

# Baseline and Forecasted Community GHG Emissions Inventory

County of Santa Barbara  
Long Range Planning Division

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## **BASELINE GHG EMISSIONS INVENTORY**

This baseline greenhouse gas (GHG) emissions inventory (Inventory) update summarizes the preliminary results of an analysis of the County's 2007 baseline GHG emissions. The Inventory acts as a foundation for the County's Climate Action Plan by informing the County and community of the largest sources of GHG emissions, and thus the largest opportunities for GHG reductions. This Inventory focuses on community-wide emissions in the unincorporated Santa Barbara County only and provides a baseline against which future progress can be measured.

PMC conducted this analysis using methodologies recommended by the California Air Resources Board (CARB), ICLEI-Local Governments for Sustainability, and industry best practices. The Inventory analyzes the following emissions sources:

- Energy – Residential, commercial, and industrial electricity and natural gas consumed in the unincorporated county in 2007.
- Transportation – Vehicle miles traveled (VMT) to, from, or within the unincorporated county in 2007.
- Waste – Methane emissions from waste sent to landfills from the community in 2007.
- Stationary Sources – Direct emissions from industrial, commercial, and office processes in the county that are permitted by the County of Santa Barbara.
- Off-road – Emissions from agricultural, construction, lawn and garden, and other industrial equipment/vehicles.
- Agriculture – Emissions from livestock and from fertilizer application.
- Aircraft – Emissions from operations at the Santa Ynez Airport in unincorporated Santa Barbara County.
- Water and Wastewater – The energy required to extract, filter, move, and treat the water consumed and/or treated in the county in 2007.

## **INVENTORY UPDATE PURPOSE**

In 2010, the County prepared an inventory of 2007 community-wide GHG emissions for the unincorporated areas of Santa Barbara County. Changes to the regulatory structure since the creation of this initial inventory, including an update to the California Environmental Quality Act (CEQA) Guidelines, have prompted the County to re-inventory emissions from community-wide sources. This Inventory is an updated assessment of GHG emissions in the unincorporated county.

Senate Bill 97, adopted in 2007 by the State of California, directed the Governor's Office of Planning and Research (OPR) to amend the California Environmental Quality Act (CEQA) Guidelines to address greenhouse gas emissions. The revised CEQA Guidelines became effective on March 18, 2010. Per CEQA, local governments may use adopted plans consistent with the CEQA Guidelines to assess the cumulative impacts of projects on climate change, if the adopted plan includes a certified

environmental impact report (EIR. In order to benefit from the streamlining provisions of the CEQA Guidelines, a plan for the reduction of greenhouse gas emissions must accomplish the following:

- Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;
- Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;
- Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;
- Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;
- Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;
- Be adopted in a public process following environmental review.

To create a Qualified GHG Reduction Strategy in compliance with the CEQA Guidelines, the County contracted with PMC to peer review and update the baseline inventory. In the process of completing the Inventory, PMC completed new emissions calculations to use the most up-to-date tools and resources.

## 2007 INVENTORY SUMMARY

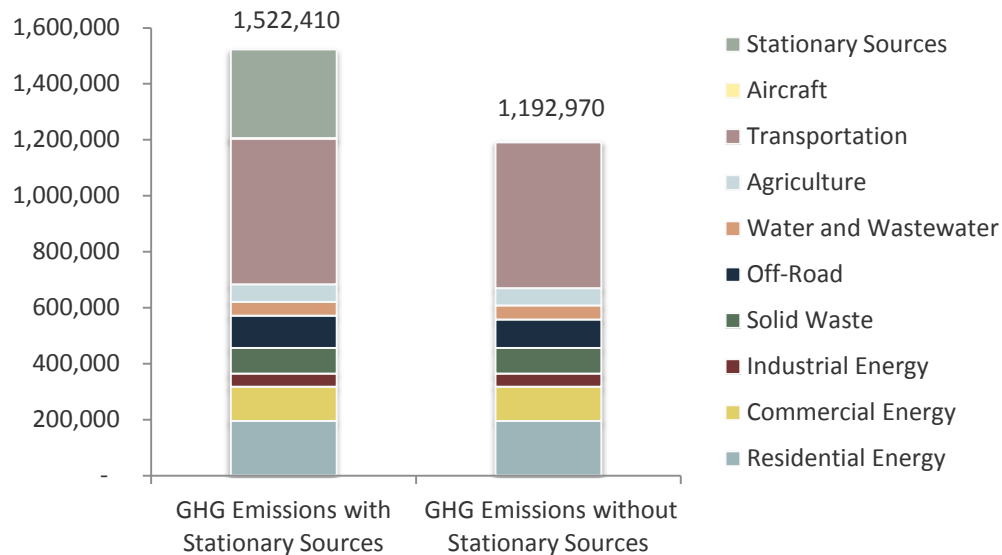
Emissions from unincorporated county sources totaled 1,522,420 metric tons of carbon dioxide equivalents (MTCO<sub>2</sub>e) in the baseline year 2007. As shown in **Table 1** and **Figure 1**, the transportation sector is the largest contributor at 34%, producing approximately 521,160 MTCO<sub>2</sub>e. Emissions from stationary sources were the next largest contributor, accounting for 21% of total emissions, producing approximately 315,890 MTCO<sub>2</sub>e. Emissions from residential energy use (195,490 MTCO<sub>2</sub>e) account for 13% of total emissions and represent the third largest source of GHG emissions. Commercial energy use (121,580 MTCO<sub>2</sub>e), off-road equipment (115,690 MTCO<sub>2</sub>e), solid waste disposal (91,920 MTCO<sub>2</sub>e), agriculture, industrial energy, water and wastewater, and aircraft operations account for the remainder of unincorporated county emissions in 2007.

**Table 1 – 2007 Unincorporated Santa Barbara County Emissions (with Stationary Sources)**

Sector	GHG Emissions MTCO <sub>2</sub> e
Residential Energy	195,490
Commercial Energy	121,580
Industrial Energy	46,780
Solid Waste	91,920
Off-Road	115,690
Water and Wastewater	49,520
Agriculture	62,110
Transportation	521,160

<b>Stationary Sources</b>	315,890
<b>Aircraft</b>	2,270
<b>TOTAL</b>	1,522,410

**Figure 1 – 2007 Unincorporated Santa Barbara County Emissions (with and without Stationary Sources)**



## STATIONARY SOURCES AND OIL DRILLING EQUIPMENT ANALYSIS

The GHG Emissions associated with stationary sources, and off-road oil drilling equipment have been included as an informational item in **Table 1** and **Figure 1** above. Because of the County's limited influence to regulate emissions from these sources and uncertainty in forecasting their GHG emissions, the GHG emissions from these sources have been excluded from further discussion of GHG emissions, forecasting, target setting, and policy development in this report. The County may consider pursuing stationary sources in separate, future policy initiatives. Stationary Source information for the 2007 baseline year was provided by the Santa Barbara County Air Pollution Control District, and off-road oil drilling equipment consumption was estimated using ARB's Off-Road Software. To reflect the exclusion of stationary sources from the unincorporated County's GHG emissions, **Table 2** and **Figure 2** represent the County's Emissions without stationary sources. Excluding stationary sources, the unincorporated County's 2007 GHG emissions totaled 1,192,970 MTCO<sub>2</sub>e.

**Table 2** identifies the sources and sectors of GHG emissions from activities within the county in 2007, and identifies whether the emissions are generated within the county boundaries, the county's relative degree of influence to affect GHG emissions, and whether or not the Energy and Climate Action Plan (ECAP) will focus on addressing the GHG emissions from a particular source. Relative degree of influence is determined by identifying whether the county has jurisdictional, financial, permitting, or operational control to implement policies or programs to reduce a particular GHG emissions source.





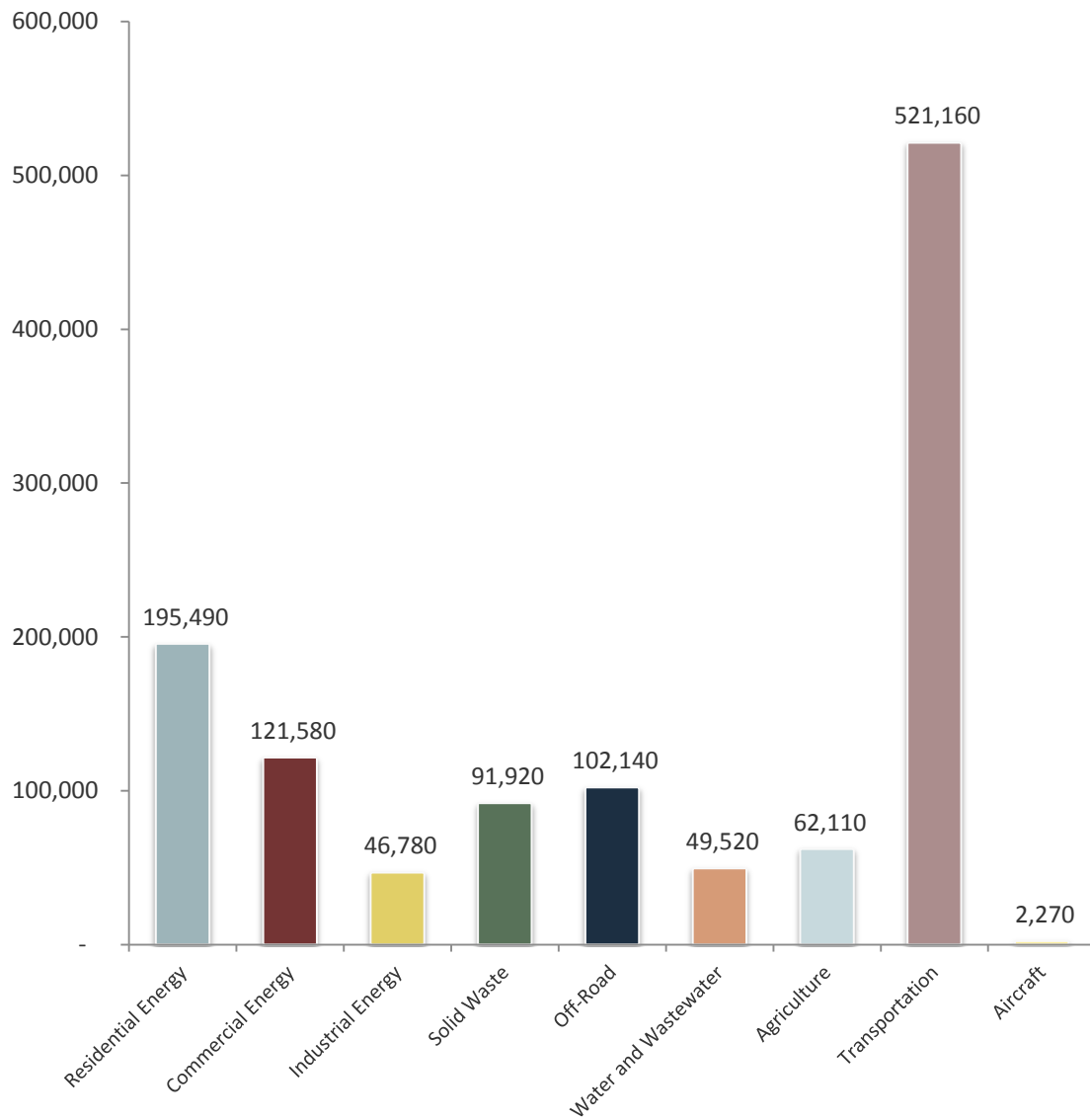
**Table 2 – 2007 Unincorporated Santa Barbara County GHG Emissions by Sector**

