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EL CERRITO'S GREENHOUSE GAS EMISSIONS

El Cerrito's GHG Emissions

This chapter quantifies and provides information on the baseline GHG emissions inventory, future growth in emissions, and the impact of reduction targets. Being able to quantify and understand the GHG emissions from activities in El Cerrito is the foundation of the Climate Action Plan. A GHG emissions baseline informs the planning process by:

- Outlining the origins of GHG emissions in El Cerrito and to what extent they are likely to grow;
- Providing a baseline against which to measure progress towards meeting the City's reduction targets; and
- Identifying the greatest opportunities for making reductions.

Setting Targets in a Regional Context

In 2011 the El Cerrito City Council adopted targets for reducing GHG emissions by 15% below 2005 levels by the year 2020 and 30% below 2005 levels by 2035.* El Cerrito's baseline inventory and reduction targets were developed within the context of state and regional climate protection initiatives. The 2005 baseline was chosen as part of a larger effort by ICLEI to complete emissions inventories for cities in Contra Costa County. The 2020 target year corresponds with goals set forth in the AB32 *Scoping Plan*. The 2035 target is generally consistent with other state and regional climate-related planning efforts currently underway, such as the Sustainable Communities Strategy under SB 375.

California's AB 32 *Scoping Plan* recommends that local governments reduce emissions by 15% below an established baseline by 2020. Subsequently, BAAQMD established a new methodology for defining thresholds for GHG emissions based on the AB 32 recommended goal. Per BAAQMD, a Climate Action Plan that is consistent with AB 32 reduction targets, and qualified through the CEQA process as such, could also provide guidance to development projects seeking to streamline CEQA GHG analysis and/or mitigate GHG emissions.

Developing a Baseline

Emissions Counted in the Baseline Inventory

The City developed a 2005 baseline GHG inventory for both community-wide and municipal sources.† This inventory has been subsequently updated to incorporate new BAAQMD guidelines. While the inventory does not include all emissions attributable to El Cerrito residents and businesses, it provides a replicable snapshot of GHG emissions

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* El Cerrito City Council Resolution 2011-12 (February 22, 2011).

† Inventory was compiled using ICLEI Local Governments for Sustainability's Clean Air Climate Protection (CACP) software and refined according to BAAQMD's 2010 GHG Plan Level Quantification Guidance.

that can be reliably measured over time and over which local government exercises influence.

Sources of GHG emissions in the inventory, as detailed in *Figure2.4 (Community GHG Emission Sources)*, include the following:

- Energy and water use by residents and businesses (including institutions and governmental agencies);
- Vehicle miles traveled on El Cerrito's streets, including El Cerrito's portion of San Pablo Avenue;
- The percent of vehicle miles traveled in Contra Costa County on state highways (excluding San Pablo Avenue), interstates, and other county roads that are attributable to El Cerrito's residents, businesses, institutions and governmental agencies;
- Tons of waste sent to the landfill by residents and businesses; and
- Use of refrigerants to air condition buildings and vehicles (municipal sector only).

Emissions from El Cerrito's municipal operations were quantified as a subset of the larger community emissions baseline and will be discussed in more detail in *Chapter 4, El Cerrito's Municipal Operations*.

Fig. 2.1: A Snapshot of El Cerrito	**2005**
Population	23,244
Households	10,340
People per Household	2.25
Businesses / Institutions	522
Number of Jobs	5,750
Square Miles	3.65
Tons CO2e Emissions (US Tons)	147,094

Community Baseline Emissions Inventory 2005

Figures 2.2 and 2.3 (*El Cerrito Community GHG Emissions 2005 Baseline Inventory*) summarize the City's community wide GHG emissions, which in 2005 equaled 147,094 tons of " equivalent carbon dioxide" (CO2e).‡ At 51%, emissions from automobile use constitute the largest source of emissions in El Cerrito. At nearly 44%, energy consumption is the second largest, with residential energy use being almost twice as much as commercial. Emissions associated with the decomposition of waste from El Cerrito in landfills constitute 5%. Finally, water use and waste water treatment (as measured by the amount of energy used per gallon conveyed and treated) and municipal refrigerants each comprise less than one percent of emissions.

Following is a more detailed description of these emissions. The Baseline Inventory is detailed in *Appendix B, Baseline Community GHG Emissions Inventory*.

