City of Capitola

2010 Baseline Community-wide Greenhouse Gas Emissions Inventory

Prepared by: The Association of Monterey Bay Area Governments | Energy Watch

With Assistance from ICLEI - Local Governments for Sustainability USA and Pacific Gas and Electric Company

Prepared for: The City of Capitola

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Executive Summary

The City of Capitola recognizes that greenhouse gas (GHG) emissions from human activity are catalyzing profound climate change, the consequences of which pose substantial risks to the future health, wellbeing, and prosperity of our community. Furthermore, Capitola has multiple opportunities to benefit by acting quickly to reduce community GHG emissions. These opportunities include: reducing energy and transportation costs for residents and businesses, creating green jobs, improving health of residents, making your community a more resilient and attractive place to live and locate a business.

Capitola has begun the climate action planning process, starting with inventorying emissions. This report provides estimates of greenhouse gas emissions resulting from activities in Capitola as a whole in 2010.

Table ES 1: 2010 Capitola Community-wide Baseline GHG Emissions Inventory Summary

Source/Activity	2010 Community-wide Baseline GHG Inventory
Electricity Consumption	12,776
Stationary Fuel Combustion	16,049
Transportation and Mobile Sources	57,123
Solid Waste Generation	1,476
Water Treatment and Distribution	667
TOTAL	**88,091**

There are a variety of emissions sources and activities included in the community-wide inventory. A subset of these, identified as local government significantly influenced emissions, are most policy relevant. Figure ES 1 shows significantly influenced emissions from in-boundary Sources, while Figure ES 2 shows the significantly influenced emissions Activities. As you can see, the largest contributor in this set is Transportation and Mobile Sources with 57,123 Metric Tons of Carbon Dioxide Equivalent (MTCO2e) of emissions. The next largest contributors are Stationary Fuel Combustion (i.e. – Residential and Commercial/Industrial Natural Gas Consumption) with 16,049 MTCO2e and Electricity Consumption with 12,776 MTCO2e. Actions to reduce emissions in each of these sectors will be a key part of a climate action plan. Solid Waste Generation and Water Treatment and Distribution were responsible for the remainder of significantly influenced sources of emissions.

Figure ES 1: Community Emissions Sources Subject to Local Government Significant Influence

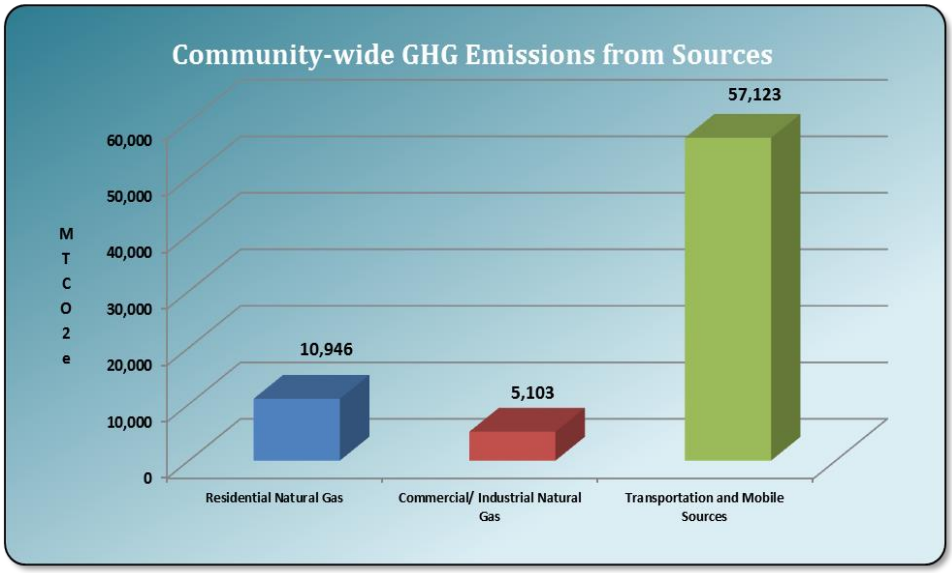
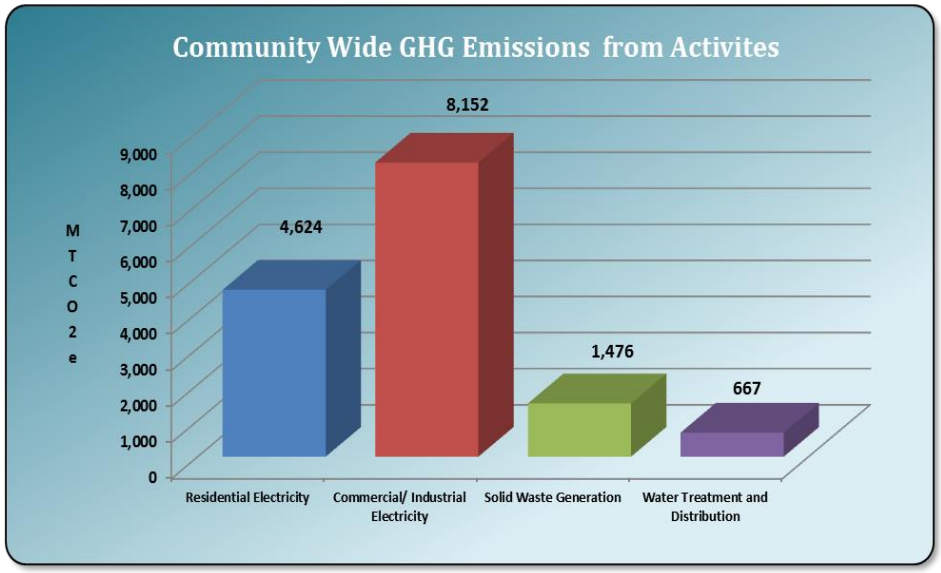