Sector	Subsector	Activity	Unit	MTCO <sub>2</sub> e	County Degree of Influence
<b>Residential Energy</b>	Residential Electricity	293,717,600	kWh	85,610	High
	Residential Natural Gas	20,656,900	Therms	109,890	High
<b>Commercial Energy</b>	Commercial Electricity	143,946,300	kWh	41,950	High
	Commercial Natural Gas	14,968,300	Therms	79,630	High
<b>Industrial Energy</b>	Industrial Electricity	114,952,900	kWh	33,500	Medium
	Industrial Natural Gas	2,498,600	Therms	13,290	Medium
<b>Solid Waste</b>	Landfilled Waste	115,390	tons	90,440	High
	Alternative Daily Cover	2,380	tons	1,480	High
<b>Off-Road</b>	Agricultural Equipment	6,878,600	gallons	67,500	Medium
	Construction and Mining Equipment	2,882,600	gallons	28,560	Medium
	Industrial Equipment	309,800	gallons	2,490	Medium
	Lawn & Garden Equipment	373,700	gallons	2,560	Medium
	Light Commercial Equipment	130,400	gallons	1,030	Medium
<b>Water and Wastewater</b>	Electricity used by water systems	85,710	Million Gallons	42,680	Medium
	Wastewater Emissions	2,577	Million Gallons	1,550	Medium
	Septic Tanks	8,749	Septic Tanks	5,280	Medium
<b>Agriculture</b>	Fertilizer Emissions	116,400	Acres of Crops	34,080	Medium
	Livestock Emissions	26,200	Livestock	28,030	Low
<b>Transportation</b>	On-Road transportation from trips beginning or ending in the unincorporated county	1,075,523,400	Annual VMT	521,160	High
<b>Aircraft</b>	Landings and takeoffs from Santa Ynez Airport	71	Daily Flights	2,270	Low

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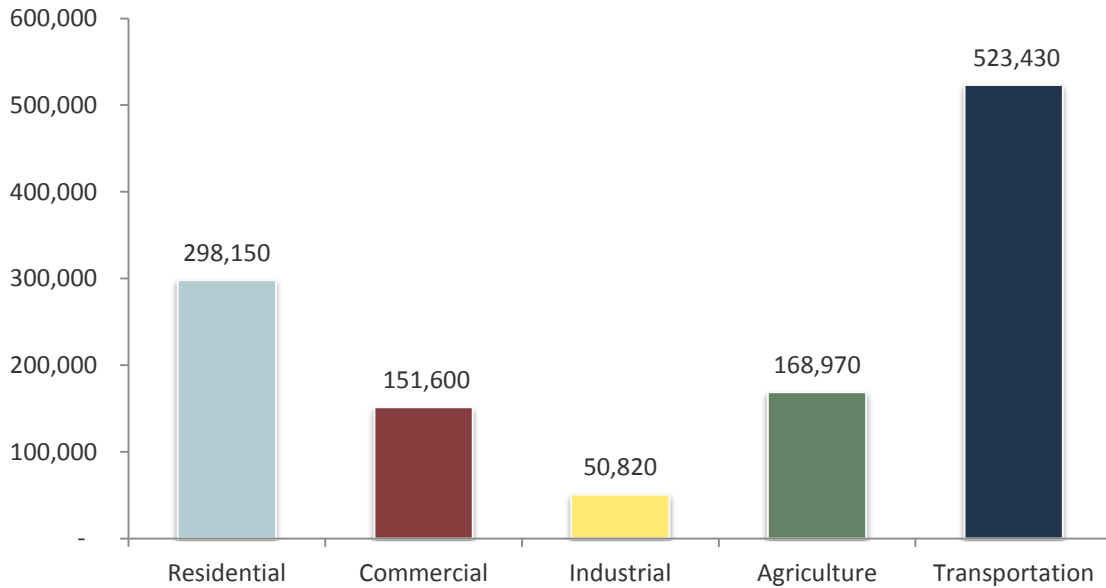


**Figure 2 – 2007 Unincorporated Santa Barbara County GHG Emissions by Sector**



Each activity can be aggregated into economic sectors present within the unincorporated county. For example, the residential sector represents emissions from residential electricity, solid waste produced by residents, water used in homes, etc. **Figure 3** and **Table 3** depict the GHG emissions attributed to the residential, commercial, industrial, agriculture, and transportation sectors in 2007.

**Figure 3 – 2007 GHG Emissions by Economic Sector, MTCO<sub>2</sub>e**



**Table 3 – 2007 GHG Emissions by Economic Sector, MTCO<sub>2</sub>e**

Sector	MTCO <sub>2</sub> e	Percentage
Residential	298,150	25%
Commercial	151,600	13%
Industrial	50,820	4%
Agriculture	168,970	14%
Transportation	523,430	44%
<b>TOTAL</b>	<b>1,192,970</b>	

### GHG EMISSIONS NOT INCLUDED IN COUNTY INVENTORY

While there are other sources of emissions occurring within Santa Barbara County, the sources identified below in **Table 4** and **Figure 4** are excluded from the County’s baseline GHG emissions inventory for one or more of the following reasons:

- **Lack of jurisdictional control**—There are areas of the unincorporated county in which the County of Santa Barbara lacks jurisdictional control or permitting authority to influence GHG emissions-generating activities. Examples of areas where the County lacks the authority to influence GHG emissions include Vandenberg Air Force Base, the University of California, Santa Barbara, and the Santa Barbara Channel.
- **Limited ability to influence or reduce GHG emissions**—In cases where the County is limited in its ability to influence the emissions-generating activity, the County has excluded the

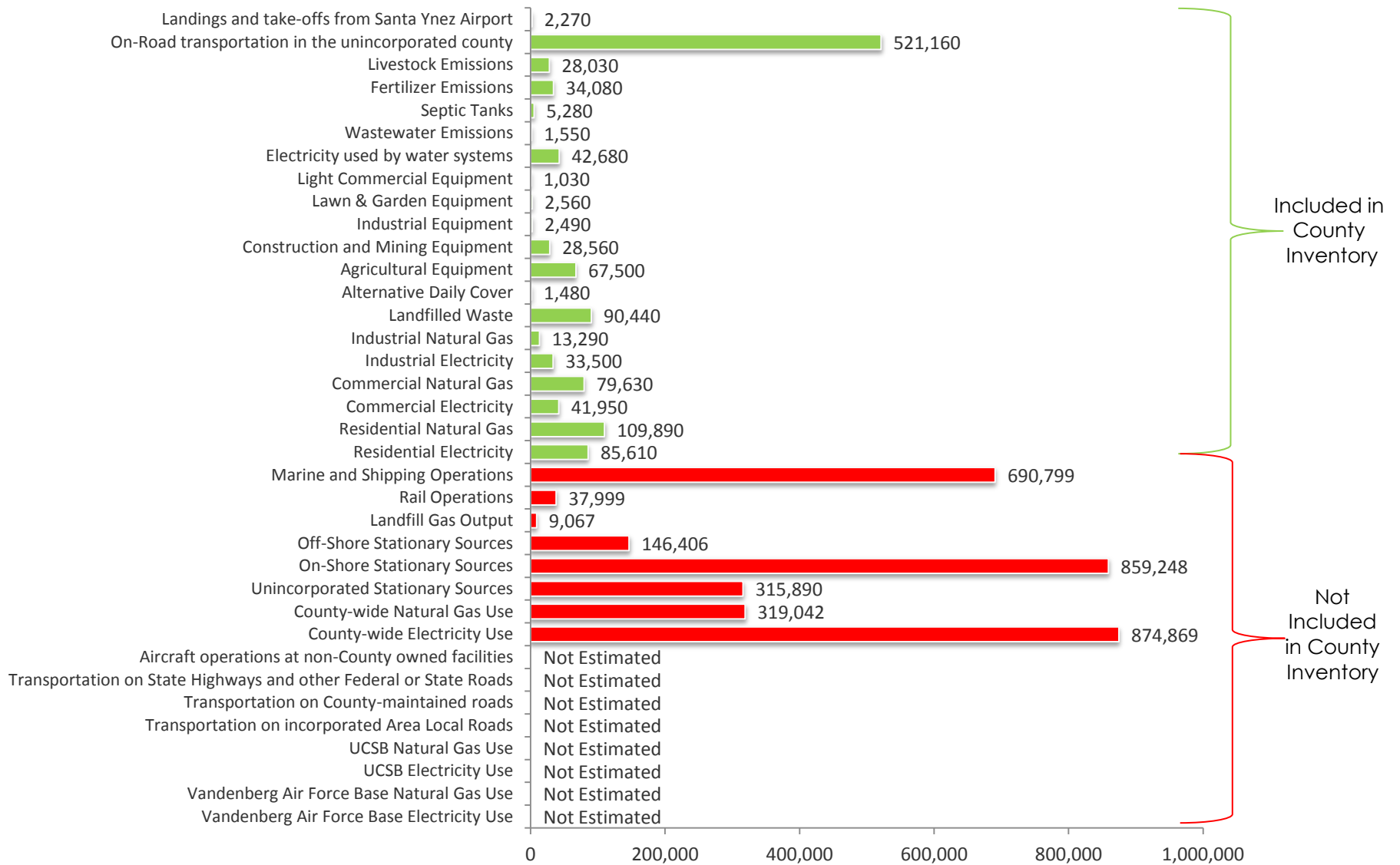
source from the GHG inventory. Examples of such sources include large stationary facilities that are permitted by the APCD, state and federal regulatory agencies or vehicle and rail travel that does not stop in the county, but uses fuel and generates GHG emissions while in the county.

