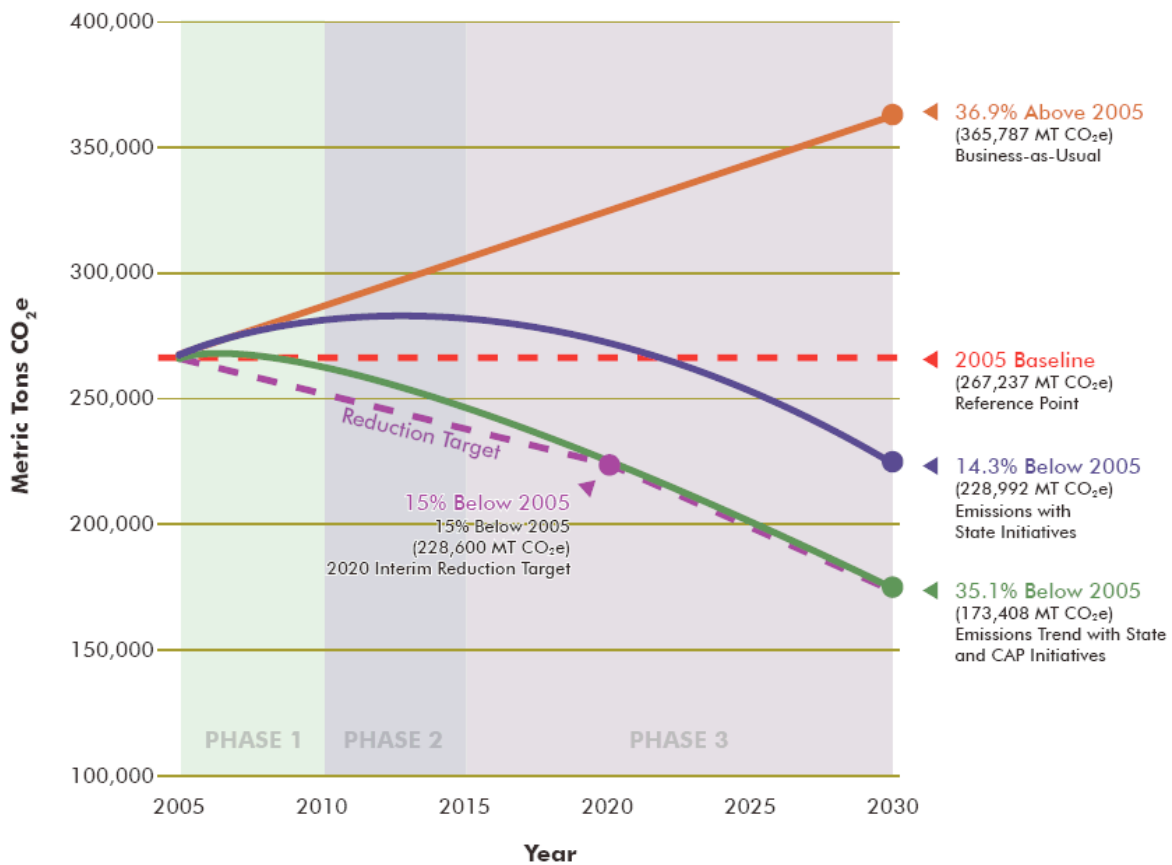


## VII. Reduction Target Analysis

Job, household, and population growth will weigh against City, State, and regional reduction activities in our effort to see that San Carlos's emissions are 35% below 2005 levels by 2030. This chapter analyzes how these growth factors and reduction efforts affect one another and how they culminate in our estimated 2030 emissions scenario shown in Figure 11 below.

As discussed earlier in this document, if the San Carlos community continues to produce greenhouse gas emissions at the same rate as 2005, our annual emissions will reach 365,787 metric tons of CO<sub>2</sub>e by 2030. This 'business-as-usual' linear projection, shown by the red line in Figure 11 below, is a 36.9% increase above 2005 levels due to population, job, and household growth as well as projected increases in consumption.