Figure ES 2: Community Emissions Activities Subject to Local Government Significant Influence



Climate Change Background

Naturally occurring gases dispersed in the atmosphere determine the Earth's climate by trapping solar radiation. This phenomenon is known as the greenhouse effect. Overwhelming evidence shows that human activities are increasing the concentration of greenhouse gases and changing the global climate. The most significant contributor is the burning of fossil fuels for transportation, home heating, electricity generation and other purposes, which introduces large amounts of carbon dioxide and other greenhouse gases into the atmosphere. Collectively, these gases intensify the natural greenhouse effect, causing global average surface and lower atmospheric temperatures to rise.

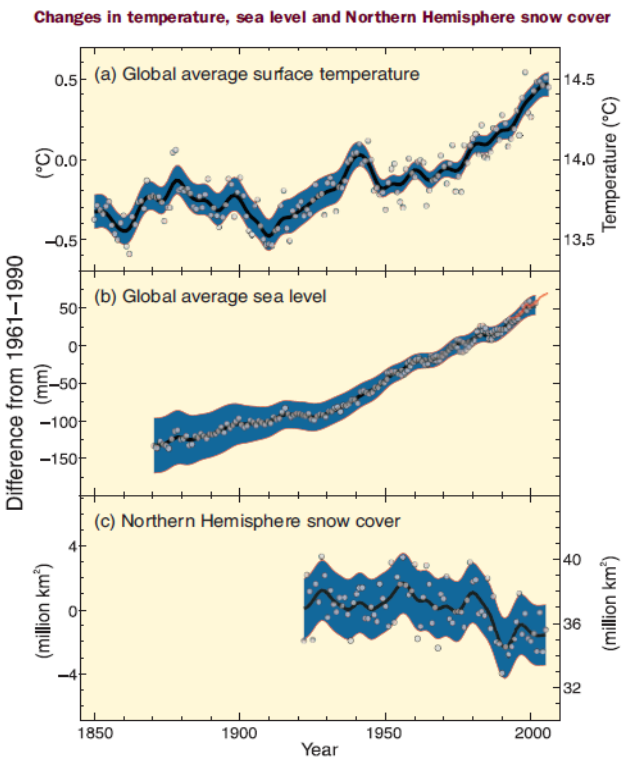


Figure 1: Observed changes in global temperature, sea level and snow cover

Capitola could be impacted by the effects of sea-level rise, changes in precipitation patterns, extreme weather events, increased wildfires, and other inclement effects of climate change. Current and expected impacts to Capitola related to climate change are explained below. Other expected impacts in California include frequent and damaging storms accompanied by flooding and landslides, summer water shortages as a result of reduced snow pack, and the disruption of ecosystems, habitats, and agricultural activities.

Many communities in the United States have taken responsibility for addressing climate change at the local level. Reducing fossil fuel use in the community can have many benefits in addition to reducing greenhouse gas emissions. More efficient use of energy decreases utility and transportation costs for residents and businesses. Retrofitting homes and businesses to be more efficient creates local jobs. In addition, money not spent on energy is more likely to be spent a local businesses and add to the local economy. Reducing fossil fuel use improves air quality, and increasing opportunities for walking and bicycling improves residents' health.

Evidence of Human-Caused Climate Change

There is overwhelming scientific consensus that the global climate is changing, and that human actions, primarily the burning of fossil fuels, are the main cause of those changes. The Intergovernmental Panel on Climate Change (IPCC) is the scientific body charged with bringing together the work of thousands of climate scientists. The IPCC's Fourth Assessment Report states that "warming of the climate system is unequivocal."[1] Furthermore, the report finds that "most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic GHG concentrations."

2012 was the hottest year on record for the continental United States, with two dozen cities breaking or tying their all-time high temperature records.[2] Globally, the 12 years from 2001-2012 are among the 14 hottest on record, and 1998 was the only year in the 20th century hotter than 2012.[3] 1976 was the last year with a below average global temperature. The steady uptick in average temperatures is significant and expected to continue if action is not taken to greatly reduce greenhouse gas emissions.

California Policy

California has a number of state level policies that serve as regulatory drivers for climate action planning at the local government level, which are described below.

Global Warming Solutions Act (AB32)

California passed the Global Warming Solutions Act (AB 32) in 2006, which charged the California Air Resources Board (CARB) with implementing a comprehensive statewide program to reduce greenhouse gas emissions. AB 32 established the following greenhouse gas emissions reduction targets for the state of California:

- 2000 levels by 2010
- 1990 levels by 2020

SB 375

SB 375 enhances California's ability to reach its AB 32 goals by promoting good planning with the goal of more sustainable communities. SB 375 requires CARB to develop regional greenhouse gas emission reduction targets for passenger vehicles. CARB is to establish targets for 2020 and 2035 for each region covered by one of the State's 18 metropolitan planning organizations (MPOs).

