1 quantifies the contributions of each sector to total the community emissions generated during the period of 2010 through 2012. Figure 1 illustrates on average each sector's contribution to total community emissions for the three-year period. Emissions from energy used (electricity and natural gas) constitute the largest source of GHGs for the community (51%). On-road transportation associated with vehicle miles travelled on City roads (excluding State highways) was the second contributor to community emissions, accounting for about 31% of emissions each year.²

Table 1. Community GHG Emissions by Sector for the City of Thousand Oaks

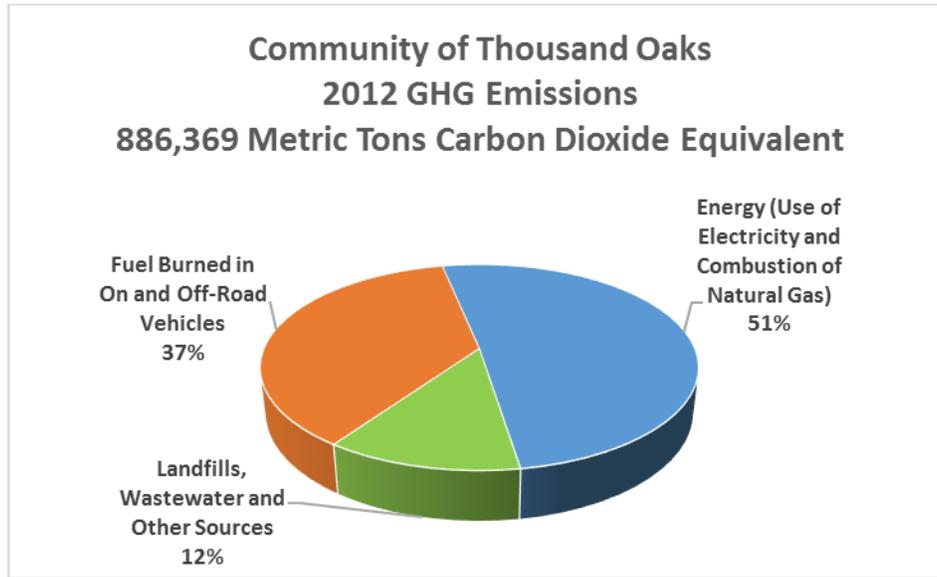
Sector	2010 (MT CO ₂ e)	2011 (MT CO ₂ e)	2012 (MT CO ₂ e)
On-Road Transportation	285,274	279,754	274,210
Non-Residential Electricity Use	174,844	176,307	177,819
Residential Natural Gas Use	134,951	133,603	123,611
Other Emissions*	101,197	102,512	108,202
Residential Electricity Use	107,358	108,042	110,680
Off-Road Vehicle Use	56,932	57,689	54,176
Non-Residential Natural Gas Use	38,495	38,226	37,673
Total	899,051	896,133	886,369

*Includes emissions from gases with high global warming potential, methane and nitrous oxide from wastewater treatment plants and landfills.

Values in this table and others may not add due to rounding.

² Data related to emissions from State highways is presented in the Regional Report, Part I of Climate on the Move.

Figure 1. 2012 Community GHG Emissions for the City of Thousand Oaks



As explained in the body of this report, emissions are categorized based on control of the process from which they were generated. Direct emissions (also referred to as Scope 1 emissions) are generated on-site or directly by the reporter, (e.g. using natural gas for heating, or burning gasoline in a vehicle), while indirect emissions (Scope 2 emissions) are generated off-site by a separate entity (e.g. purchased electricity or purchased heat). Purchased electricity is the most common form of Scope 2 emissions, and the only Scope 2 emissions type reported in the VCREA inventory.

The table below demonstrates that both Scope 1 (direct) and Scope 2 (indirect) emissions source contributions remained relatively consistent through the three-year period.

Table 2. Direct and Indirect Emissions for the City of Thousand Oaks

Scope	2010 (MT CO _{2e})	2011 (MT CO _{2e})	2012 (MT CO _{2e})
Scope 1 (Direct) emissions	616,847	611,784	597,871
Scope 2 (Indirect) emissions	282,202	284,349	288,499
Total	899,051	896,133	886,369

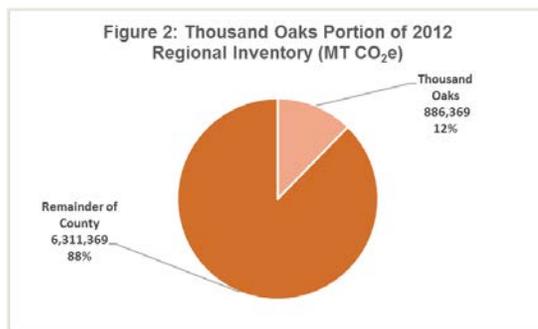
Values in this table and others may not add due to rounding.