**Figure 11**  
**2030 Emissions Reductions in San Carlos**



While we implement the Measures of this document, emissions will continue to rise along this 'business-as-usual' projection. As such, the emissions reductions analyzed in this chapter are subtracted from the business-as-usual projection and not the baseline. Subtracting our reduction efforts from 2005 levels would be assuming that time stops while this Plan and State initiatives are implemented. In reality, our efforts will be

implemented while emissions are still increasing in San Carlos. This fact makes our reduction target of 35% below 2005 levels more challenging, yet still feasible; the percent change from 'business-as-usual' in 2030 to 35% below 2005 levels is over 70%. These trends are shown in Figure 11 above.

The reduction measures in this Plan will be implemented in phases due to financial, technical, or political obstacles and constraints. The curved lines in the graph above were formed by subtracting the greenhouse gas savings of each reduction measure from the projected emissions in the time period in which it is expected to be implemented. The result is a curvilinear trend towards expected emissions levels. These phases of implementation are explained further in this chapter and in the Implementation chapter.

### **State Initiatives: An Integral Partner in Our Reduction Efforts**

Local governments can only do so much as they have minimal control over the transportation and energy sector. The majority of our future emissions depend on State, Federal, and regional efforts to affect the efficiency of vehicles, fuels, electricity, and natural gas. The waste sector remains the one sector in which our local governments have a large influence, which is demonstrated by our estimated 43% reduction from 2005 levels in the waste sector by 2030. The following sections describe and analyze the major State emission reduction efforts including the Renewable Portfolio Standard (RPS), Pavley bill, Title 24, Low-Carbon Fuel Standard, and SB 375.

### **Regional Portfolio Standard (RPS)**

The State of California Renewable Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. Established in 2002 in Senate Bill 1078, the RPS program requires electricity providers to increase the portion of energy that comes from renewable sources to 20% by 2010 and by 33% by 2020. Per the trend of Executive Order S-14-08, this renewable energy goal is assumed to increase to 50% by 2030.

Assuming a constant distribution of natural gas and electricity use, the California RPS will reduce emissions by approximately 13,834 metric tons CO<sub>2</sub>e by 2020 and 31,566 metric tons CO<sub>2</sub>e by 2030. According to the California Public Utilities Commission, renewable energy constituted 13.5% of PG&E's electricity mix in 2005.

### **Assembly Bill 1493 (Pavley) I and II**

Assembly Bill 1493 (Pavley), signed into law in 2002, will require carmakers to reduce greenhouse gas emissions from new passenger cars and light trucks beginning in 2011. The California Air Resources Board adopted regulations in September 2004 that create two phases of increasingly stringent standards for car manufacturers between 2009 and 2020. It is expected that new vehicles sold in California will create an average of 16% less greenhouse gas emissions than current models. The bill is being challenged in federal and state courts by automakers and car dealers. It is anticipated that the EPA waiver will be granted in 2009 and the State will be allowed to move forward as outlined in AB 1493.

Pavley I and II is expected to reduce transportation emissions within the City of San Carlos by 34,649 metric tons CO<sub>2</sub>e by 2020 and 31,566 metric tons CO<sub>2</sub>e by 2030. This estimate is based on the vehicle efficiency rates included in a technical assessment prepared by the California Air Resources Board.<sup>62</sup> The future vehicle mix in San Carlos was obtained using the EMFAC software. Pavley efficiency rates were then applied to each model year in 2020 and 2030.

### Low-Carbon Fuel Standard

The Low Carbon Fuel Standard (LCFS) is a flexible performance standard designed to accelerate the availability and diversity of low-carbon fuels by taking into consideration the full life-cycle of greenhouse gas emissions. The LCFS will reduce emissions and make our economy more resilient to future petroleum price volatility.<sup>63</sup>

As part of the AB 32 Scoping Plan, the LCFS is expected to reduce the intensity of transportation fuels by 10%. This will result in an estimated 14,124 metric tons in reductions by 2020 and 10,304 metric tons in 2030. The amount of CO<sub>2</sub>e reduced actually lowers from 2020 to 2030 because the increase in vehicles subject to the Pavley bill.

### Title 24

The Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated regularly, most recently in 2008. California's building efficiency standards (along with those for energy efficient appliances) have saved more than \$56 billion in electricity and natural gas costs since 1978. It is estimated the standards will save an additional \$23 billion by 2013.<sup>64</sup>

The recent California Long-Term Energy Efficiency Plan recommended that Title 24 standards be updated to require all new residential buildings will be zero net energy by 2020. Assuming that this is implemented, Title 24 would result in at least a 2,947 metric tons of CO<sub>2</sub>e reduction.

### Senate Bill 375

Senate Bill 375 aims to reduce greenhouse gas emissions by linking transportation funding to land use planning. The bill requires Metropolitan Planning Organizations like MTC to create sustainable communities strategies in their regional transportation plans (RTPs) for the purpose of reducing suburban sprawl. It also creates incentives for implementation of the sustainable communities' strategies and sustainable transportation plans.

<sup>62</sup> Percentage reduction in Co<sub>2</sub>e per model year derived from California Air Resources Board; An Enhanced Technical Assessment. "Comparison of Greenhouse Gas Reductions for the United States and Canada Under U.S. Café Standards and California Air Resources Board Greenhouse Gas Regulations." Table 11, Page 13: "CO<sub>2</sub>-Equivalent Emission Reductions from Adopted Pavley 1 and Anticipated Pavley 2 Regulations in California in 2020."

<sup>63</sup> AB 32 Scoping Plan, Page 19.

<sup>64</sup> California Energy Commission, <http://www.energy.ca.gov/title24/>, accessed June 9, 2009.

The Scoping Plan also estimates a 5 million metric ton reduction as a result of the regional targets set by SB 375. This number represents an estimate of what may be achieved from local land use changes, not the SB 375 regional target. ARB will establish regional targets for each Metropolitan Planning Organization (MPO) region following the input of the Regional Targets Advisory Committee and a public consultation process with MPOs and other stakeholders per SB 375.

Although SB 375 is expected to reduce trips and transportation-related emissions, it is not quantified as a reduction source in this Plan for two reasons: 1) The intent and implementation of SB 375 overlaps greatly with the current mixed use and transit-oriented development measures included in this Plan and 2) A technical, defensible analysis of the bill's projected impact on the State or San Carlos area is not available at this time.

**Table 33**  
**Emission Reduction Analysis from State Initiatives**

		2020 Metric Tons CO <sub>2</sub> e per year	2030 Metric Tons CO <sub>2</sub> e per year
<b>Business-as-Usual Projection</b>		<b>321,519</b>	<b>365,787</b>
1	Renewable Portfolio Standard	- 13,834	- 31,566
2	Pavley I and II	- 34,649	- 91,978
3	Low Carbon Fuel Standard	- 14,124	-10,304
4	Title 24	n/a*	-2,340
<b>Total Reductions</b>		<b>-62,607</b>	<b>-136,794</b>
<b>Net Emissions</b>		<b>258,912</b>	<b>228,993</b>
<b>Base Year 2005 Community Emissions</b>		<b>267,237</b>	<b>267,237</b>
<b>Percent below 2005 Level</b>		<b>3.1%</b>	<b>14.3%</b>

\* Information Item Only. Greenhouse gas emissions from water filtration, movement, and treatment were not included in the baseline inventory of emissions referenced in this report, therefore these reductions cannot be added to the total reductions from the baseline year.

**Climate Action Plan Reductions**

The quantifiable reduction measures included in this plan are estimated to save at least 30,329 metric tons of CO<sub>2</sub>e by 2020 and 55,584 metric tons of CO<sub>2</sub>e by 2030. These reductions are shown in conjunction with the estimated results of State initiatives in Table 33 below.

**Table 34**  
**Reduction Target Analysis**

		2020 Metric Tons CO <sub>2</sub> e per year	2030 Metric Tons CO <sub>2</sub> e per year
<b>Reference Year 2030 Emissions Projection</b>		<b>321,519</b>	<b>365,787</b>
1	Energy Use Strategies	-12,628	-29,792
2	Transportation and Land Use Strategies	-12,886	-18,518
3	Solid Waste	-4,815	-7,274
<b>Subtotal – Emissions with CAP</b>		<b>291,210</b>	<b>310,203</b>
4	Renewable Portfolio Standard	-13,834	-31,566
5	Pavley I and II	-34,649	-91,978
6	Low Carbon Fuel Standard	-14,124	-10,304
7	Title 24	n/a*	-2,947
<b>Total – Emissions with CAP and State Programs</b>		<b>228,603</b>	<b>173,408</b>
<b>Base Year 2005 Community Emissions</b>		<b>267,237</b>	<b>267,237</b>
<b>Percent below 2005 Level</b>		<b>14.5% **</b>	<b>35.1%</b>

\* The reduction potential of new Title 24 requirements have not been technically analyzed.

\*\* It is expected that the unquantifiable emission reduction measures included in this report will more than account for the 0.5% reduction to meet AB 32 and S-03-05 reduction targets.

With this Plan, San Carlos is making a proactive effort to reducing climate change locally. By implementing this Plan, San Carlos will ensure that greenhouse gas emissions meet, if not exceed, local and State reduction targets. As an information item

### Reduction Analysis by Sector

As an information item, the following charts depict 2020 and 2030 emissions reductions by sector. As you can see from Tables 35 and 36, the waste sector is expected to have the greatest emission reductions by 2020. By 2030, the largest reductions are expected in the transportation sector.

**Table 35**  
**Reduction Target Analysis by Sector, 2020**

City of San Carlos, Projected 2020 Greenhouse Gas Emissions	2005 Actual Emissions	2020 Business-as-Usual Emissions	2020 With Reductions	% Change from 2020 Business-as-Usual	% Change from 2005 Levels
<b>Residential</b>	49,178	53,312	42,726	-19.86%	-13.12%
<b>Commercial/Industrial</b>	54,619	78,454	62,598	-20.21%	14.61%
<b>Waste</b>	12,777	13,862	9,047	-34.74%	-29.19%
<b>Transportation</b>	150,663	175,891	114,232	-35.06%	-24.18%
<b>TOTAL</b>	<b>267,237</b>	<b>321,519</b>	<b>228,565</b>	<b>-28.91%</b>	<b>-14.47%</b>

**Table 34**  
**Reduction Target Analysis by Sector, 2030**

City of San Carlos, Projected 2030 Greenhouse Gas Emissions	2005 Actual Emissions	2030 Business-as-Usual Emissions	2030 With Reductions	% Change from 2030 Business-as-Usual	% Change from 2005 Levels
<b>Residential</b>	49,178	56,259	27,868	-50.5%	-43.3%
<b>Commercial/Industrial</b>	54,619	99,876	63,962	-36.0%	17.1%
<b>Waste</b>	12,777	14,636	7,362	-49.7%	-42.4%
<b>Transportation</b>	150,663	195,016	74,216	-61.9%	-50.7%
<b>TOTAL</b>	<b>267,237</b>	<b>365,787</b>	<b>173,408</b>	<b>-52.6%</b>	<b>-35.1%</b>

**Challenges in analyzing San Carlos' future emissions**

There are two main challenges in analyzing San Carlos' future emissions. As described in this Plan, not all reduction measures can be quantified in terms of greenhouse gas emissions. This report makes a best effort at estimating possible minimum levels of reduction, but it is more than likely that our analysis did not capture the results of all efforts to be made within the City by 2030. As more research is released and climate action plans become more common, it is likely that a better methodology for calculating emissions reductions will become available therefore reducing our future emissions level even further below what is currently projected.