[1] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

[2] Burt, Christopher C. "2012 a Record Warm Year for Continental U.S"., January 2, 2013. http://www.wunderground.com/blog/weatherhistorian/comment.html?entrynum=112

[3] NOAA: State of the Climate 2012 Summary. http://www.ncdc.noaa.gov/sotc/

Executive Order S-3-05

Executive Order S-3-05, issued by Governor Schwarzenegger, reinforces these goals and also sets a schedule for the reporting of both the measured impacts of climate change upon California's natural environment and the emissions reduction efforts undertaken by a myriad of state, regional, and local groups. Executive Order S-3-05 establishes an additional target of 80% below 1990 levels by 2050. Capitola's GHG emissions inventory is intended to enable the City to develop effective GHG reduction policies and programs to meet these targets and track emissions reduction progress.

Figure 2: ICLEI Climate Mitigation Milestones

California Environmental Quality Act (CEQA)

CEQA requires public agencies to evaluate the environmental impacts of discretionary development plans and projects in their jurisdictions. CEQA guidelines were updated in March 2010 to require analysis of climate change in CEQA documents. Many jurisdictions are finding that climate change impacts from local government activities are "significant" under CEQA, and are identifying emissions reductions targets and Climate Action Plans as mitigation measures to reduce climate change impacts to less-than-significant levels.

ICLEI Climate Mitigation Program

In response to the problem of climate change, many communities in the United States are taking responsibility for addressing emissions at the local level. Since many of the major sources of greenhouse gas emissions are directly or indirectly controlled through local policies, local governments have a strong role to play in reducing greenhouse gas emissions within their boundaries. Through proactive measures around land use patterns, transportation demand management, energy efficiency, green building, waste diversion, and more, local governments can dramatically reduce emissions in their communities. In addition, local governments are primarily responsible for the provision of emergency services and the mitigation of natural disaster impacts.

ICLEI provides a framework and methodology for local governments to identify and reduce greenhouse gas emissions, organized along Five Milestones, also shown in Figure 2:

1. Conduct an inventory and forecast of local greenhouse gas emissions;

2. Establish a greenhouse gas emissions reduction target;
3. Develop a climate action plan for achieving the emissions reduction target;
4. Implement the climate action plan; and,
5. Monitor and report on progress.

This report represents the completion of ICLEI's Climate Mitigation Milestone One for the community as a whole, and provides a foundation for future work to reduce greenhouse gas emissions in Capitola.

Sustainability & Climate Change Mitigation Activities in Capitola

Capitola has already implemented and/or participated in programs that have or will lead to ancillary benefits in the form of energy conservation and greenhouse gas mitigation. The following are some examples:

- Lead-by-example actions to reduce government operations emissions
    - Active and Ongoing Participation in the AMBAG Energy Watch energy efficiency and conservation programs
    - Formation of the Commission on the Environment, which informs City staff and elected on issues related to environmental protection and stewardship
- Business engagement and recognition programs
    - Monterey Bay Green Business Certification Program
- Recycling and waste reduction programs

Inventory Methodology

Understanding a Greenhouse Gas Emissions Inventory

The first step toward achieving tangible greenhouse gas emission reductions requires identifying baseline emissions levels and sources and activities generating emissions in the community. This report presents emissions from the Capitola community as a whole. Emissions from government operations is a subset of the community inventory included as part of the Non-residential sector, as shown in Figure 3. For example, data on commercial energy use by the community includes energy consumed by municipal buildings, and community vehicle-miles-traveled estimates include miles driven by municipal fleet vehicles.

Figure 3: Relationship of Community and Government Operations Inventories

As local governments have continued to join the climate protection movement, the need for a standardized approach to quantify GHG emissions has proven essential. This inventory uses the approach and methods provided by the Community Greenhouse Gas Emissions Protocol (Community Protocol)[4].

Community Emissions Protocol

The Community Protocol was released by ICLEI in October 2012, and represents a new national standard in guidance to help U.S. local governments develop effective community GHG emissions inventories. It establishes reporting requirements for all community GHG emissions inventories, provides detailed accounting guidance for quantifying GHG emissions associated with a range of emission sources and community activities, and provides a number of optional reporting frameworks to help local governments customize their community GHG emissions inventory reports based on their local goals and capacities. The State of California Governor's Office of Planning and Research recommends that California local governments follow the Community Protocol when undertaking their greenhouse gas emissions inventories.

[4] http://www.icleiusa.org/tools/ghg-protocol/community-protocol

Quantifying Greenhouse Gas Emissions

Sources and Activities

Communities contribute to greenhouse gas emissions in many ways. Two central categorizations of emissions are used in the community inventory: 1) GHG emissions that are produced by "sources" located within the community boundary, and 2) GHG emissions produced as a consequence of community "activities".

Source	Activity
Any physical process inside the jurisdictional boundary that releases GHG emissions into the atmosphere	**The use of energy, materials, and/or services by members of the community that result in the creation of GHG emissions.**

By reporting on both GHG emissions sources and activities, local governments can develop and promote a deeper understanding of GHG emissions associated with their communities. A purely source-based emissions inventory could be summed to estimate total emissions released within the community's jurisdictional boundary. In contrast, a purely activity-based emissions inventory could provide perspective on the efficiency of the community, even when the associated emissions occur outside the jurisdictional boundary. The division of emissions into sources and activities replaces the scopes framework that is used in government operations inventories, but that does not have a clear definition for application to community inventories.