A detailed description of the calculation methodologies used to compile the community inventory can be found in Appendix B, Methodological Considerations.

Residential and non-residential emissions sources are described in the following sections. As there is little variation between years, 2012 data is used for discussion purposes because it is the most recent.

GHG emissions in 2012 for the City of Thousand Oaks totaled 886,369 metric tons of carbon dioxide equivalent (MT CO_{2e}). Thousand Oaks is the second-largest incorporated city contributor in terms of total County emissions. Electricity, natural gas, gasoline, and

diesel consumption are the largest overall contributors to GHG emissions in the City of Thousand Oaks. As shown in Figure 2, emissions from the City of Thousand Oaks in 2012 accounted for about 12% of overall GHG emissions for Ventura County. Thousand Oaks' 2012 per capita GHG emissions are 6.96 MT CO₂e, compared to countywide per capita emissions of 6.52 MT CO₂e.



A discussion of the City of Thousand Oaks' GHG emissions for each major sector, focusing on CY 2012, is presented below.

Emissions from the Residential Sector



Residential emissions for the City of Thousand Oaks mainly result from household use of electricity and natural gas. Residential emissions were calculated from electricity and natural gas consumption data provided by SCE and SCG. Residential combustion of natural gas, primarily in home heating, resulted in the following emissions:

Table 3. Residential Emissions from Natural Gas for the City of Thousand Oaks

Year	MT CO ₂ e
2010	134,951
2011	133,603
2012	123,611

Residential use of electricity provided by SCE produced GHGs as follows:

Table 4. Residential Emissions from Electricity for the City of Thousand Oaks

Year	MT CO ₂ e
2010	107,358
2011	108,042
2012	110,680

Residential use of self-generated energy through the consumption of wood, kerosene, propane, fuel oil, individual diesel generators, and bottled natural gas could not be quantified due to lack of available data. It is expected that the GHG emissions from these sources are negligible. High GWP gases partially originate from the residential sector but are included in a separate category below.

Emissions from the Non-Residential Sector



The non-residential sector includes emissions from commercial, industrial and agricultural operations. Because utilities are required to maintain confidentiality when they provide data to the public, including partnerships, disaggregation into the individual sectors can result in skewed results. This is discussed in more detail in Part I: Regional Inventory of this report. For that reason, the three non-residential sectors are combined and reported as one. The reader should be aware that there may still be under-reporting of non-residential emissions because utilities are required to redact specific facility data to protect confidentiality. Additional information on the implications of confidentiality and data reporting should be directed to SCE or SCG.

Energy generated through the commercial and industrial consumption of kerosene, propane, fuel oil, individual diesel generators, and bottled natural gas could not be quantified due to the difficulty and expense of collecting valid data.

Non-residential emissions associated with the combustion of natural gas, based on terms reported by the SCG, are as follows:

Table 5. Non-Residential Emissions from Natural Gas for the City of Thousand Oaks

Year	MT CO ₂ e
2010	38,495
2011	38,226
2012	37,673

Non-residential use of electricity provided by SCE produced GHGs as follows:

Table 6. Non-Residential Emissions from Electricity for the City of Thousand Oaks

Year	MT CO ₂ e
2010	174,844
2011	176,307
2012	177,819

California Air Resources Board – Mandatory Reporting

The California Global Warming Act and associated Mandatory Reporting Regulation requires facilities with 10,000 metric tons or more of greenhouse gas emissions and/or all facilities in specific sectors to report those emissions to the California Air Resources Board.

The table below contains the facilities within the City of Thousand Oaks subject to greenhouse gas emissions reporting during the period 2010-2012, and reported emissions values for each facility.