- **GHG emissions are considered biogenic in nature**—Biogenic sources of GHG emissions would occur with or without human intervention, and therefore cannot be managed or influenced by the County. An example of a biogenic emissions source would be the naturally occurring oil and gas seeps in the Santa Barbara Channel. An example of another sources includes a portion of the GHG emissions generated from waste decomposition. While waste decomposing in a landfill generates methane, some of it would be generated whether or not the waste was generated and placed into a landfill.
- **Lack of methodology to estimate GHG emissions**—In cases where the activity data needed to determine GHG emissions are not reasonably available or methods to estimate activity data have not yet been developed, the activity has been excluded from the GHG inventory. An example of an emissions source that lacks clear methodology or cannot be reasonably estimated includes community use and consumption of products, often called a lifecycle analysis.

**Table 4 – GHG Emissions Sources Excluded from the County GHG Inventory**

Sector	Subsector	Activity	Unit	MTCO <sub>2e</sub>	County Degree of Influence
<b>Energy Use</b>	County-wide Electricity Use	3,242,000,000	kWh	874,869	Low
	County-wide Natural Gas Use	130,756,020	Therms	319,042	Low
	Vandenberg Air Force Base Electricity Use	Not Available		Not Estimated	Low
	Vandenberg Air Force Base Natural Gas Use	Not Available		Not Estimated	Low
	UCSB Electricity Use	69,217,570	kWh	Not Estimated	Low
	UCSB Natural Gas Use	2,426,111	Therms	Not Estimated	Low
<b>Stationary Sources</b>	Unincorporated Stationary Sources	Not Available		315,890	Low
	On-Shore Stationary Sources	Not Available		859,248	Low
	Off-Shore Stationary Sources	Not Available		146,406	Low
<b>Solid Waste</b>	Landfill Gas Output	Not Available		9,067	Medium
<b>Off-Road</b>	Rail Operations	Not Available		37,999	Low
	Marine and Shipping Operations	Not Available		690,799	Low
<b>Transportation</b>	Transportation on incorporated Area Local Roads	285,843,800	VMT	Not Estimated	Low
	Transportation on County-maintained roads not originating or terminating in the County	309,849,200	VMT	Not Estimated	Medium
	Transportation on State Highways and other Federal or State Roads	271,480,800	VMT	Not Estimated	Low
<b>Aircraft</b>	Aircraft operations at non-County owned facilities	Not Available		Not Estimated	Low

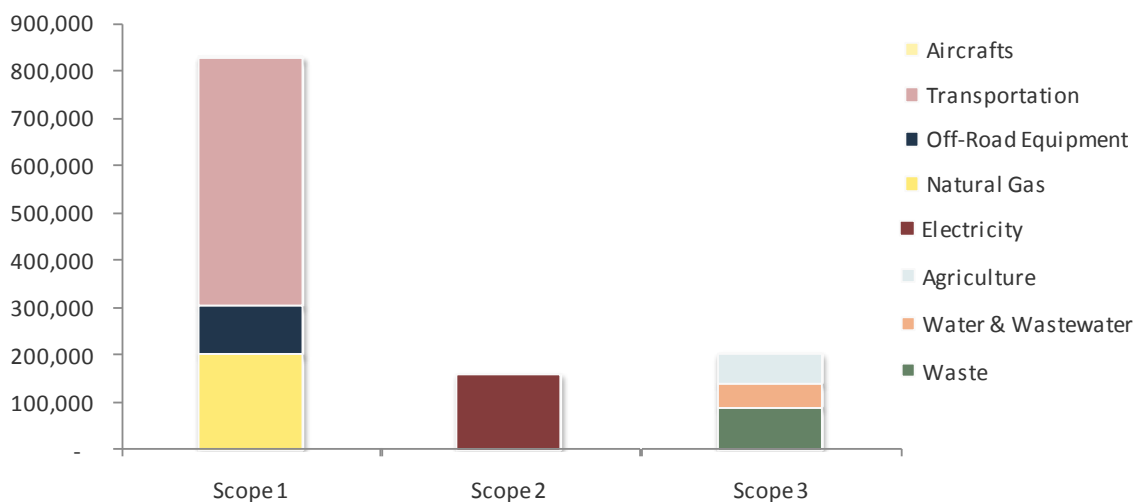
**Figure 4 – Comparison of GHG Emissions Sources Included and Excluded from the County GHG Inventory**



## GHG EMISSIONS BY SCOPE

This Inventory includes direct and indirect emissions from Scope 1, Scope 2, and Scope 3 sources. Scope 1 is defined to be all direct GHG emissions. Scope 2 emissions include indirect emissions associated with the consumption or purchase of electricity. Scope 3 emissions are all other indirect emissions. Emissions were identified from the following activities: residential energy, commercial energy, industrial energy, on-road transportation, aircraft, off-road equipment, water, wastewater, solid waste, and agriculture. As shown in **Figure 5**, Scope 1 emissions, those which are a result of direct fuel combustion from transportation, equipment, and natural gas use, make up the largest portion of emissions at 69%. Scope 2 emissions make up 14% of the County's GHG emissions, and are a result of indirect fuel combustion, from electricity, which may be generated outside of the county, but consumed within the unincorporated county. Finally, Scope 3 emissions include all other indirect sources of emissions, including waste and the electricity related to water and wastewater, making up 17% of total GHG emissions.

**Figure 5 – 2007 GHG Emissions by Scope, MTCO<sub>2</sub>e**



# GHG EMISSIONS BY SECTOR ACTIVITY

## RESIDENTIAL ENERGY

Residential energy use includes natural gas and electricity consumption. Electricity is provided to residential customers in Santa Barbara County by Pacific Gas & Electric Company in the North County and by Southern California Edison on the South Coast. Residential electricity use in the unincorporated county was determined using the California Energy Commission report on the total electricity delivered to Santa Barbara County in 2007. Pacific Gas & Electric Company provided total residential electricity use for the unincorporated North County.

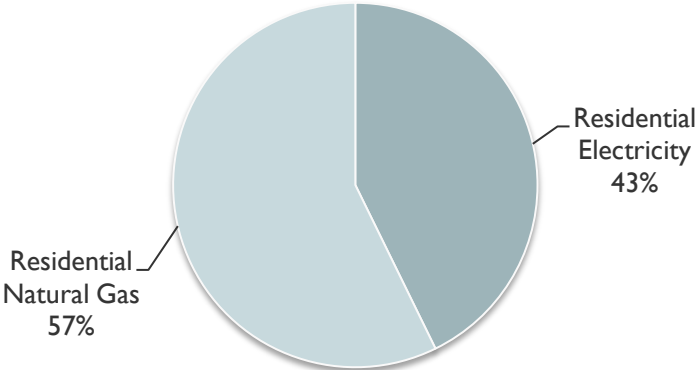
**Residential Energy Quick Facts**

- 293,717,600 Total electricity use (kWh)
- 20,656,900 Total natural gas use (therms)
- 85,610 Electricity emissions (MTCO<sub>2e</sub>)
- 109,890 Natural gas emissions (MTCO<sub>2e</sub>)
- 195,490 Total emissions (MTCO<sub>2e</sub>)

South Coast residential electricity use was estimated based on the number of households in the unincorporated county compared to total residential electricity delivered by Southern California Edison in Santa Barbara County. Residential natural gas usage was provided by the Southern California Gas Company and was allocated to the unincorporated county based on total natural gas deliveries to residential customers in Santa Barbara County in 2007.

With all scopes and sectors aggregated, 13% of total community-wide emissions in 2007 came from residential energy use. In 2007, residential energy use included approximately 294 million kilowatt hours of electricity and 20.7 million therms of natural gas, generating approximately 195,490 MTCO<sub>2e</sub>. As shown in **Figure 6**, electricity accounted for 44% and natural gas accounted for 56% of residential energy emissions.

**Figure 6 – 2007 Residential Energy GHG Emissions, MTCO<sub>2e</sub>**



## COMMERCIAL ENERGY

Electricity is provided to commercial customers in Santa Barbara County by Pacific Gas & Electric Company in the North County and by Southern California Edison on the South Coast. Commercial electricity use in the unincorporated county was determined using the California Energy Commission report on the total electricity delivered to Santa Barbara County in 2007. Pacific Gas & Electric Company provided total nonresidential electricity use for the unincorporated North County, though the data included electricity used by facilities not under jurisdictional control of the County, such as Vandenberg Air Force Base. To determine commercial electricity use in the unincorporated North County, the total number of commercial sector jobs (excluding Vandenberg employees) was used.