Base Year

The inventory process requires the selection of a base year with which to compare current emissions. Capitola's community greenhouse gas emissions inventory utilizes 2010 as its base year.

Quantification Methods

Greenhouse gas emissions can be quantified in two ways:

- Measurement-based methodologies refer to the direct measurement of greenhouse gas emissions (from a monitoring system) emitted from a flue of a power plant, wastewater treatment plant, landfill, or industrial facility.[5]
- Calculation-based methodologies calculate emissions using activity data and emission factors. To calculate emissions accordingly, the basic equation below is used: *Activity Data x Emission Factor = Emissions*

All emissions sources in this inventory are quantified using calculation based methodologies. Activity data refer to the relevant measurement of energy use or other greenhouse gas-generating processes such as fuel consumption by fuel type, metered annual electricity consumption, and annual vehicle miles traveled. Please see appendices for a detailed listing of the activity data used in composing this inventory.

Known emission factors are used to convert energy usage or other activity data into associated quantities of emissions. Emissions factors are usually expressed in terms of emissions per unit of activity data (e.g. lbs CO_2/kWh of electricity).

For this inventory, calculations were made using the data and emissions factors provided by ICLEI, Pacific Gas and Electric Company (PG&E), CalRecycle, CalTrans, and the Monterey Bay Unified Air Pollution Control District.

[5] Capitola's community inventory includes emissions data provided by the [INSERT ENTITY] that was gathered through [INSERT MEHTOD, E.G: DIRECT MEASUREMENT].

Community-wide Emissions Inventory Results

Following the Community Protocol, this inventory report organizes emissions in several frames. Each frame includes a particular set of emissions sources and activities, and each helps to tell a different story about community emissions. This report looks at Capitola's community emissions through the following frames:

- Local Government Significant Influence
- Household Consumption

Community Profile

To put emissions inventory data in context, it is helpful to have some basic information about community such as population and number of households. This information is provided in Table 1.

Table 1: Capitola Community Indicators

Estimated 2010 Population	9,918
Estimated 2010 Households	5,534
Estimated 2010 Jobs	6,170

Significantly Influenced Emissions Frame

Capitola has chosen first to focus on emissions over which the City government has significant influence. This frame emphasizes policy relevance, highlighting a set of emission sources and activities that Capitola has the greatest opportunity to address. This frame includes all of the five Basic Emissions Generating Activities required by the community protocol. Table 2 and Figure 6 summarize significantly influenced emissions by source and activity.

Table 2: Significantly Influenced GHG Emissions by Activity and Source

Sector	Sources	Activities	TOTALS
Residential	10,946	4,624	15,570
Commercial / Industrial	5,103	8,152	13,255
Transportation and Mobile Sources	57,123	n/a	57,123
Solid Waste	n/a	1,476	1,476
Water Treatment and Distribution	n/a	667	667
TOTALS	73,172	14,920	88,091
Percentage of Total CO2e	83%	17%	100.0%

Capitola will focus on these emissions sources and activities in developing a climate action plan. The total significantly influenced emissions of 88,091 tons CO2e will be the baseline for setting an emissions reduction target and measuring future emissions reductions against. Figure 4 shows significant influence activity emissions by sector, while Figure 5 shows significant influence source emissions by sector. These figures only show emissions that are included in the significant influence frame, and are not intended to be comprehensive of all in-boundary sources or community activities.

Figure 4: Significantly Influenced Emissions by Sector (MTCO2e)

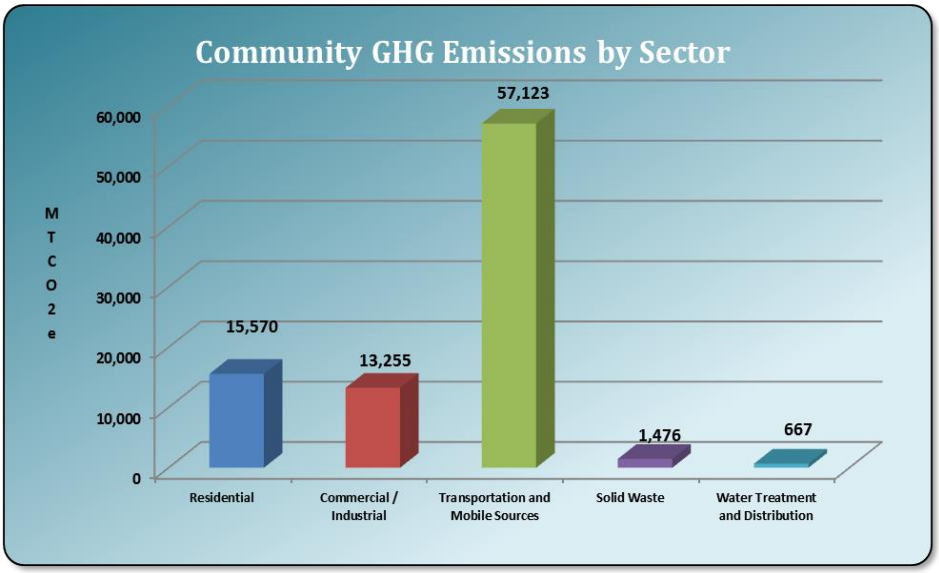


Figure 5: Significant Influence Emissions by Sector (Percentage of Total Emissions)