Table 7. Industrial Facilities Subject to AB32 and their Reported Emissions (MT CO_{2e})

Facility Name	2010	2011	2012
Amgen Inc.	26,624	26,098	23,211

On-Road Transportation Emissions



Vehicle miles traveled on Thousand Oaks roads accounted for approximately 8% of all travel in the County of Ventura. 2012 GHG emissions from that travel totaled 274,210 MT CO_{2e}, which represents 31% of total Thousand Oaks community emissions. These emissions resulted from vehicles burning gasoline and diesel fuel. Note that 54% of all on-road emissions in Ventura County occur on State Highways, as discussed in Part 1, Section 3.3. A portion of those emissions would be attributable to vehicles used for travelling to and from the City on those highways, particularly for commuting purposes. Without detailed traffic studies, the options for allocation of highway miles to particular cities within a region include by population, by registered vehicles or through economic indicators. Regardless of the method of allocation, mitigation of emissions from vehicle traffic on state highways is at least a regional issue. Focusing on where problems are best addressed, this report provides data and discusses on-road vehicle traffic on State roads in Part 1, Climate on the Move's Regional Inventory.

Off-Road Vehicle Emissions

Exhaust emissions from off-road vehicle use for the City of Thousand Oaks in 2012 resulted in 54,176 MT CO_{2e}, which represents 6 % of 2012 emissions.

Emissions from Solid Waste

"Landfilling" is the main method for disposal of municipal and household solid wastes or refuse in the United States. Although maintained in an oxygen-free environment and relatively dry conditions, landfill waste produces significant amounts of landfill gas (mostly methane but including carbon dioxide and nitrous oxide). With Californians disposing of more than 42 million tons of waste per year, the total amount of landfill gases produced in California is tremendous.³



A 2008 California Integrated Waste Management Board Study identified the components of waste in California landfills. The authors applied that characterization to an EPA model for estimating GHG emissions from landfills (WARM), and estimate that there are approximately 0.4223 MT CO_{2e} resulting from every short ton of landfilled waste in

³ http://www.energy.ca.gov/biomass/landfill_gas.html

Ventura County. CALRecycle data provides individual city and unincorporated area diversion and disposal rates for solid waste against which the 0.4223 metric was applied. Based on these calculations, the City’s total emissions associated with landfilled solid waste are:

Table 7. Emissions from Landfilled Solid Waste for the City of Thousand Oaks

Year	MT CO ₂ e
2010	44,200
2011	43,596
2012	44,098

There is no municipal solid waste landfill in Thousand Oaks. Waste generated in the City is transported to landfills outside the City boundaries.

Water and Wastewater Treatment Emissions



GHG emissions from electricity consumption for water supply and irrigation infrastructure required for the City of Thousand Oaks totaled 813 MT CO₂e for the period, which represents 0.1% of overall community emissions.

2012 GHG from domestic wastewater treatment for the City of Thousand Oaks totaled 4,113 MT CO₂e, which represents 0.4% of Thousand Oaks’ total 2012 emissions. Emissions from wastewater treatment include purchased electricity to operate treatment plants (396 MT CO₂e), and per capita emissions of CH₄ and N₂O (3,717 MT CO₂e) as calculated using the State of California Air Resources Board’s methodology. Purchased electricity emissions are reported under “Emissions from the Non-Residential Sector.”

High GWP GHG Emissions

Hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and nitrogen trifluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydro chlorofluorocarbons, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential (GWP) gases.⁴



Emissions from high GWP GHGs for the City of Thousand Oaks in 2012 totaled 60,386 MT CO₂e. Emissions were calculated based on the California Air Resources Board per capita estimate for California.

⁴ <http://www.epa.gov/climatechange/ghgemissions/gases.html>

Avoided Energy Emissions (2010 through 2014)

Avoided emissions are those that result from projects specifically designed to reduce energy use or to source energy from renewable sources. In addition to economic benefits of energy efficiency (using less electricity, burning less natural gas costs less) and installation of photovoltaic systems, there are also GHG benefits from these projects. These GHG savings are the “costs” that would have been incurred if the measures had not been put in place. For example, if a company installs a 1 MW photovoltaic system generating approximately 1.7 MWhs of fossil-free electricity per year, its GHG savings are roughly equivalent to 473 MT CO_{2e}. That benefit accumulates, since every year that the project is in operation, an additional 473 MT CO_{2e} does not enter the atmosphere and the benefits accumulate. This highlights the persistence of GHGs in the environment and the importance of avoiding their emissions as a first strategy.

The tables below show avoided emissions for calendar years (CYs) 2010 through 2014. It is reasonable to assume that the avoided emissions for 2010 through 2012 are captured in the emission levels reported in the 2011 and 2012 inventories. Without these reductions, the 2010, 2011 and 2012 inventories would have been an equivalent number of MT CO_{2e} higher. The data for CYs 2013 and 2014 indicate reductions that have been made in those years, but does not account for growth that might offset those reductions.