### Commercial Energy Quick Facts

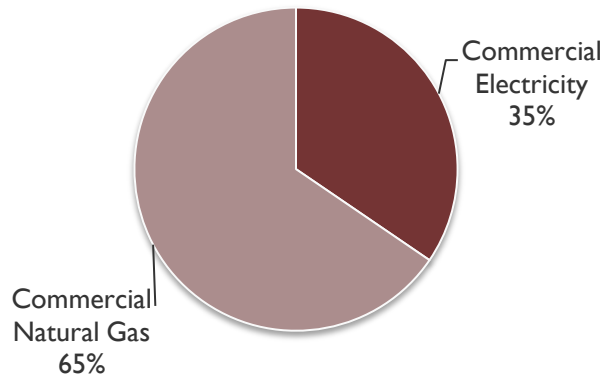
143,946,300	Total electricity use (kWh)
14,968,300	Total natural gas use (therms)
41,950	Electricity emissions (MTCO <sub>2e</sub> )
79,630	Natural gas emissions (MTCO <sub>2e</sub> )
121,580	Total emissions (MTCO <sub>2e</sub> )

South Coast commercial electricity use was estimated based on the number of commercial sector jobs in the unincorporated county compared to total commercial electricity delivered by Southern California Edison in Santa Barbara County. Commercial natural gas was provided by the Southern California Gas Company and was allocated to the unincorporated county based on total natural gas deliveries to commercial customers in Santa Barbara County in 2007 and the number of commercial sector jobs in the unincorporated county.

With all scopes and sectors aggregated, 8% of total community-wide emissions in 2007 came from commercial energy use, which includes natural gas and electricity consumption. In 2007, commercial energy use included 144 million kilowatt hours of electricity and 15 million therms of natural gas, generating approximately 121,580 MTCO<sub>2e</sub>. As shown in **Figure 7**, electricity accounted for 35% and natural gas accounted for 65% of commercial energy emissions.



**Figure 7 – 2007 Commercial Energy GHG Emissions, MTCO<sub>2</sub>e**



## INDUSTRIAL ENERGY

Electricity is provided to industrial customers in Santa Barbara County by Pacific Gas & Electric Company in the North County and by Southern California Edison on the South Coast. Industrial electricity use in the unincorporated county was determined using the California Energy Commission report on the total electricity delivered to Santa Barbara County in 2007. Pacific Gas & Electric Company provided total Industrial electricity use for the unincorporated North County, though the data included electricity used by facilities not under jurisdictional control of the County, such as Vandenberg Air Force Base. To determine industrial electricity use in the unincorporated North County, the total number of industrial sector jobs (excluding Vandenberg employees) was used.

### Industrial Energy Quick Facts

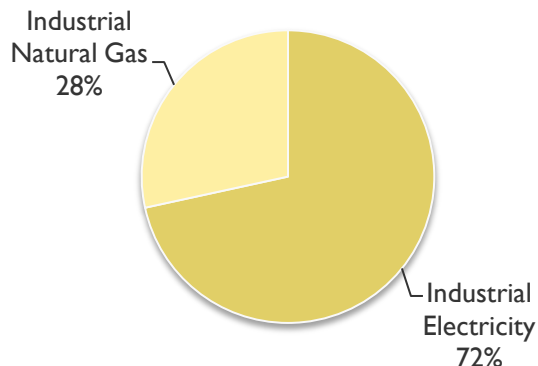
114,952,900	Total electricity use (kWh)
2,498,600	Total natural gas use (therms)
33,500	Electricity emissions (MTCO <sub>2</sub> e)
13,290	Natural gas emissions (MTCO <sub>2</sub> e)
46,780	Total emissions (MTCO <sub>2</sub> e)

South Coast industrial electricity use was estimated based on the number of industrial sector jobs in the unincorporated county compared to total industrial electricity delivered by Southern California Edison in Santa Barbara County. Industrial natural gas was provided by the Southern California Gas Company and was allocated to the unincorporated county based on total natural gas deliveries to industrial customers in Santa Barbara County in 2007 and the number of industrial sector jobs in the unincorporated county.

With all scopes and sectors aggregated, 3% of total community-wide emissions in 2007 came from industrial energy use. Industrial energy use includes natural gas and electricity consumption. In 2007, industrial energy use included 114 million kilowatt hours of electricity and 2.5 million therms of natural gas, generating approximately 46,780

MTCO<sub>2</sub>e. As shown in **Figure 8**, electricity accounted for 72% and natural gas accounted for 28% of industrial energy emissions.

**Figure 8 – 2007 Industrial Energy GHG Emissions, MTCO<sub>2</sub>e**

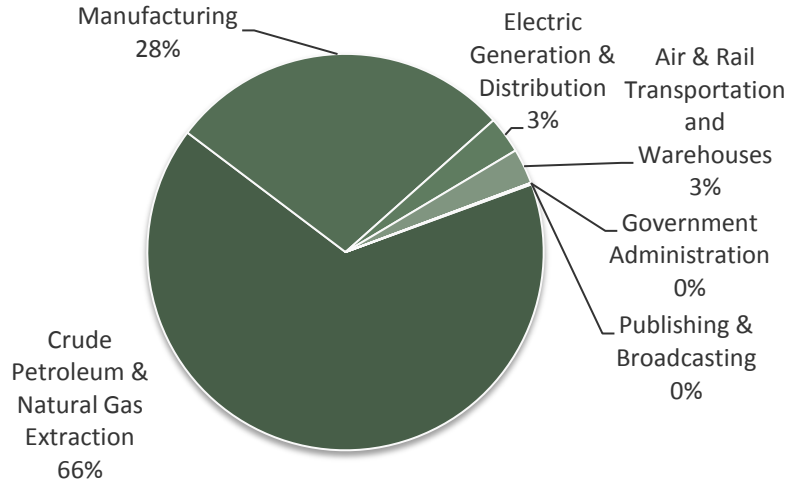


### STATIONARY SOURCES

In addition to electricity and natural gas uses, commercial and industrial facilities often utilize other fuel sources such as diesel, propane fuel, and gasoline, which are considered stationary sources from on-site back-up generators, internal combustion engines, and other equipment. As shown in **Figure 9**, the majority of stationary source emissions in unincorporated Santa Barbara County are generated from crude petroleum and natural gas extraction (66% of stationary source emissions) and manufacturing (28%). Electric generation and distribution, air and rail transportation, publishing and broadcasting, and government administration activities make up the remaining 6% of stationary source emissions in unincorporated Santa Barbara County.

The County's authority to influence or regulate some of these larger facilities may be limited since many are regulated by federal and state agencies or the Santa Barbara County Air Pollution Control District. Therefore, these emissions are not included in the County's GHG reduction target-setting considerations.

**Figure 9 – 2007 Stationary Source GHG Emissions, MTCO<sub>2e</sub>**



**TRANSPORTATION**

On-road transportation generates GHG emissions from the combustion of gasoline and diesel fuel use by vehicles operating on roads within Santa Barbara County. Consistent with the majority of California, travel by on-road motorized vehicles constitutes the greatest percentage of GHG emissions in the unincorporated county.

**Transportation Quick Facts**

1,123,640,400	Annual vehicle miles traveled
24	Per capita daily VMT
460,690	Gasoline emissions
60,470	Diesel emissions
521,160	Total emissions (MTCO <sub>2e</sub> )

Using select link analysis and the Santa Barbara County Association of Government's Travel Demand Model, three types of vehicle trips were tracked separately for AM and PM peak periods to determine total vehicle miles traveled (VMT):

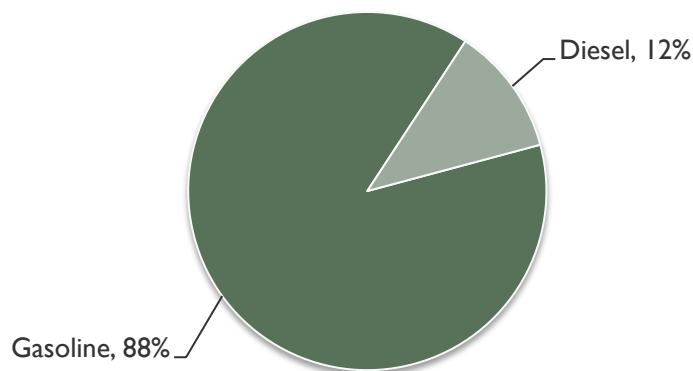
- 1) Internal-Internal: Vehicle trips that remained in the unincorporated county
- 2) Internal-External and External-Internal: Vehicle trips that have an ending or a beginning in the unincorporated and another within an incorporated city or outside of Santa Barbara County
- 3) External-External: Vehicle trips with neither end of the trip beginning or ending in the unincorporated county

Using the recommendation of the Regional Target Advisory Committee (RTAC), the body responsible for Senate Bill 375 target setting, VMT from trips of type 1, 2, and 3 were counted 100%, 50%, and 0% respectively toward jurisdiction-generated VMT.

The VMT analysis resulted in 1.1 billion miles traveled annually and approximately 24 miles per person per day in unincorporated Santa Barbara County, generating

approximately 521,160 MTCO<sub>2</sub>e. Approximately 12% of transportation-related GHG emissions came from diesel fuel use, while the remaining 88% of transportation emissions were the result of gasoline use (see **Figure 10**).

**Figure 10 – 2007 On-Road Transportation GHG Emissions by Fuel Type, MTCO<sub>2</sub>e**



## OFF-ROAD EQUIPMENT

Gasoline and diesel fuel are used to power off-road equipment in Santa Barbara County. Off-road equipment incorporated in this Inventory includes agriculture, construction and mining, lawn and garden, and light commercial equipment.

### Off-Road Equipment Quick Facts

8,764	Equipment Population
11,936,200	Fuel Consumption
102,140	Total MTCO <sub>2</sub> e

Off-road vehicles and equipment accounted for 8% of emissions in 2007. The California Air Resources Board's OFFROAD 2007 program provides emissions data for off-road equipment by county. The countywide data was attributed to the unincorporated county based on the indicators presented in **Table 5**.

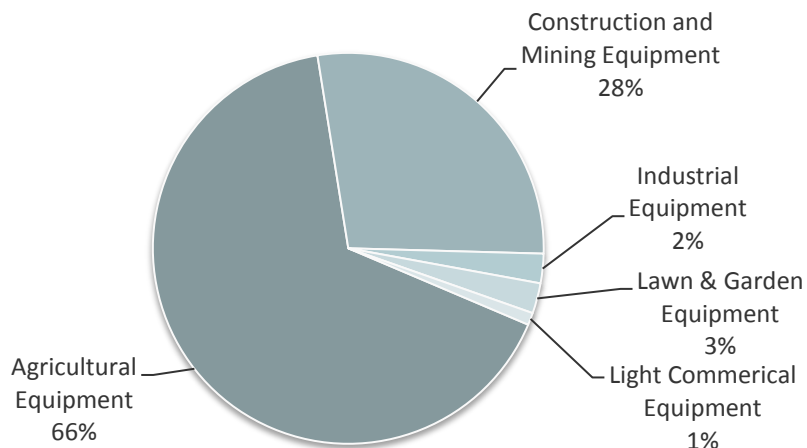
**Table 5 – Off-Road Equipment Allocation Indicators**

Equipment Type	Allocation Indicator
Agricultural Equipment	Acres of Cropland
Construction and Mining Equipment	Countywide Permit Valuations
Industrial Equipment	Industrial Jobs
Lawn & Garden Equipment	Households
Light Commercial Equipment	Service and Commercial Jobs

Approximately 66% of off-road equipment emissions in 2007 came from agricultural equipment, while 28% were the result of construction and mining equipment. The remaining off-road equipment activities included in this Inventory include industrial equipment, lawn and garden equipment, and light commercial equipment, making up

approximately 6% of emissions collectively (see **Figure 11**). Total emissions from off-road equipment for 2007 is estimated to be approximately 102,140 MTCO<sub>2e</sub>.

**Figure 11 – 2007 Off-Road Equipment GHG Emissions by Equipment Type, MTCO<sub>2e</sub>**



## AIRCRAFT

Aircraft emissions include the fuel used during landings and take-offs at the Santa Ynez Airport. While there are six airports in Santa Barbara County, only the Santa Ynez airport is operated by Santa Barbara County. The airport averages approximately 70 operations per day, all of which are civil flights using piston or jet aircrafts. In 2007, the Santa Ynez Airport was responsible for approximately 2,270 MTCO<sub>2e</sub>.

### Aircraft Quick Facts

70	Daily Operations
2,270	Aircraft MTCO <sub>2e</sub>

## SOLID WASTE

Waste generated by residential, commercial, and industrial uses in the unincorporated county is disposed of at a managed landfill in Santa Barbara County. Waste emissions are considered Scope 3 emissions because they are not generated in the baseline year, but will produce methane over an approximately 100-year period as the waste decomposes.

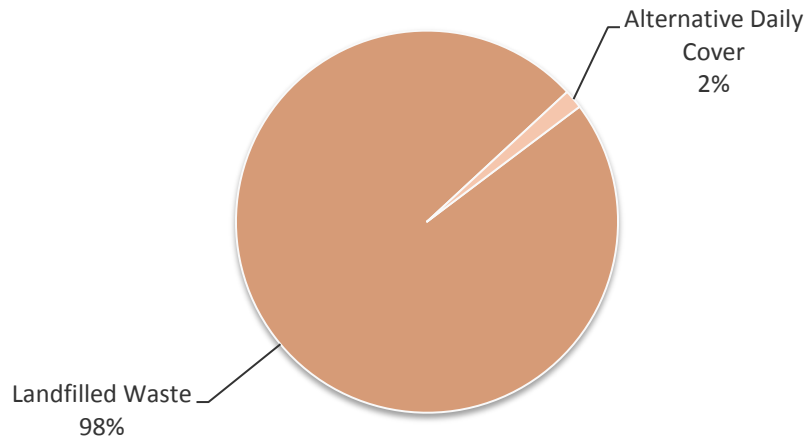
### Solid Waste Quick Facts

115,390	Tons landfilled waste
2,380	Tons ADC
90,440	MTCO <sub>2e</sub> landfilled waste
1,480	MTCO <sub>2e</sub> ADC
91,920	Total emissions (MTCO <sub>2e</sub> )

Solid waste disposed of at managed landfills was responsible for 6% of total emissions for the community. Waste and alternative daily cover (ADC) tonnages for the unincorporated county are reported by

the County of Santa Barbara to CalRecycle on an annual basis. In 2007, approximately 115,390 tons of solid waste and 2,380 tons of green waste and sludge used as ADC were sent to the Tajiguas Landfill in 2007, resulting in approximately 91,920 MTCO<sub>2e</sub> (see **Figure 12**).

**Figure 12 – 2007 Waste Emissions by Type of Waste Disposed, MTCO<sub>2e</sub>**



## AGRICULTURE

Agricultural processes account for 4% of the 2007 Inventory or 62,110 MTCO<sub>2e</sub>. The agriculture sector includes an analysis of the GHG emissions occurring from fertilizer application on crops and from livestock, which produce methane through digestive processes (see **Figure 13**). In 2007, the unincorporated county's agricultural economy included 116,400 acres of cultivated cropland and 26,200 livestock animals. Crops in Santa Barbara County include vegetables, berries, fruit, row crops, and wine grapes. Livestock populations in Santa Barbara County include dairy cattle, grazing cattle, sheep, goats, and horses.

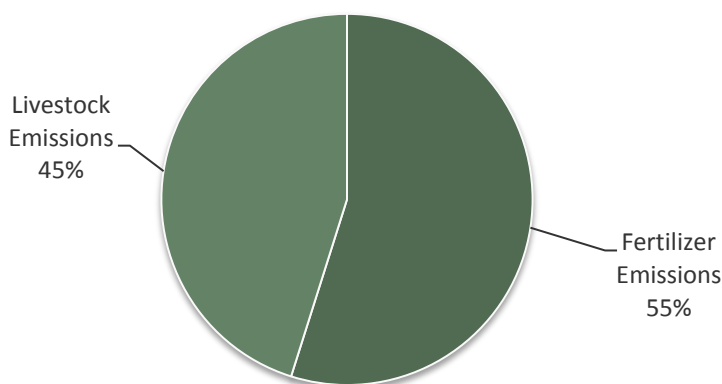
### Agriculture Quick Facts

116,400	Acres of Agriculture
26,200	Livestock Population
34,080	Fertilizer Emissions
28,030	Livestock Emissions
62,110	Total Agriculture Emissions (MTCO <sub>2e</sub> )

An average nitrogen fertilizer use for each crop was identified using University of California Cooperative Extension cost reports. A weighted average of nitrogen fertilizer was calculated for each crop category and applied to all other cropland not within the top three crops for each category. An equation provided by the California Air Resources Board was used to calculate grams of N<sub>2</sub>O released per pound of fertilizer applied to each crop type. Grams of N<sub>2</sub>O were converted into metric tons of CO<sub>2e</sub>

using factors provided in the Local Government Operations Protocol Version 1.1 Methane emissions from livestock were calculated using the Intergovernmental Panel on Climate Change's Livestock Estimation equations based on kilograms of methane per head per year by type of animal.

**Figure 13 – 2007 Agriculture Emissions by Activity, MTCO<sub>2</sub>e**



## WATER AND WASTEWATER

Water and wastewater emissions accounted for 3% of total GHG emissions in 2007 or 49,520 MTCO<sub>2</sub>e. This Inventory includes two types of water-related emissions: (1) direct process emissions, which include methane generated from septic systems and wastewater treatment plants; and (2) emissions from the electricity and natural gas used to extract, process, treat, and deliver water and wastewater to, from, and within Santa Barbara County.

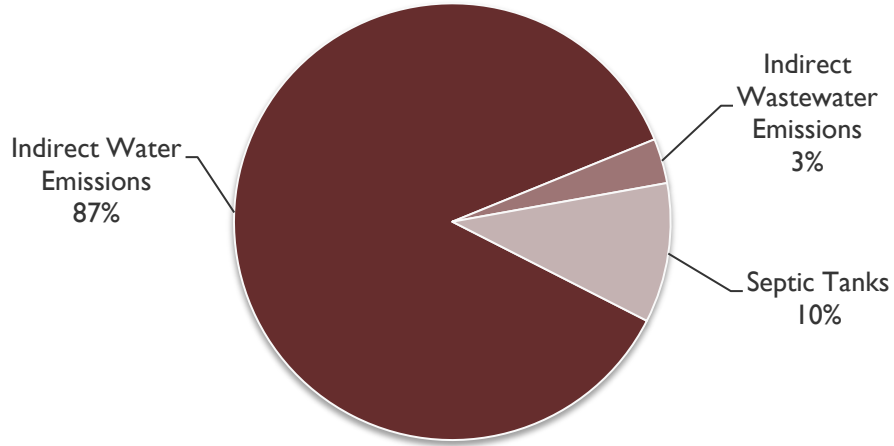
In 2007, the unincorporated county used approximately 86 billion gallons of water, 90% of which was used for agricultural purposes and extracted through private groundwater wells. Wastewater treatment plants throughout the county also utilize energy to treat approximately 2.6 billion gallons of wastewater generated by uses in the unincorporated county. There are approximately 8,750 septic systems in unincorporated Santa Barbara County, which are used to treat wastewater from residential properties that are not connected to sewer and wastewater treatment systems. Water and wastewater delivery and treatment utilized approximately 150

### Water & Wastewater Quick Facts

8,750	Number of Septic Tanks
85,710	Million Gallons Delivered
42,680	Water Treatment Emissions (MTCO <sub>2</sub> e)
1,550	Wastewater Treatment Emissions (MTCO <sub>2</sub> e)
5,280	Septic Tank Emissions (MTCO <sub>2</sub> e)
49,520	Total Water & Wastewater Emissions (MTCO <sub>2</sub> e)

million kWh of electricity in 2007. **Figure 14** below depicts the GHG emissions occurring from water use in the unincorporated county.