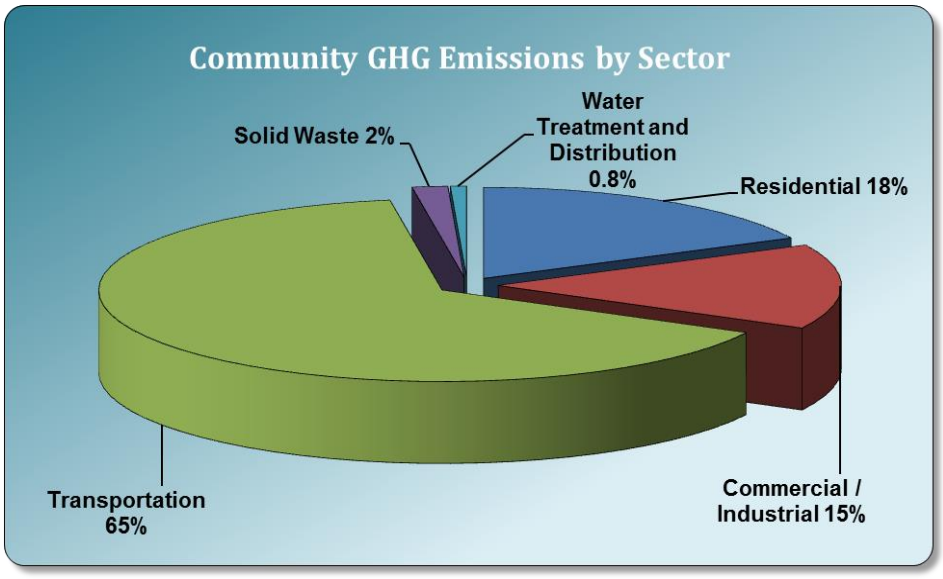


Figure 6 shows a more detailed breakdown of significantly influenced activity emissions, and Figure 7 shows a more detailed breakdown of significantly influenced source emissions.

Figure 6: Significantly Influenced Source Emissions (MTCO2e)

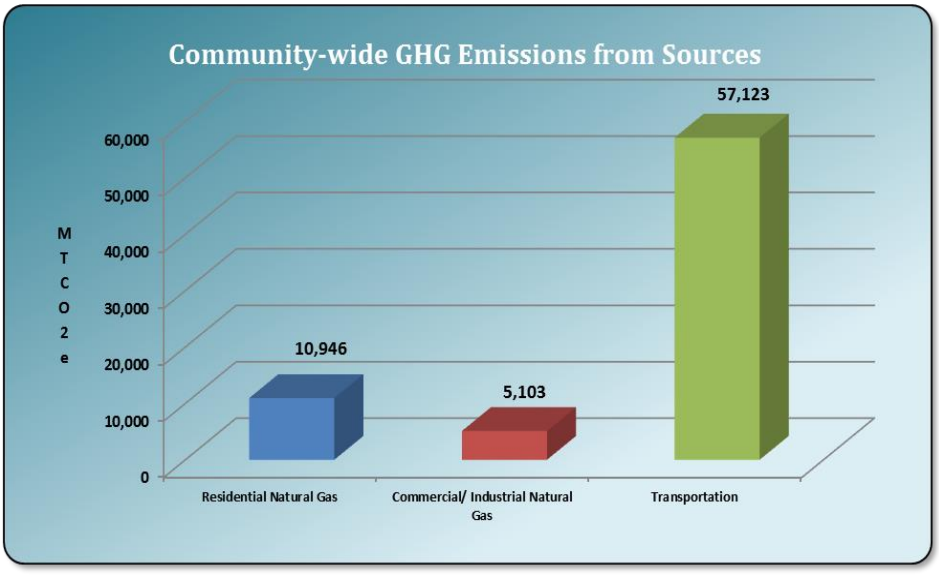
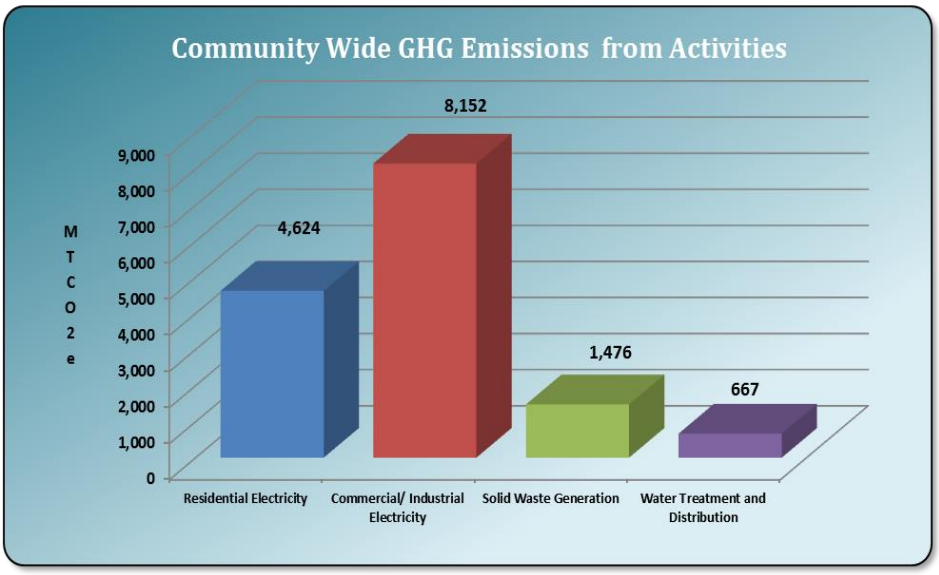