Southern California Edison

Southern California Edison provided VCREA with a detailed list of MWh savings and related costs associated with residential and non-residential programs across the County of Ventura, including Thousand Oaks.⁵

Table 8. 2010-2014 Avoided Emissions from SCE Programs in the City of Thousand Oaks

Program	MWhs Avoided	MT CO _{2e} Avoided	Investment
2010 to 2012 Non-Residential	19,386	5,398	\$4,231,986
2010 to 2012 Residential	19,438	5,413	\$2,069,663
2010 to 2012 Total	38,824	10,811	\$6,301,649
2013 Non-Residential	10,751	2,994	\$892,118
2013 Residential	1,920	535	\$438,132
2013 Total	12,671	3,528	\$1,330,249
2014 Non-Residential	9,915	2,761	\$1,476,848
2014 Residential	2,426	675	\$456,617
2014 Total	12,341	3,436	\$1,933,465

*Slight differences in totals due to rounding.

Program data for the SCG was not available at the time this report was written.

⁵ Detailed project data is available in Appendix D.

Rooftop Solar



Another way emissions are avoided is through the installation of rooftop solar panels on homes and businesses. Many of residents and small businesses who install these panels apply for incentives through the California Solar Initiative. When they do so, they provide data about their residence or business and about the solar system they are installing. That data is then made available to the public. It does not represent all of the photovoltaic installations in the City, for example, it does not include the installation of large capacity production or self-financed units, but it provides a sense of the growing impact that this type of electricity generation can have on our carbon footprint and how our sense of energy production is on the move.

Some of the avoided emissions in Thousand Oaks for CYs 2010 through 2014 as a result of solar energy production are:

Table 9. Avoided Emissions from Solar Production in the City of Thousand Oaks

Year	MT CO ₂ e
2010	308
2011	393
2012	563
2013	1015
2014	989

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Thousand Oaks City Government Operations Inventory



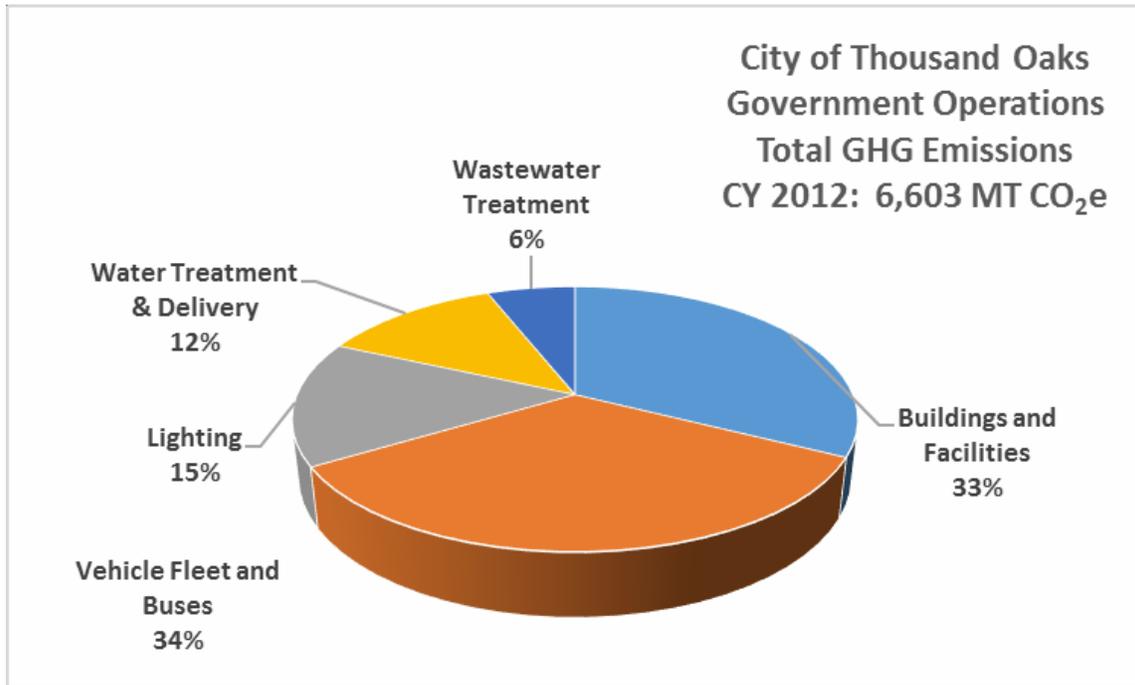
The State of California’s Air Resources Board and The Climate Registry have adopted a Local Government Operations Protocol (LGOP) that guides the reporting of GHG emissions by local governments. The LGOP defines the categories under which government operations are categorized, including facilities, lighting and traffic control, water and pumping and wastewater pumping.