‡ " Equivalent carbon dioxide" (CO2e) is the common unit of measurement to describe how much global warming a given type of greenhouse gas may cause.

Transportation (50.9%)

Transportation emissions are measured using vehicle miles traveled (VMT) in El Cerrito and as a percentage of highway traffic in Contra Costa County. Residents, employees, visitors and those doing business in El Cerrito drove nearly 115 million miles in 2005, producing approximately 74,800 tons of CO2e. VMT captured in this inventory is not inclusive of all car and truck travel by El Cerritans, but the methodology is replicable and consistent with BAAQMD recommendations.

Residential Energy Use (28.3%)

Collectively, El Cerrito's households consumed 48.1 million kilowatt hours (kWh) of electricity and 5 million therms of natural gas in 2005, producing 41,620 tons of CO2e or about 4 tons annually per household. As depicted in *Figure 2.3, Inventory Detail,* residential natural gas use accounts for 20% of emissions alone and is the second largest single source of emissions.

Commercial Energy Use (15.2%)

El Cerrito's 520 "bricks and mortar" businesses and institutions consumed 68.3 million kWh and 881,000 therms of natural gas, generating over 22,000 tons of CO2e, 40% of which is produced by the two BART stations.

Water Consumption (0.3%):

In 2005 El Cerrito consumed 945 million gallons of water, or an average of 253 gallons per day per household, and sent half as many gallons of sewage through the Stege Sanitary District to the East Bay Municipal Utility District (EBMUD) for treatment. EBMUD uses 309 kWh to transport 325,851 gallons from the Mokelumne River to the tap and another 457 kWh to treat the same amount of sewage. This energy use produced over 500 tons of GHG emissions.*

While this is not a significant source of emissions, it is included to quantify water conservation goals. As climate

Fig. 2.2: El Cerrito Community GHG Emissions (2005 Baseline Inventory)

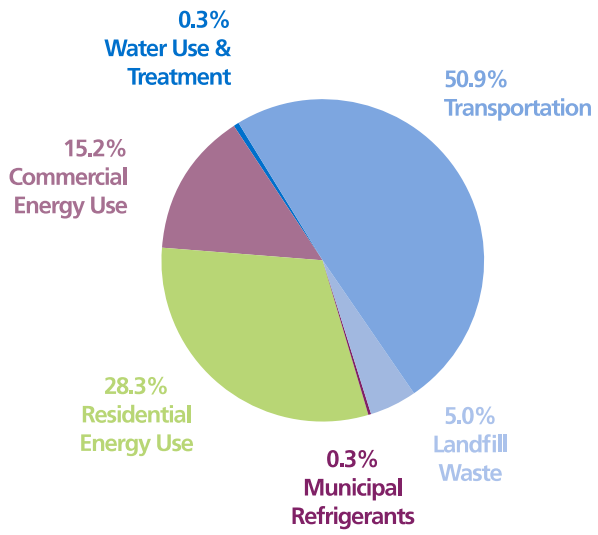
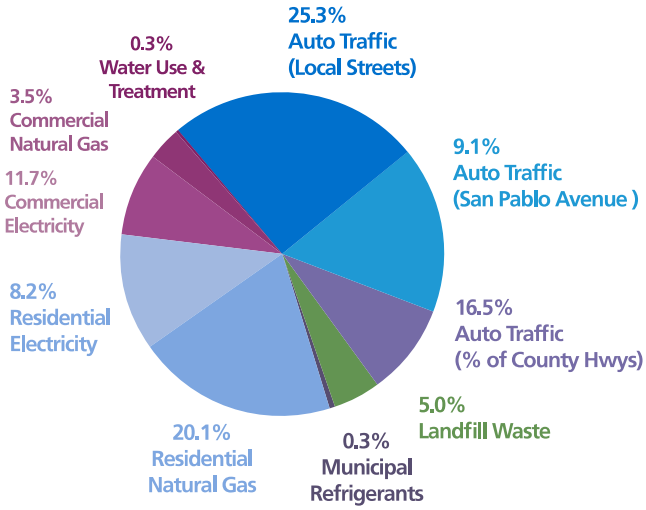


Fig. 2.3: Community GHG Emissions Inventory Detail



* Green Building Studio & PG&E. "Supply and Demand-Side Water Efficiency Opportunities." February 2007.

change stresses State water supplies, community members will need to conserve this diminishing resource.

Waste in Landfills (5%)

Decomposition of waste in landfills produces methane, which is a greenhouse gas with 21 times the global warming potential of carbon dioxide. In 2005, El Cerrito's 10,340 households and 520 businesses disposed of 29.5 million pounds of waste (or 1,272 pounds per resident per year),which translates into over 7,300 tons of CO2e per year.

Municipal Fugitive Refrigerants (0.3%)

Refrigerants can be found in building HVAC equipment, common appliances such as refrigerators, and air conditioning units for vehicles. While it is not possible at this time to quantify the number of all such appliances in the community, it is possible to do so for the City's municipal operations. Refrigerants (or rather, "fugitive emissions" due to leaks and refrigerant recharging of equipment) was quantified for local government operations in accordance with ICLEI's Protocol for accounting for GHG emissions in local government operations.

Fig. 2.4: Community GHG Emission Sources (2005 Baseline Inventory)

End Use (2005)	Total Units	Unit	Service Population (SP)	Units per SP	Total Tons CO2e	Estimated Costs
Energy Use						
Residential Electricity	48,148,911	kWh	Household	4,656.57	12,114	$ 6,018,614
Residential Natural Gas	5,043,720	therms	Household	487.79	29,506	$ 6,657,710
Commercial Electricity	68,347,754	kWh	Businesses	130,934.39	17,234	$ 9,568,686
Commercial Natural Gas	880,679	therms	Businesses	1,687.12	5,152	$ 1,162,496
Energy Subtotal					**64,006**	**$ 23,407,506**
Water Use						
Water Consumed	945,043,396	gallons	Resident, Employee	32,594.45	277	$3,382,322
Wastewater Treated	661,530,377	gallons	Resident, Employee	22,816.11	234	
Water Subtotal					**511**	**$3,382,322**
Transportation						
Auto Traffic (Local Streets)	57,892,650	VMT	Resident, Employee		37,143	
Auto Traffic (San Pablo Ave)	20,305,753	VMT	Resident, Employee		13,482	
Auto Traffic (% of County Highways)	36,454,614	VMT	Resident, Employee		24,200	
Transportation Subtotal	**114,653,017**	**VMT**		**3,954.37**	**74,825**	**$16,306,207**
Solid Waste	**29,558,000**	**lbs**	Resident, Employee	**1,271.64**	**7,302**	**$5,500,000**
Fugitive Refrigerants	**450**	**CO2e**	Municipal	**450.21**	**450**	
				Totals	**147,094**	**$ 48,596,035**

Inventory Versus El Cerrito's Carbon Footprint

There are other emissions caused by activities within El Cerrito that are not included in the baseline inventory, such as the production and transportation of food and goods consumed in El Cerrito, vehicle travel beyond Contra Costa County, and air travel by El Cerrito citizens.

These emission sources have been excluded from the inventory because they lack reliable data points, are beyond the scope of local government influence, and/or may be easily double-counted by other jurisdictions. However, curbing these emissions is necessary if we are to mitigate climate change. For instance, the US Environmental Protection Agency published a recent study showing that the domestic production and transportation of food and goods accounts for an estimated 42% of all GHG emissions in the United States.* This figure would be even larger if it measured emissions from the international production of goods consumed in the United States.

Because these emissions are not included in the baseline inventory, actions to reduce them do not contribute to our official reduction goals. However, mitigating these emissions should not be overlooked and will be discussed in more detail in Chapter 5, Personal Climate Action. Reducing these unquantified emissions sources include such actions as planting trees, buying environmentally-friendly goods, buying locally grown food, and supporting a more home-grown local economy.

Fig. 2.5: GHG Forecast and Reduction Targets (2005-2035)

	2005	2020	2035
Population	23,244	24,400	26,200
Reduction Targets	Baseline	15%	30%
Reduction Targets in Tons of CO_2e		41,965	89,860
Business-As-Usual (BAU) Emissions	147,094	166,995	192,825
Tons Reduced from BAU Resulting from State Initiatives		- 19,482	- 35,721
Tons Reduced from BAU Resulting from City Initiatives		- 22,483	- 54,139
Total Emissions After Reductions (Tons CO_2e)	147,094	125,030	102,965
Tons CO_2e Per Capita	6.33	5.12	3.93

Growth in Emissions: Business-As-Usual

Projecting emissions growth over time is necessary to quantify total emissions reductions needed to meet reduction targets. El Cerrito's GHG emissions have been projected for 2020 and 2035 using a "Business-As-Usual" (BAU) trend scenario, which assumes that, absent any new actions to curb emissions, existing growth rates are predictive of future consumption trends in energy, water, vehicle use, and waste. These current numbers then are multiplied by the projected growth in El Cerrito's population, housing, and workforce† to develop a GHG Forecast for future years.

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* U.S. Environmental Protection Agency. "Opportunities to Reduce GHG Emissions through Materials and Land Management Practices." 2009.

† ABAG. *Projections and Priorities*. August, 2009.

Based on this methodology, El Cerrito's GHG emissions are expected to increase by nearly 20,000 tons to 166,995 tons in 2020 and another 26,000 tons to 192,825 tons by 2035, as show in *Figure 2.5, GHG Forecast and Reduction Targets*. This methodology is further documented in *Appendix D, Community Emissions Forecast*.

El Cerrito's Reduction Targets

El Cerrito has adopted targets to reduce GHG emissions 15% below 2005 levels to 125,030 tons by 2020 and by 30% to 102,965 tons by 2035.

Because the State of California has several initiatives that will help significantly reduce GHG emissions at the local level, El Cerrito will not shoulder the entire burden of achieving these reductions. As discussed in *Chapter 1* under "State Actions that Reduce Local Emissions," the State's Renewable Power, Low Carbon Fuel, and Vehicle Efficiency standards will help decrease the GHG emissions per kilowatt hour or gallon of gas used. These state initiatives are projected to reduce nearly 19,500 tons of CO2e from the BAU projections by 2020 and over 35,000 tons by 2035.

As shown in F*igure 2.6, GHG Emissions Scenarios*, once reductions from state initiatives are subtracted from the Business-As-Usual Scenario, El Cerrito will need to reduce an additional 22,500 tons by 2020 in order to achieve the 15% reduction target. Because it is unknown what additional state and/or federal actions might occur by 2035, any further reductions from outside initiatives are assumed to be static after 2020. By 2035, El Cerrito would then need to reduce emissions by an additional 54,000 tons in order to continue the trend and reduce emissions by 30% by 2035.
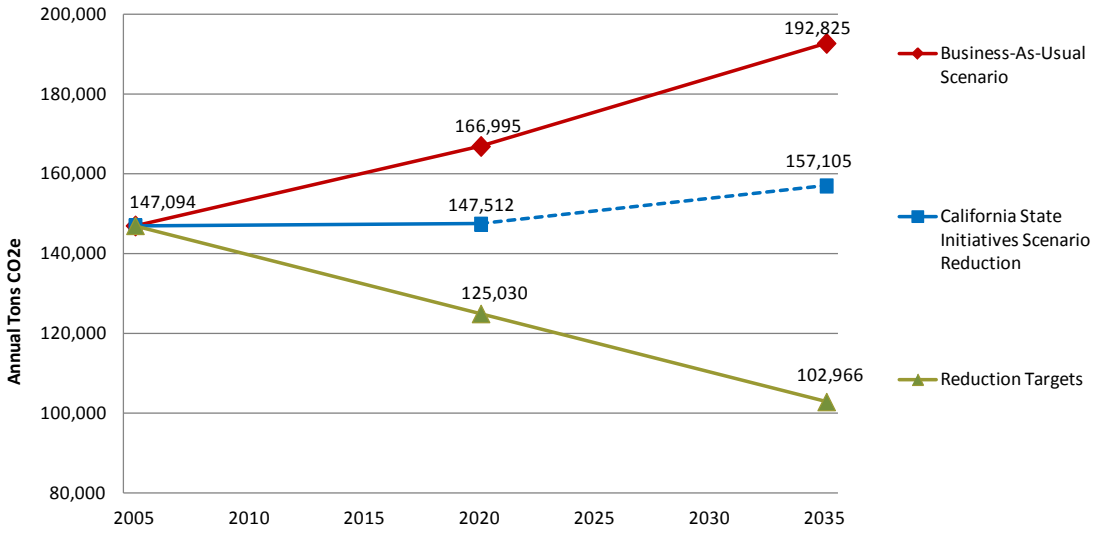
Fig. 2.6: GHG Emissions Scenarios (2005-2035)