Figure 7: Significantly Influenced Activity Emissions (MTCO2e)



The Transportation sector is the largest contributor to emissions over which Capitola has significant influence, representing approximately 65% of the City's total emissions. This will be an important activity to focus efforts on in developing a climate action plan. The Residential and Commercial/Industrial sectors also account for a large part of significantly influence emissions, and will also be important to address.

Table 3: Community-Wide GHG Emissions by Category

Source or Activity	Activity Data Quantity and Unit	Emissions (MTCO2e)
Residential Use of Electricity	22,835,419 kWh	**4,624**
Commercial/Industrial Use of Electricity	36,291,610 kWh	**8,152**
Residential Stationary Combustion	2,071,672 therms	**10,946**
Commercial Stationary Combustion	966,194 therms	**5,103**
On-road Vehicle Travel	302,528 vehicle miles traveled daily	**54,744**
Off-road Vehicle Emissions	*n/a**	**2,379**
Potable Water Treatment and Distribution	1,120 acre feet per year	**260**
Wastewater Treatment	1.08 million gallons per day	**407**
Generation of Solid Waste	8,803 tons	**1,476**
	Total Community-Wide Emissions	**88,091**

*Note- Source for Off-road Vehicle Travel emissions estimate: Santa Cruz County Regional Transportation Commission Study- *2004 Inventory of Greenhouse Gas Emissions.*

Household Consumption Frame

The second frame through which Capitola has chosen to look at emissions is that of household consumption. The household consumption frame helps to illustrate the full, life cycle impacts of residents' activities. Household consumption includes lifecycle emissions associated with household electricity use, household natural gas use, household personal vehicle transportation, household use of public transportation, household use of water and wastewater services, household production of garbage, and household use of materials and services. Many of these emissions overlap with those looked at through the local government influence and communitywide activities frames. But the household consumption frame also includes emissions that are not included in the other frames, in particular emissions from goods and services that are produced outside the community.

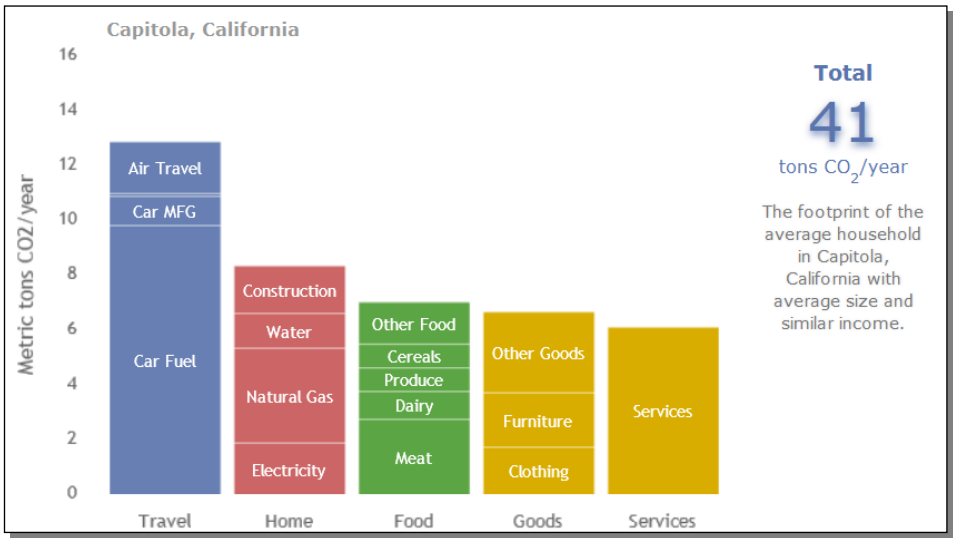
Consumption-based emissions for communities in the U.S. are often – but not always – higher than in-boundary emissions. Consumption based emissions are also larger than geographic emissions for the nation as a whole, although communities with small residential populations, limited government presence, and large industrial or tourism activities (businesses serving non-resident customers) would find their consumption-based emissions to be relatively small. But regardless of whether consumption based emissions are larger or smaller, some of the emissions are *different*, and they represent additional ways in which the community contributes to climate change and by extension, additional opportunities for the community to reduce its contribution to climate change. Table 4 shows total household consumption

emissions for Capitola, while Figure 8 shows household consumption emissions for an average household in Capitola.

Table 4: Total Household Consumption Emissions for Capitola (Source: Cool Climate Calculator)

Average Household Emissions (MTCO2e/Year)	Number of Households	Total Household Consumption Emissions (MTCO2e/Year)
41	5,534	226,894

Figure 8: Household Consumption Emissions for an Average Household in Capitola



Looking at the household emissions frame shows that Food and Purchased Goods are large contributors to emissions, comparable in size to Household Energy Use. A range of actions can help to reduce these emissions, including materials management, reduction of wasted food, and sustainable purchasing practices by governments, businesses, and households. Capitola may want to look at educational efforts in some of these areas as part of its climate action plan.