The City of Thousand Oaks emissions varied significantly over the three years covered by this report, with significant reductions. Emissions from use of electricity in facilities were cut by 95%. In late 2010, the City Council made the commitment to purchase Green Power through a third party, which reduced emissions from the largest city facilities, beginning in 2011. The wastewater treatment plant has increased the production of solar power and constructed a second cogeneration power plant fueled by biofuels from the wastewater treatment process. The results with respect to emissions from electricity use are as follows:

	2010 MT CO ₂ e	2011 MT CO ₂ e	2012 MT CO ₂ e
Buildings and Facilities	2,322	87	131
Hill Canyon WWT Plant	754	892	396

Emissions from combustion of natural gas increased significantly after 2010, primarily because the City reached an agreement with Waste Management Inc. (WMI) to provide compressed natural gas to its fleet of waste haulers while WMI developed its own fueling station and because the city expanded its fleet of CNG buses during that time period. The City anticipates natural gas data for calendar years 2013 forward will demonstrate a return to historic levels.

Figure 3. 2012 GHG Emissions from City of Thousand Oaks Government Operations



Emissions from the Use of Electricity

Thousand Oaks purchases its electricity from SCE. These purchases resulted in the following emissions for CYs 2010 through 2012.

**Table 10. Emissions from the Use of Electricity for
City of Thousand Oaks Government Operations**

	2010 MT CO ₂ e	2011 MT CO ₂ e	2012 MT CO ₂ e
Buildings and Facilities	2,322	87	131
Streetlights and Traffic Signals	1,004	1,005	1,007
Water and Pumping	782	770	813
Wastewater Treatment	754	892	396
Total	4,862	2,754	2,347

Emissions from the Combustion of Natural Gas



The City of Thousand Oaks purchases natural gas from SCG for heating its facilities, operating boilers in its municipal buildings, converting to compressed natural gas used in vehicles and in the municipal buses powered with the fuel. These purchases resulted in the following emissions for CYs 2010 through 2012.

Table 11. Emissions from the Combustion of Natural Gas for City of Thousand Oaks Government Operations

Year	MT CO ₂ e
2010	924
2011	1,363
2012	2,011

Emissions from City Owned and Operated Vehicles



The City of Thousand Oaks owns and operates both gasoline and diesel fueled vehicles and runs a City-owned public transit system, primarily composed of CNG-fueled buses, as noted above. Based on data provided by the City's Fleet manager (fuel usage and mileage), emissions from gasoline and diesel used in these vehicles is as follows:

Table 12. Emissions from City of Thousand Oaks Vehicle Fleet

Year	MT CO ₂ e
2010	2,211
2011	2,187
2012	2,245

Avoided Energy Emissions (City Operations)

In 2007, the City of Thousand Oaks recognized the potential for renewable power generation at the Hill Canyon Wastewater Treatment Plant. Its anaerobic digester produces methane gas and there was ample space for solar panels. The first cogeneration project (a power production technology) and photovoltaic (PV) array began full year operation in 2008. Mid-year 2011 another cogeneration unit came on line. The MWhs produced, and associated avoided emissions for CYs 2010 through 2012 are as follows:

Table 13. Avoided Emissions from City of Thousand Oaks Hill Canyon Wastewater Treatment Plant

	Cogeneration		Solar		Total
	MWhs	MT CO ₂ e	MWhs	MT CO ₂ e	Total MT CO ₂ e
2010	3,033	841	1,121	311	1,153
2011	2,667	740	1,129	313	1,053
2012	4,578	1,270	1,107	307	1,577

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Thousand Oaks Community Greenhouse Gas Forecasts and Reduction Target Options



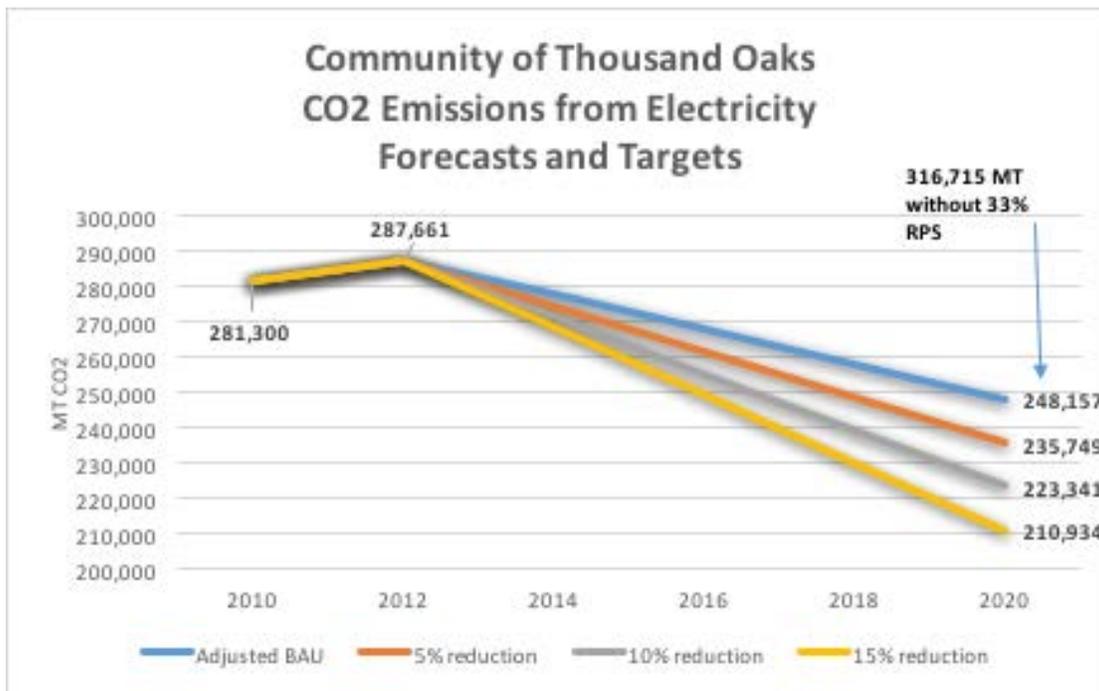
Part I of this report provides an overview of the approach to forecasting and reduction targets for the VCREA and its member local governments. Regional forecasts and reduction targets have been established for energy use (electricity and natural gas) and for on-road vehicles.

Forecasted Emissions from and Targets for Electricity Use



The California Energy Commission has estimated a preliminary mid-range business as usual (BAU) scenario where electricity use in 2020 in the SCE territory will increase by 1.21% over 2011 levels.⁶ For the City of Thousand Oaks, a BAU scenario means that emissions would total 316,715 MT CO_{2e} in 2020, as compared to the 2010 levels of 281,300.⁷ The adjusted BAU scenario projects 2020 emissions at 248,157 metric tons. Associated reduction targets are shown below:

Figure 4. Emissions from Electricity Forecasts and Targets for the City of Thousand Oaks



⁶ <http://www.energy.ca.gov/2011publications/CEC-200-2011-011/CEC-200-2011-011-SD.pdf>

⁷ Forecasts for electricity are calculated for CO₂ only and do not include CH₄ and N₂O. These gases are relatively small contributors to overall emissions and can change over time depending upon power production technology.

Based on this adjusted BAU model, 5%, 10% and 15% targets would require the following reductions in emissions:

Table 14. Required Emissions Reductions from Electricity to Meet 5%, 10% and 15% Targets for the City of Thousand Oaks

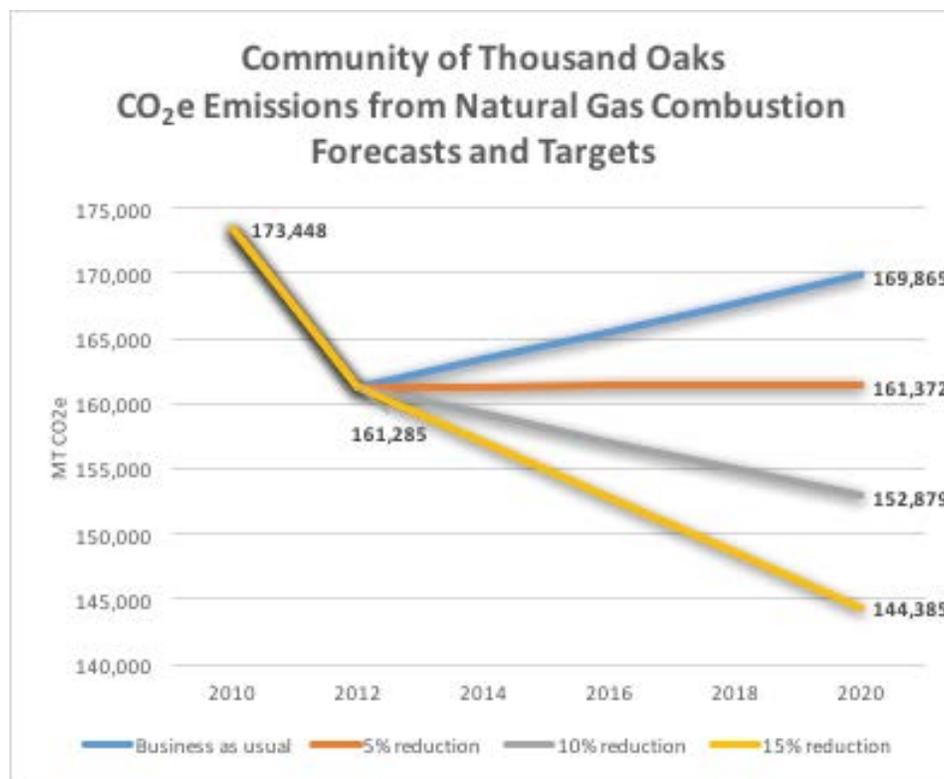
Reductions required 2010 to 2020	Below 2010 Levels (MT CO _{2e})	Below BAU 2020 Levels (MT CO _{2e})
5% reduction	14,065	51,912
10% reduction	28,130	64,319
15% reduction	42,195	76,727

Forecasted Emissions from and Targets for Combustion of Natural Gas



The California Energy Commission has also estimated a BAU scenario where natural gas use in 2020 in the SCG territory will increase by 0.65% per year over 2011 levels.⁸ For Thousand Oaks, a BAU scenario means that emissions would total 169,865 MT CO_{2e} in 2020, compared to the 2010 levels of 173,448 MT CO_{2e}. Associated reduction targets are shown below:

Figure 5. Emissions from the Combustion of Natural Gas Forecasts and Targets for the City of Thousand Oaks



⁸ <http://www.energy.ca.gov/2011publications/CEC-200-2011-011/CEC-200-2011-011-SD.pdf>

Based on this BAU model, 5%, 10% and 15% targets would require the following reductions in emissions:

Table 15. Required Emissions Reductions from Natural Gas to Meet 5%, 10% and 15% Targets for the City of Thousand Oaks

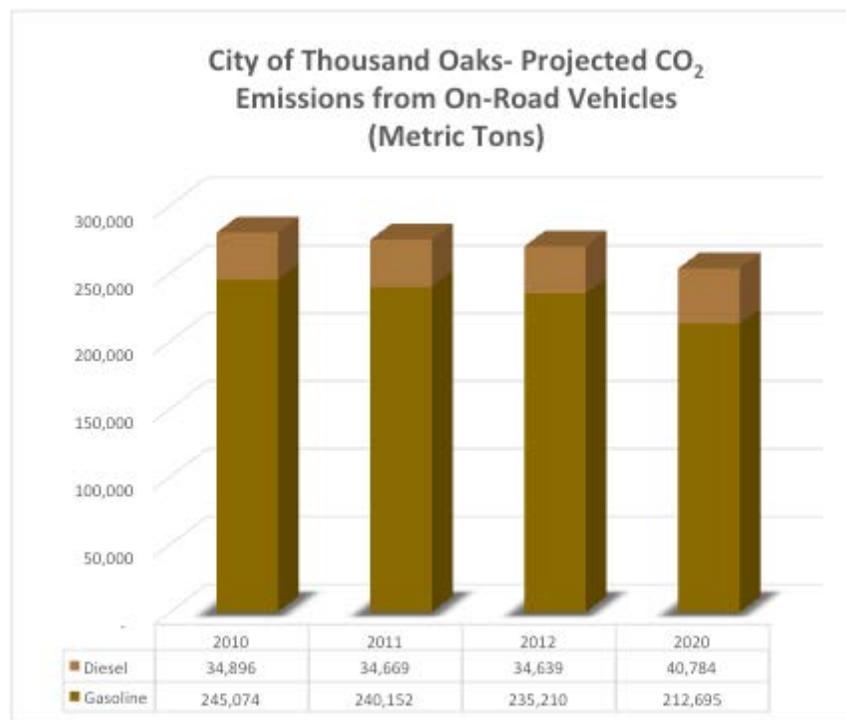
Reductions required 2012 to 2020	Below 2012 Levels (MT CO ₂ e)	Below BAU 2020 Levels (MT CO ₂ e)
5% reduction	8,672	-87
10% reduction	17,345	8,406
15% reduction	26,017	16,900

Forecasted Emissions from and Targets for On Road Transportation



As noted in Part I of this report, State and federal regulations related to fuel and vehicle efficiency will lead to significant GHG reductions by the year 2020, by which time they will be **9% lower than in 2010**. Any additional activities on the part of Thousand Oaks, including additional support for alternative modes of transportation and its public transit system, behavioral change, regional cooperation, etc. could increase the reductions resulting from State actions. Note that these emissions and projections do not include emissions from travel on State highways, which would include commuting and inter-city travel. Following is an estimate of forecasted emissions:

Figure 6. Projected Emissions from On-Road Vehicles for the City of Thousand Oaks



*Note that there are small differences between 2010 through 2012 emissions reported here and those for the GHG inventory reported earlier. Inventory includes CH₄ and N₂O, forecasts are based on CO₂ only.

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Thousand Oaks City Government Greenhouse Gas Forecasts and Reduction Targets



City of Thousand Oaks: Energy Action Plan



In 2012, the City of Thousand Oaks adopted an Energy Action Plan⁹ that assessed the current energy use in municipal facilities, established goals and objectives, and associated commitments. The plan identified the Municipal Service Center, the Transportation Center, Senior Center and City Hall/Civic Arts Plaza as the highest energy users, normalized by using carbon intensity per square foot. It then established an overall goal of achieving a 10% reduction in greenhouse gas emissions at City

facilities by 2017. The plan committed to:

1. Establishing a centralized energy policy
2. Establishing an energy management team
3. Committing to exploring sustainable sources of funding
4. Tracking and monitoring progress
5. Engaging community through outreach and education

⁹ <http://www.toaks.org/civica/filebank/blobload.asp?BlobID=23478>

6 Progress Since 2010



Reductions in Emissions from Electricity Use

Below is a summary of the reductions required to meet the 5%, 10% and 15% targets proposed for Thousand Oaks.

Reductions required 2010 to 2020 (electricity)	Below 2010 Levels (MT CO _{2e})	Below BAU 2020 Levels (MT CO _{2e})
5% reduction	14,065	51,912
10% reduction	28,130	64,319
15% reduction	42,195	76,727

There are two readily available sources of information on reductions in emissions from electricity use for the period 2010 through 2014: avoided emissions as a result of SCE projects and rooftop solar installations, as reported by the California Solar Initiative.

As of December 31, 2014, these two types of energy projects have resulted in cumulative annual reductions of 20,736 MT CO_{2e} as follows:

Year	SCE Projects		PV Installations		Total	
	Annual (MT CO _{2e})	Cumulative (MT CO _{2e})	Annual (MT CO _{2e})	Cumulative (MT CO _{2e})	Annual (MT CO _{2e})	Cumulative (MT CO _{2e})
2010-2012	10,811	10,811	1,265	1,265	12,076	12,076
2013	3,528	14,339	1,015	2,280	4,543	16,619
2014	3,436	17,775	989	3,269	4,425	21,044

*Slight differences in totals due to rounding.

Reductions in Emissions from Combustion of Natural Gas

Emissions from natural gas combustion appeared to reduce significantly in 2012, with 2010, 2011 and 2012 totals of 173,447, 171,830 and 161,284 MT CO_{2e}, respectively. SB 350 specifically recognized the importance of increasing energy efficiency in existing buildings, one of the major sources of emissions from the combustion of natural gas.

Reductions in Emissions from On-Road Vehicles

The State of California predicts a steady decrease in emissions from on-road vehicles (although as noted earlier, diesel emissions are expected to increase slightly between now and 2020 unless additional measures are introduced). New planning guidelines are expected in the near future with specific focus on climate change. These should be taken into consideration in considering ways of meeting reduction targets above those that passively occur through State measures.