**Figure 14 – 2007 Water and Wastewater Emissions by Water Treatment Type, MTCO<sub>2</sub>e**





## **GHG EMISSIONS FORECAST**

An adjusted forecast determines the impact that state regulations will have on the County's future GHG emissions. The community-wide GHG emissions have been forecast to the year 2020 for consistency with state legislation (AB 32). For consistency with other County and regional planning efforts, a second emissions forecast year of 2035 is included as well. The basis for all growth scenarios is a "business-as-usual" (BAU) projection. The BAU projection forecasts emissions to reflect the County's growth projections without regulatory or technical intervention to reduce GHG emissions. The BAU projection is then used as a starting point for the County to determine the level of emissions reductions needed to reach a reduction target.

## **POPULATION, HOUSING, AND EMPLOYMENT FORECAST**

In order to complete a business-as-usual (BAU) forecast for unincorporated Santa Barbara County, it is important to have a clear picture of the county's anticipated growth. **Tables 6, 7, and 8** provide a summary of the anticipated growth in population, housing, and jobs for the unincorporated communities through 2035. These estimates come from the Santa Barbara County Association of Government's Regional Growth Forecast and have incorporated 2010 Census Data, when available.

**Table 6 – Unincorporated County Population Forecast, 2007–2035**

	<b>2005</b>	<b>2007</b>	<b>2010</b>	<b>2020</b>	<b>2035</b>
Unincorporated Total	132,260	133,190	134,580	139,220	144,690
Countywide Total	417,510	422,740	431,290	459,800	486,900
% of Total Countywide	32%	32%	31%	30%	30%

**Table 7 – Unincorporated County Households Forecast, 2007–2035**

	<b>2005</b>	<b>2007</b>	<b>2010</b>	<b>2020</b>	<b>2035</b>
Unincorporated Total	44,950	45,660	46,050	47,350	49,290
Countywide Total	143,140	146,980	149,440	157,650	165,970
% of Total Countywide	31%	31%	31%	30%	31%

**Table 8– Unincorporated County Jobs Forecast, 2007–2035**

	<b>2005</b>	<b>2007</b>	<b>2010</b>	<b>2020</b>	<b>2035</b>
Agriculture	14,090	14,170	15,020	15,530	16,720
Industrial	2,620	2,630	2,610	3,000	3,320
Commercial	4,120	4,150	4,400	4,790	5,350
Office	1,790	1,780	1,800	1,870	2,060
Service	6,990	7,040	7,760	8,330	8,880
Unincorporated County Total	29,610	29,770	31,590	33,520	36,330
Countywide Total	188,050	189,610	200,000	216,000	241,000

## BUSINESS-AS-USUAL FORECAST

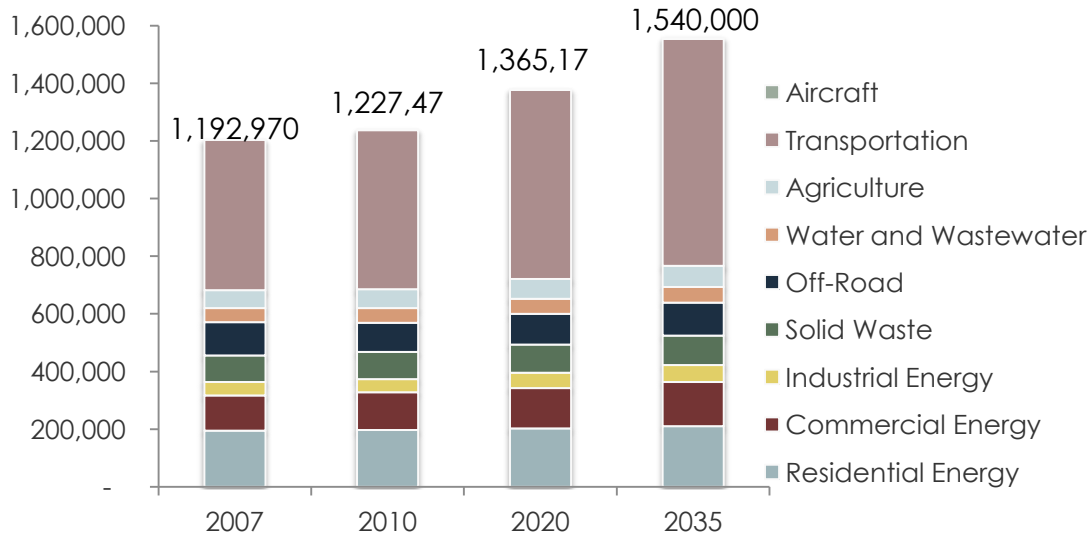
The population, housing, and job forecast indicators are applied to the 2007 GHG emissions inventory to determine a business-as-usual growth scenario. Emissions are forecasted under this scenario by utilizing projections that indicate growth in each sector as shown in **Table 9**.

**Table 9 – Applicable Indicators by GHG Emissions Sector**

Sector	Sub-Sector	Applicable Indicator
<b>Residential Energy</b>	Residential Electricity	Households
	Residential Natural Gas	Households
<b>Commercial Energy</b>	Commercial Electricity	Commercial/Service Jobs
	Commercial Natural Gas	Commercial/Service Jobs
<b>Industrial Energy</b>	Industrial Electricity	Industrial Jobs
	Industrial Natural Gas	Industrial Jobs
<b>Solid Waste</b>	Landfilled Waste	Service Population
	Alternative Daily Cover	Service Population
<b>Off-Road</b>	Agricultural Equipment	Agriculture Jobs
	Construction and Mining Equipment	Construction Growth
	Industrial Equipment	Industrial Jobs
	Lawn & Garden Equipment	Households
	Light Commercial Equipment	Commercial/Service Jobs
<b>Water and Wastewater</b>	Water Emissions	Service Population
	Wastewater Emissions	Service Population
	Septic Tanks	Households
<b>Agriculture</b>	Fertilizer Emissions	Agriculture Jobs
	Livestock Emissions	Agriculture Jobs
<b>Transportation</b>	On-Road Transportation	VMT Forecast
<b>Aircraft</b>	Landings and Take-Offs	Landings and Take Offs

A business-as-usual (BAU) projection is an estimate of how emissions would grow if consumption trends and efficiencies remain at their 2007 levels yet the number of people, households, and jobs continues to grow in Santa Barbara County. Under the business-as-usual scenario, community-wide emissions will grow by approximately 14% by the year 2020 and by approximately 29% by 2035 (refer to **Figure 15** and **Table 10**).

**Figure 15 – 2007–2035 Business-As-Usual GHG Emissions (MTCO<sub>2e</sub>)**



**Table 10 – 2007–2035 Business-As-Usual GHG Emissions (MTCO<sub>2e</sub>)**

Sector	2007	2010	2020	2035
Residential Energy	195,490	197,160	202,730	211,040
Commercial Energy	121,580	130,860	140,520	152,700
Industrial Energy	46,780	46,430	53,360	59,060
Solid Waste	91,920	93,730	97,440	102,100
Off-Road	102,140	88,170	91,120	97,240
Water and Wastewater	49,520	50,440	52,370	54,840
Agriculture	62,110	65,830	68,070	73,280
Transportation	521,160	552,580	657,290	787,470
Aircraft	2,270	2,270	2,270	2,270
<b>TOTAL</b>	<b>1,192,970</b>	<b>1,227,470</b>	<b>1,365,170</b>	<b>1,540,000</b>
<b>% Growth</b>		<b>3%</b>	<b>14%</b>	<b>29%</b>

### ADJUSTED BUSINESS-AS-USUAL FORECAST

State-led or state-induced reduction strategies included in the AB 32 Scoping Plan are factored into the adjusted 2020 and 2035 emissions forecast. Strategies include all state actions that are approved, programmed, and/or adopted and require no additional local action. Incorporating these strategies into the forecast and reduction assessment to create an adjusted business-as-usual forecast provides a more accurate picture of future emissions growth. This methodology also provides a more accurate assessment of

the responsibility of local governments once state measures to reduce GHG emissions have been implemented.

A brief description of each of these state-led or state-induced reduction strategies, along with the methodology used to incorporate the strategy into the adjusted emission forecast, is presented below. The overall effect of these strategies is also summarized below in **Table 11**.

**Table 11 – GHG Reduction Impact of State Policies on Santa Barbara County (MTCO<sub>2</sub>e)**

	2010	2020	2035
<b>Renewable Portfolio Standard</b>	830	23,850	41,800
<b>Pavley (Clean Car Standard)</b>	0	97,550	173,850
<b>Low Carbon Fuel Standard</b>	0	40,300	44,160
<b>Title 24 Standards</b>	310	2,030	6,790
<b>California Solar Initiative</b>	130	260	230
<b>TOTAL</b>	1,270	163,990	266,830

## SUSTAINABLE COMMUNITIES STRATEGY (SB 375)

### DESCRIPTION

Passed in 2008, Senate Bill 375, the Sustainable Communities and Climate Protection Action of 2008, directed the California Air Resources Board to work with the 18 Metropolitan Planning Organizations to establish greenhouse gas reduction targets for 2020 and 2035 and to achieve those targets through integrated transportation, housing, and land use planning. In 2011, the Santa Barbara County Association of Governments board adopted SB 375 targets for 2020 and 2035 to achieve a zero net increase in per capita GHG emissions per passenger vehicle.

While implementation of SB 375 is expected to reduce vehicle trips and transportation-related emissions in Santa Barbara County, it is not included in this adjusted business as usual forecast at this time for the following three reasons.

- 1) The intent and implementation of SB 375 is likely to overlap with mixed use and transit-oriented development measures to be included in the County's climate action plan,
- 2) A technical, defensible analysis of the bill's projected impact on the state or County is not available at this time, and
- 3) SBCAG is in the process of updating the RTP and the strategies to achieve the targets have not yet been identified.

## **CAP AND TRADE**

### **DESCRIPTION**

The AB 32 Scoping Plan, developed and adopted by CARB in 2008, identified a cap-and-trade program as one of the market mechanisms to reduce greenhouse gas emissions. Under the cap-and-trade program, GHG emissions caps from the identified sectors would be established and facilities subject to cap-and-trade would be allotted permits, which could be traded or sold if unused. Over time, the cap would decrease, requiring facilities to either purchase additional permits, or reduce emissions generated by their facility.

Implementation of the cap-and-trade program is expected by 2013. However, at this time, the market mechanisms that will be employed by facilities to meet the cap-and-trade requirements have not yet been studied at the depth necessary to identify an achievable local GHG reduction to Santa Barbara County's stationary source emissions. For this reason, cap-and-trade regulations are not incorporated into the adjusted business as usual forecast at this time but could be incorporated in future updates.

## **RENEWABLE PORTFOLIO STANDARD**

### **DESCRIPTION**

California's Renewable Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country, mandating that 33% of electricity delivered in California is generated by renewable sources like solar, wind, and geothermal by 2020. The California RPS was first codified in 2002 by Senate Bill 1078 (requiring 20% renewable electricity mix by 2010) and further strengthened in April 2011 with the adoption of Senate Bill X 1-2 (requiring 33% renewable electricity mix by 2020).

### **METHODOLOGY**

Despite the 2020 goal of California's RPS, technological, infrastructure, and political challenges may prevent some investor-owned utilities from achieving the 33% target by 2020. In 2010, the California Public Utilities Commission, the agency responsible for regulating and tracking the progress of the RPS, reported that 18% of California's electricity came from renewable sources in 2010, missing the 20% goal by 2%. California utilities have more than enough renewable electricity under consideration to meet the 33% target by 2020. However, due to contract and transmission limitations, not all of this new electricity will be available in time. Based on CPUC progress reports and identified barriers to achieving the RPS targets, this analysis assumes a more conservative forecast of a 28% renewable mix by 2020 and a 35% renewable energy mix by 2035 for both PG&E and SCE.

## PAVLEY STANDARD

### DESCRIPTION

Signed into law in 2002, AB 1493 requires carmakers to reduce GHG emissions from new passenger cars and light trucks beginning in 2011. The California Air Resources Board (CARB) adopted regulations in 2004, which took effect in 2009 with the release of a waiver from the US Environmental Protection Agency (EPA) granting California the right to implement the bill. CARB anticipates that the Pavley standards will reduce GHG emissions from new California passenger vehicles by about 22% in 2012 and about 30% in 2016, all while improving fuel efficiency and reducing motorists' costs.

The Pavley rules establish GHG emission standards for two different groups of passenger vehicles: (1) passenger cars (PC) and light-duty trucks with test weights under 3,751 pounds loaded vehicle weight (LDT1); and (2) light-duty trucks with test weights between 3,751 pounds loaded vehicle weight and 8,500 pounds gross vehicle weight (GVW) (LDT2). Medium-duty passenger vehicles (LDT3) between 8,500 and 10,000 pounds GVW are included with manufacturers' LDT2 vehicles when determining compliance with California's GHG standards. For the purposes of this analysis, only vehicles up through 8,500 pounds were taken into account considering that the majority of LDT3 vehicles are commercial and therefore do not fall under the scope of the Pavley rules.

### METHODOLOGY

GHG reductions from the Pavley standard were calculated using EMFAC 2011 data for Santa Barbara County. Emission FACTors model (EMFAC) 2011 data includes emissions factors per mile for each vehicle class for 2020 and 2035 under both a business as usual scenario and with Pavley and the Low Carbon Fuel Standard (LCFS) implemented. To determine the impact that Pavley will have on the County's emissions, Pavley and LCFS were separated from the analysis, and the difference in emissions factors was calculated for each applicable vehicle class, as shown in **Table 12**. Emissions reductions per model year and vehicle class were applied to Santa Barbara County's transportation emissions and resulted in a 15% decrease in transportation-related GHG emissions by 2020 and a 22% decrease by 2035.

**Table 12 – GHG Reductions from Pavley by Vehicle Class**

GHG Reductions by Vehicle Class	2007	2010	2020	2035
01 - Light-Duty Autos (PC)	0%	0%	22%	30%
02 - Light-Duty Trucks (T1)	0%	0%	16%	27%
03 - Light-Duty Trucks (T2)	0%	0%	15%	22%
04 - Medium-Duty Trucks (T3)	0%	0%	12%	20%

## **LOW CARBON FUEL STANDARD<sup>2</sup>**

### **DESCRIPTION**

Because transportation is the largest single source of greenhouse gas emissions in California, the State is taking an integrated approach to reducing emissions from this sector. Beyond including vehicle efficiency improvements and lowering vehicle miles traveled, the State is proposing to reduce the carbon intensity of transportation fuels consumed in California. To reduce the carbon intensity of transportation fuels, CARB is developing a LCFS. The LCFS will reduce the carbon intensity of California's transportation fuels by at least 10% by 2020 as called for by Governor Schwarzenegger in Executive Order S-01-07. The LCFS will also incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce greenhouse gas emissions.

In late 2011, a Federal District Court Judge ruled that California's Low Carbon Fuel Standard violates the dormant commerce clause by discriminating out of state ethanol products and that CARB failed to identify alternative methods for achieving greenhouse gas reductions. Though the ruling has been appealed by CARB, the current injunction will limit CARB from implementing the regulation which is why at this time, the County's ECAP is not relying on LCFS related GHG reductions to achieve the County's GHG reduction target. Potential GHG emissions reductions from the LCFS are included as an informational item only.

### **METHODOLOGY**

The California Air Resources Board's Pavley I and Low Carbon Fuel Standard Postprocessor software was utilized to determine the impact that the LCFS will have on transportation GHG emissions in Santa Barbara County. Implementation of the Low Carbon Fuel Standard is estimated to reduce life-cycle GHG emissions from transportation fuels by 10% by 2020<sup>2</sup>. Based on analysis performed by air districts, such as the Bay Area Air Quality Management District, this reduction in carbon intensity will not result in a direct 10% reduction in tailpipe emissions from vehicles but will instead reduce GHG emissions from tailpipes by 7.2% in 2020.

## **TITLE 24 STANDARDS**

### **DESCRIPTION**

Title 24 of the California Code of Regulations (CCR) mandates how each new home and business is built in California. It includes requirements for the structural, plumbing, electrical, and mechanical systems of buildings, and for fire and life safety, energy conservation, green design, and accessibility in and around buildings. The 2010 triennial edition of Title 24 pertains to all occupancies that applied for a building permit on or

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<sup>2</sup> The Low Carbon Fuel Standard GHG Reduction Impacts on Santa Barbara County are not included in the adjusted forecast.

after January 1, 2011, and remains in effect until the effective date of the 2013 triennial edition. The two sections of Title 24 that most directly apply to a GHG emissions forecast are: Part 6, the California Energy Code; and Part 11, the California Green Building Standards Code or CALGreen Code. These two sections require direct electricity, natural gas, and water savings for every new home or business built in California. Title 24 is a statewide standard applied at the local level by local agencies through project review.

The most recent update to Title 24 Part 6, the California Energy Code, went into effect on January 1, 2010, for both residential and nonresidential new construction. Part 6 also includes requirements for lighting and insulation upgrades to nonresidential buildings undergoing a major retrofit.

## **METHODOLOGY**

This GHG forecast incorporates the net energy benefit of new Title 24 requirements that did not exist in the baseline year. These estimates are based on California Energy Commission studies that compare each new update of Title 24 to its former version. The AB 32 Scoping Plan calls for ongoing triennial updates to Title 24 that will yield regular increases in the mandatory energy and water savings for new construction. As such, a conservative estimate of the energy reductions due to future updates of Title 24 based on historic growth rates has been incorporated in to the adjusted BAU forecast. Past updates to Title 24 have shown equal if not higher increases in efficiency as a result of the update.

As a conservative estimate, it is anticipated that each update to the Title 24 standards will have 70% of the effectiveness of the improvement between 2008 and 2005 standards. The energy reductions quantified in the forecast from Part 6 Energy Code updates are based on the assumption that a minimum of 3 updates to the code will occur by 2025 and each update will yield regular decreases in the maximum allowable amount of energy used from new construction.

California is the first state in the nation to adopt a mandatory green building code, the California Green Building Standards Code, or CALGreen. The CALGreen Code was updated in 2010 and became effective as of January 1, 2011. The code takes a holistic approach to green building by including minimum requirements in the areas of planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. All local governments must adopt the minimum requirements of the CALGreen code and may elect to adopt one of the two additional tiers.

Mandatory CALGreen standards do not require explicit reductions in energy consumption beyond the minimum Title 24 Part 6 standards. However, if a local government elects to adopt either of the tiers of CALGreen, additional prerequisites and electives must be implemented by new development projects subject to CALGreen. The County has not yet adopted any additional tiers of CALGreen to require



new development projects to reduce energy use, however, the County is considering incentivizing projects who meet the requirements of the additional tiers through its Innovative Building Review Program.

## **CALIFORNIA SOLAR INITIATIVE**

### **DESCRIPTION**

The California Solar Initiative (CSI) was authorized in 2006 under Senate Bill (SB) 1. CSI allows the California Public Utilities Commission (CPUC) to provide incentives to install solar technology on existing residential, commercial, nonprofit, and governmental buildings if they are customers of the state's investor-owned utilities (IOUs): Pacific Gas & Electric (PG&E), San Diego Gas & Electric (SDG&E), or Southern California Edison (SCE).

The CSI program has a budget of \$2.167 billion to expend by 2016 with a goal to reach 1,940 megawatts (MW) of installed power throughout the state by that year. The CSI program has several components including the Research and Development, Single-family Affordable Solar Housing (SASH), Multifamily Affordable Solar Housing (MASH), and Solar Water Heating Pilot programs, each of which provides incentives to further the development and installation of new solar technology on California's buildings.

### **METHODOLOGY**

The CPUC provides complete solar installation data for each jurisdiction in California since 2006. GHG reductions related to the California Solar Initiative are incorporated into this forecast by identifying the total megawatts installed in unincorporated Santa Barbara County since 2007 and estimating the annual kilowatt-hour (kWh) output of the solar installations. This calculation also estimates the rate at which residents and businesses will continue to install solar equipment through 2016, the anticipated end year of the program.

Between 2006 and 2011 residential and commercial customers through SASH, MASH, and the solar water heater programs of the California Solar Initiative, installed approximately 400 kW of solar photovoltaic systems, estimated to generate 460,000 kWh every year. By 2020, it is estimated that unincorporated Santa Barbara County residents and businesses will have installed more than 1 MW of renewable energy systems that will produce 1 million kWh annually.

## **ADJUSTED BUSINESS-AS-USUAL FORECAST SUMMARY**

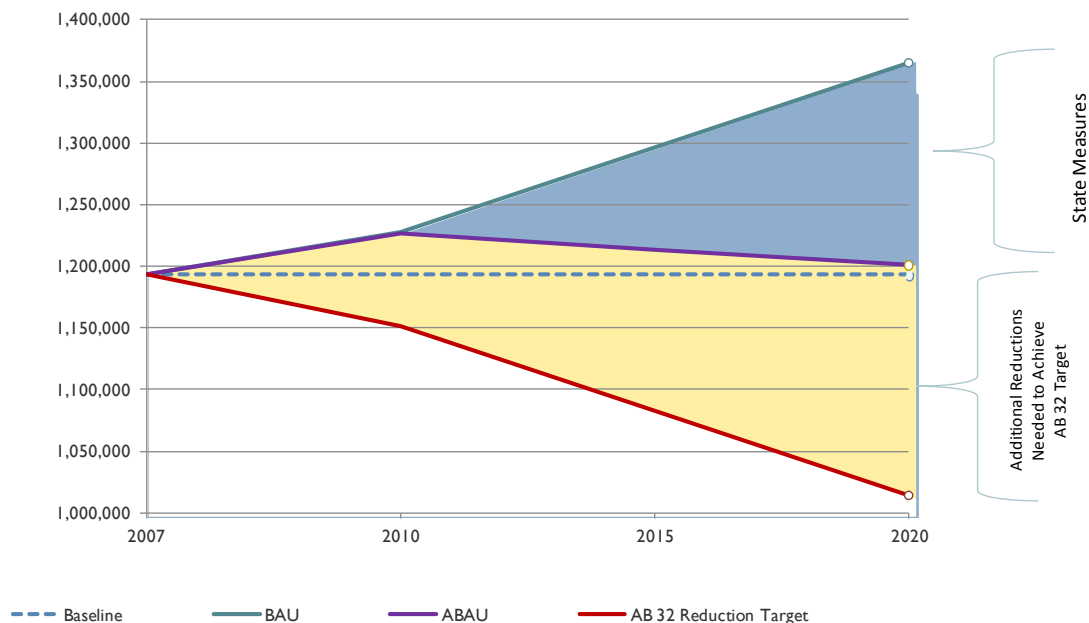
As shown in **Table 13** and **Figure 16**, state policies and programs will reduce GHG emissions by 12% below the business-as-usual forecast by 2020. Figure 16 demonstrates the gap that will need to be closed between the ABAU forecast and a proposed GHG reduction target of 15% below baseline emissions by 2020. This reduction target is based on the recommendation to local governments in the AB Scoping Plan to "move toward establishing similar goals for community emissions that parallel the State commitment to reduce greenhouse gas emissions by approximately 15% from current

levels by 2020." If adopted, the County would be responsible to reduce the remaining emissions amounting to 186,900 MTCO<sub>2e</sub> by 2020. The County's Climate Action Plan will identify regulatory and incentive based policies to close that gap and meet the GHG reduction target.

**Table 13 – Adjusted Business-As-Usual Forecast, 2007–2035\***

	2007	2010	2020	2035
Residential Energy	195,490	196,460	186,590	180,980
Commercial Energy	121,580	130,410	139,280	139,140
Industrial Energy	46,780	46,300	49,230	51,530
Solid Waste	91,920	93,730	97,440	102,100
Off-Road	102,140	88,170	91,120	97,240
Water and Wastewater	49,520	50,270	47,480	46,400
Agriculture	62,110	65,830	68,070	73,280
Transportation	521,160	552,580	519,440	569,460
Aircraft	2,270	2,270	2,270	2,270
<b>TOTAL</b>	<b>1,192,970</b>	<b>1,226,020</b>	<b>1,200,920</b>	<b>1,262,400</b>

**Figure 16 – Comparison of Business-As-Usual and Adjusted Business-As-Usual Emissions\* (MTCO<sub>2e</sub>), 2007–2020**



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## Emissions Included in County Inventory

Sector	Subsector	Activity	MTCO <sub>2e</sub>	Emissions Generated in Geographic Boundary	County Degree of Influence	ECAP Focus Area
<b>Residential Energy</b>	Residential Electricity	293,717,600 kWh	85,610	No	High	Yes
	Residential Natural Gas	20,656,900 Therms	109,890	Yes	High	Yes
<b>Commercial Energy</b>	Commercial Electricity (including Ag)	143,946,300 kWh	41,950	No	High	Yes
	Commercial Natural Gas(including Ag)	14,968,300 Therms	79,630	Yes	High	Yes
<b>Industrial Energy</b>	Industrial Electricity	114,952,900 kWh	33,500	No	Medium	Yes
	Industrial Natural Gas	2,498,600 Therms	13,290	Yes	Medium	Yes
<b>Solid Waste</b>	Landfilled Waste	115,390 tons	90,440	Yes	High	Yes
	Alternative Daily Cover	2,380 tons	1,480	Yes	High	No
<b>Off-Road</b>	Agricultural Equipment	6,878,600 gallons	67,500	Yes	Medium	Yes
	Construction and Mining Equipment	2,882,600 gallons	28,560	Yes	Medium	Yes
	Industrial Equipment	309,800 gallons	2,490	Yes	Medium	No
	Lawn & Garden Equipment	373,700 gallons	2,560	Yes	Medium	Yes
	Light Commercial Equipment	130,400 gallons	1,030	Yes	Medium	No
<b>Water and Wastewater</b>	Electricity used by water systems	85,710 Million Gallons	42,680	Partially	Medium	Yes
	Wastewater Emissions	2,577 Million Gallons	1,550	Partially	Medium	No
	Septic Tanks	8,749 Septic Tanks	5,280	Yes	Medium	No
<b>Agriculture</b>	Fertilizer Emissions	116,400 Acres of Crops	34,080	Yes	Medium	No
	Livestock Emissions	26,200 Livestock	28,030	Yes	Low	No
<b>Transportation</b>	On-Road transportation from trips beginning or ending in the unincorporated county.	1,075,523,400 Annual VMT	521,160	Partially	High	Yes
<b>Aircraft</b>	Landings and take-offs from Santa Ynez Airport	71 Daily Flights	2,270	Yes	Low	No
<b>TOTAL</b>			<b>1,192,970</b>			

### Baseline and Forecasted Community GHG Emissions Inventory

Santa Barbara County

## Emissions Excluded from County Inventory

Sector	Subsector	Activity	MTCO <sub>2e</sub>	Emissions Generated in Geographic Boundary	County Degree of Influence	ECAP Focus Area	Source
Energy Use	County-wide Electricity Use	3,242,000,000 kWh	874,869	Partially	Low	No	SBCAPCD
	County-wide Natural Gas Use	130,756,020 Therms	319,042	Partially	Low	No	SBCAPCD
	Vandenberg Air Force Base Electricity Use	Not Available	Not Estimated	No	Low	No	N/A
	Vandenberg Air Force Base Natural Gas Use	Not Available	Not Estimated	Yes	Low	No	N/A
	UCSB Electricity Use	69,217,570 kWh	Not Estimated	No	Low	No	UCSB
	UCSB Natural Gas Use	2,426,111 Therms	Not Estimated	Yes	Low	No	UCSB
Stationary Sources	Unincorporated Stationary Sources	Not Available	315,890	Yes	Low	No	SBCAPCD
	On-Shore Stationary Sources	Not Available	859,248	Partially	Low	No	SBCAPCD
	Off-Shore Stationary Sources	Not Available	146,406	Partially	Low	No	SBCAPCD
Solid Waste	Landfill Gas Output	Not Available	9,067	Yes	Medium	No	SBCAPCD
Off-Road	Rail Operations	Not Available	37,999	Partially	Low	No	SBCAPCD
	Marine and Shipping Operations	Not Available	690,799	Partially	Low	No	SBCAPCD
Transportation	Transportation on incorporated Area Local Roads	285,843,800 VMT	Not Estimated	No	Low	No	Caltrans
	Transportation on County-maintained roads	309,849,200 VMT	Not Estimated	Yes	Medium	No	Caltrans
	Transportation on State Highways and other Federal or State Roads	271,480,800 VMT	Not Estimated	Partially	Low	No	Caltrans
Aircraft	Aircraft operations at non-County owned facilities	Not Available	Not Estimated	Partially	Low	No	SBCAPCD