Consumption emissions for an average household were obtained from the calculator at http://coolclimate.berkeley.edu. Residents who want to learn more about consumption-based emissions from their own household can use the calculator to obtain emissions based on their personal energy use, transportation and purchasing.

Community Emissions Forecast

In order to plan for GHG emission reductions strategies jurisdictions must estimate (or "forecast") future emissions under a Business As Usual (BAU) scenario, which assumes no policies or actions are implemented to curb GHG emissions. GHG Forecasting takes into account historical emission levels established in the Baseline year (2010), as well as expected growth or changes in conditions within the jurisdiction (i.e. - changes in population, expected new development in the Residential and/or Commercial/Industrial sectors, etc.).

The City of Capitola municipal staff and their contracted consultants have developed growth assumptions for the community's recent General Plan Update, which estimate the growth in populations, housing units, and employment in future years. Those growth assumptions provide the basis for the Compound Annual Growth Rates (CAGR) that have been applied to the appropriate sectors of the 2010 Baseline GHG Inventory to create the 2035 and 2050 BAU GHG Forecasts for the City of Capitola.

Table 5 shows expected changes in key indicators used in generating the forecast.

Table 5: Indicators Used in Emissions Forecast (Source: DC&E The Planning Center)

Indicator	2010 Value	2035 Value	Annual Growth Rate	Percent Change from 2010 to 2035
Population	**9,918**	**10,198**	**0.11%**	**2.75%**
Households	**5,534**	**5,613**	**0.06%**	**1.41%**
Employment	**6,170**	**7,368**	**0.71%**	**16.26%**

Under a business-as-usual scenario, the City of Capitola's significantly influenced emissions will grow by approximately 7 percent by the year 2050—from 88,091 MTCO2e to 94,430 MTCO2e—under a business as usual scenario.

Table 6 below shows the results of the 2035 and 2050 BAU GHG Forecast.

Table 6: 2035 and 2050 Business As Usual GHG Emissions Forecast

Source/Activity	2010 Community-wide GHG Inventory Update	2035 BAU GHG Forecast	2050 BAU GHG Forecast	Percent Change from 2010 to 2050
Electricity Consumption	12,776	14,082	14,928	17%
Stationary Fuel Combustion	16,049	17,689	18,753	17%
Transportation and Mobile Sources	57,123	57,986	58,510	2%
Solid Waste	1,476	1,517	1,542	4%
Water Treatment and Distribution	667	686	697	4%
TOTAL	**88,091**	**91,960**	**94,430**	**7%**

Conclusion

This inventory marks completion of Milestone One of the Five Milestones for Climate Mitigation. The next steps are to set an emissions reduction target, and to develop a climate action plan that identifies specific quantified strategies that can cumulatively meet that target. In addition, Capitola should continue to track key energy use and emissions indicators on an on-going basis. ICLEI recommends completing a re-inventory at least every five years to measure emissions reduction progress.

Emissions reduction strategies to consider for the climate action plan include energy efficiency, renewable energy, vehicle fuel efficiency, alternative transportation, vehicle trip reduction, land use and transit planning, waste reduction, and community education and engagement among others. This inventory shows that emissions from the transportation sector and energy consumption in the built environment (Electricity consumption and Stationary Fuel Combustion) will be particularly important to focus on. Through these efforts and others the City of Capitola can achieve additional benefits beyond reducing emissions, including: increase energy security and independency, saving businesses and residents money, creating jobs and improving Capitola's economic vitality and its quality of life.

Appendix A: Community Inventory Details

Table A-1 provides a summary of the emissions sources and activities that are included in the community inventory, as well as those potential sources that are excluded.

Table A-1: Summary of Included and Excluded Community Emissions

Emissions Type		Source or Activity?	Required Activities	Included under reporting frameworks:			Excluded (IE, NA, NO, or NE)	Explanatory Notes	Emissions ($MTCO_2e$)
				SI	CA	HC			
Built Environment									
Use of fuel in residential and commercial stationary combustion equipment		Source AND Activity	x	x					
Industrial stationary combustion sources		Source	x	x					
Electricity	Power generation in the community	Source					NO		
	Use of electricity by the community	Activity	x	x					
District Heating/ Cooling	District heating/cooling facilities in the community	Source					NO		
	Use of district heating/cooling by the community	Activity					NO		
Industrial process emissions in the community		Source					NE		
Refrigerant leakage in the community		Source					NE		
Transportation and Other Mobile Sources									
On-road Passenger Vehicles	On-road passenger vehicles operating within the community boundary	Source	x	x					
	On-road passenger vehicle travel associated with community land uses	Activity					NE		
On-road Freight Vehicles	On-road freight and service vehicles operating within the community boundary	Source					NE		
	On-road freight and service vehicle travel associated with community land uses	Activity					NE		
On-road transit vehicles operating within the community boundary		Source	x	x					
Transit Rail	Transit rail vehicles operating within the community boundary	Source					NO		
	Use of transit rail travel by the community	Activity					NE		
Inter-city passenger rail vehicles operating within the community boundary		Source					NO		
Freight rail vehicles operating within the community boundary		Source					NE		

Emissions Type		Source or Activity?	Required Activities	Included under reporting frameworks: SI	CA	HC	Excluded	Notes	Emissions (MTCO2e)
Marine	Marine vessels operating within the community boundary	Source					NE		
	Use of ferries by the community	Activity					NO		
Off-road surface vehicles and other mobile equipment operating within the community boundary		Source	x	x					
Use of air travel by the community		Activity	x			x			
Solid Waste									
Solid Waste	Operation of solid waste disposal facilities in the community	Source					NO		
	Generation and disposal of solid waste by the community	Activity	x	x					
Water and Wastewater									
Potable Water - Energy Use	Operation of water delivery facilities in the community	Source					NO		
	Use of energy associated with use of potable water by the community	Activity	x	x					
Use of energy associated with generation of wastewater by the community		Activity	x	x					
Centralized Wastewater Systems - Process Emissions	Process emissions from operation of wastewater treatment facilities located in the community	Source					NO		
	Process emissions associated with generation of wastewater by the community	Activity	x	x					
Use of septic systems in the community		Source AND activity					NE		
Agriculture									
Domesticated animal production		Source					NO		
Manure decomposition and treatment		Source					NO		
Upstream Impacts of Community-Wide Activities									
Upstream impacts of fuels used in stationary applications by the community		Activity					NE		
Upstream and transmission and distribution (T&D) impacts of purchased electricity used by the community		Activity					NE		
Upstream impacts of fuels used for transportation in trips associated with the community		Activity					NE		
Upstream impacts of fuels used by water and wastewater facilities for water used and wastewater generated within the community boundary		Activity					NE		
Upstream impacts of select materials (concrete, food, paper, carpets, etc.) used by the whole community		Activity					NE		

Emissions Type	Source or Activity?		Included under reporting frameworks: SI	CA	HC	Excluded	Notes	Emissions (MTCO2e)
Independent Consumption-Based Accounting								
Household Consumption (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all households in the community)	Activity	x			x			
Government Consumption (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all governments in the community)	Activity					NE		
Life cycle emissions of community businesses (e.g., gas & electricity, transportation, and the purchase of all other food, goods and services by all businesses in the community)	Activity					NE		

Table A-2 provides details on calculation methods and data sources for each included activity and source.

Table A-2: Community Inventory Calculation Method and Data Source Details

Residential use of electricity	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	22,835,419	kWh	0.000203674	MTCO2e/kWh	PG&E	BE.2.1
Method and data source notes:						

Commercial use of electricity	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	36,291,610	kWh	0.000203674	MTCO2e/kWh	PG&E	BE.2.1
Method and data source notes:						

Residential use of stationary combustion equipment	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	2,071,672	therm	0.00532	MTCO2e/therm	PG&E	BE.1.1
Method and data source notes:						

Commercial use of stationary combustion equipment	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	966,194	therm	0.00532	MTCO2e/therm	PG&E	BE.1.1
Method and data source notes:						

On-road passenger vehicle travel associated with community land uses	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	302,528	Daily Vehicle Miles Traveled	Variable (See below)	See below	DC&E The Planning Center (VMT), AMBAG (EMFAC/TDM Outputs)	TR.1.A
Method and data source notes: **EMFAC. Bhupendra Patel, Senior Transportation Modeler- AMBAG: bpatel@ambag.org**						

On-road freight and service vehicle travel associated with community land uses	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	n/a					n/a
Method and data source notes:						

Generation of solid waste by the community	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	8,083	tons	0.1826	MTCO2e/ton	ICLEI/CACP	SW.4.1
Method and data source notes: http://www.ciwmb.ca.gov/Publications/default.asp?pubid=1097						

Use of energy associated with use of potable water	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	1,277,338	kWh	0.000203674	MTCO2e/kWh	PG&E	Other
Method and data source notes: Capitola Potable Water Consumption data provided by DC&E The Planning Center (Source: Soquel Creek Water District, 2010 Urban Water Management Plan) = 1,120 Acre Feet per Year Consumed = 364,953,600 Gallons Consumed * 0.0035 kWh/Gallon (Supply, Conveyance, Distribution and Treatment. Source: Table 2-E from CAPCOA. Quantifying Greenhouse Gas Mitigation Methods. August, 2010. http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf)						

Use of energy associated with generation of wastewater	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	1.08	Million Gallons Per Day (MGD)	See below	See below	DC&E The Planning Center	Other

Method and data source notes:
Capitola Wastewater is treated by the City of Santa Cruz Wastewater Treatment Facility. On October 2, 2013 Dan Seidel (SCWWTF Superintendent) provided the Total Average Daily Flow to the WWTF (10.6 MGD). That data, in conjunction with the Estimated Capitola MGD (1.08) provided by DC&E The Planning Center and the MBUAPCD provided data for total 2010 SCWWTF GHG Emissions (3,998 MTCO2e), was used to calculate the Estimated Emissions from Capitola's 2010 Wastewater. This includes the estimated emissions from the SCWWTF's energy consumption, process, and effluent.

[Additional activity/source]	Activity data		Emissions factor			Method
	Value	Unit	Value	Unit	Source	
	n/a					n/a

Method and data source notes: