APPENDIX E:
ADJUSTED BUSINESS AS USUAL FORECAST

Actions and legislation implemented by the State of California to reduce GHG emissions statewide will also have a measureable beneficial impact to San Luis Obispo County. State programs are included in the adjusted business as usual forecast to determine the additional level of local efforts that will be needed to meet the State recommended and County-adopted GHG reduction targets of 15% below baseline levels by 2020.

Figure 1. Summary of State GHG Reduction Impacts to SLO County

State Reductions Summary	2010	2020	2035
Pavley Reductions	0	-58,200	-100,660
LCFS Reductions	0	-25,790	-24,530
RPS Reductions	-3,570	-25,950	-44,010
CSI Reductions	-760	-1,160	-1,090
Title 24 Reductions	0	-12,560	-43,650
Total State Reductions	-4,330	-123,660	-213,940

ASSEMBLY BILL (AB) 1493 (PAVLEY)

Methodology:

Signed into law in 2002, AB 1493 requires carmakers to reduce GHG emissions from new passenger cars and light trucks beginning in 2011. Regulations adopted by the California Air Resources Board (CARB) in 2004 and took effect in 2009 with the release of a waiver from the U.S. 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 lbs. loaded vehicle weight and 8,500 lbs. gross vehicle weight (GVW) (LDT2). Medium-duty passenger vehicles (LDT3) between 8,500-10,000 lbs. 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 lbs were considered since the majority of LDT3 vehicles are commercial and therefore do not fall under the scope of the Pavley rules.

The GHG emission standards established by the Pavley regulation reflect not only exhaust CO_2 emissions resulting directly from operation of the vehicle, but also: 1) tailpipe emissions of CH_4 and N_2O; 2) CO_2 emissions resulting from operating the air conditioning system (indirect AC emissions); and 3) HFC refrigerant emissions released from the air conditioning system due to either leakage, losses during recharging, sudden releases due to accidents, or release from scrappage of the vehicle at end of life (direct AC emissions). This analysis accounts for CO_2 from tailpipes. Air conditioning is not included in EMFAC estimates of CO_2e and methane and therefore not accounted for in the reductions.

GHG reductions from the Pavley standard were calculated using EMFAC 2007 data for San Luis Obispo County. EMFAC 2007 data includes the breakdown of vehicles by vehicle class and emissions factors per mile for each vehicle class. The impact that the Pavley Standard will have on passenger vehicles in the unincorporated county follows the methodology included in an EMFAC2007 post-processing tool provided by the California Air Resources Board. Emissions reductions per model year and vehicle class were applied to San Luis Obispo County's transportation emissions and will result in a 13% decrease in transportation related GHG emissions by 2020 and a 21% decrease by 2035.

Citations:

California Air Resources Board. 2006. Emissions Factor 2007 Model Software. http://www.arb.ca.gov/msei/onroad/latest_version.htm

California Air Resources Board. 2010. *Clean Car Standards - Pavley, Assembly Bill 1493.* http://www.arb.ca.gov/cc/ccms/ccms.htm.

California Air Resources Board. 2010. Pavley I and Low Carbon Fuel Standard Postprocessor Version 1.0. http://www.arb.ca.gov/cc/sb375/tools/postprocessor.htm.

Fehr and Peers. 2011. County of San Luis Obispo Climate Action Plan: Transportation Reduction Measures and Estimates. San Jose, CA.

LOW CARBON FUEL STANDARD

Methodology:

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, ARB is developing a Low Carbon Fuel Standard (LCFS), which would reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020 as called for by Governor Schwarzenegger in Executive Order S-01-07. LCFS will incorporate compliance mechanisms that provide flexibility to fuel providers in how they meet the requirements to reduce greenhouse gas emissions.

The California Air Resources Board's Pavley I and Low Carbon Fuel Standard Postprocessor software was utilized to determine the impact that LCFS will have on GHG emissions in SLO County. Implementation of the Low Carbon Fuel Standard is estimated to reduce transportation related GHG emissions by an estimated 6% by 2020 and 5.1% by 2035.

Citation:

California Air Resources Board. 2006. Emissions Factor 2007 Model Software. http://www.arb.ca.gov/msei/onroad/latest_version.htm

California Air Resources Board. 2010. Pavley I and Low Carbon Fuel Standard Postprocessor Version 1.0. http://www.arb.ca.gov/cc/sb375/tools/postprocessor.htm.

RENEWABLE PORTFOLIO STANDARD

Methodology:

California's Renewable Portfolio Standard (RPS) mandates that utility providers procure 33% of their energy from renewable sources by 2020. PG&E is the provider of electricity in San Luis Obispo County and approximately 11.9% of utilities electricity came from qualified renewable sources in 2006. In 2010, PG&E maintained a portfolio with 17.7% of their total electricity sales coming from certified renewable energy sources. While PG&E has made significant strides to reach the 33% goal by 2020, the California Public Utilities Commission (CPUC) has indicated that energy providers are not likely to meet this target due to transmission and permitting issues that have proved to be significant barriers to the development of renewable energy. With these barriers, the calculation included in this Plan relies on a more realistic scenario modeled by the CPUC in their June 2009 RPS Implementation Analysis Report that PG&E's renewable energy will reach 28% in 2020 and 35% by 2035. This implementation analysis shows that by 2020, PG&E will be providing customers in unincorporated San Luis Obispo County an additional 16.1% of their electricity from renewable sources compared to baseline 2006 conditions. By 2035, the increase in renewable energy will result in 23.1% more renewable electricity compared to 2006.

Citations:

California Public Utilities Commission. 2009. 33% Renewable Portfolios Standard Implementation Analysis Report. http://www.cpuc.ca.gov/NR/rdonlyres/1865C207-FEB5-43CF-99EB-A212B78467F6/0/ 33PercentRPSImplementationAnalysisInterimReport.pdf.

California Public Utilities Commission. 2011. California Renewable Portfolio Standard. Sacramento, CA. http://www.cpuc.ca.gov/PUC/energy/Renewables/index.htm

CALIFORNIA SOLAR INITIATIVE

Methodology:

The California Solar Initiative (CSI) was authorized in 2006 under Senate Bill (SB) 1 and 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 be expended by 2016 with a goal to reach 1,940 MW of installed power through out the state by that time. The CSI program has several components including the Research and Development, Single-family Affordable Solar Housing (SASH), Multi-family Affordable Solar Housing (MASH), and Solar Water Heating Pilot Program, each of which provides incentives to further the development and installation of new solar technology on California's buildings.

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 Plan by identifying the total megawatts (MW) installed in unincorporated San Luis Obispo County since the start of the program and estimating the annual 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 2010, residential and commercial customers installed approximately 2 MW of solar photovoltaic systems, estimated to generate 3.5 million kWh every year. By 2020, it is estimated that unincorporated San Luis Obispo County residents and businesses will have installed 3.5 MW of renewable energy systems that will produce 6.5 million kWh annually.

Citations:

California Energy Commission and California Public Utilities Commission. 2011. California Solar Initiative: California Solar Statistics - Geographical Statistics. http://www.californiasolarstatistics.ca.gov/reports/locale_stats/

California Energy Commission and California Public Utilities Commission. 2010. *About the California Solar Initiative.* http://www.gosolarcalifornia.org/about/csi.php.

CALIFORNIA BUILDING CODES, TITLE 24

Methodology:

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 about buildings. The 2010 triennial edition Title 24 applies to all occupancies that applied for a building permit on or after January 1, 2011, and remains in effect until the effective date of the 2013 triennial edition. This Plan focuses on two sections of Title 24: 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.

Part 6, 2008 Building Energy Efficiency Standards

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.

The GHG forecast in this Plan 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 on-going triennial updates to Title 24 that will yield regular increases in the mandatory energy and water savings for new construction. As such, the GHG forecast also includes a conservative estimate of the energy reductions due to future updates of Title 24 based on historic growth rates. Past updates to Title 24 have shown equal if not higher increases in efficiency as a result of the update. To be conservative, we estimate that each update to the Title 24 Standards will have 70% of the effectiveness of the 2008 vs. 2005 standards. The energy reductions quantified in the forecast from Part 6 Energy Code updates are based on the assumption that the triennial updates to the code will yield regular decreases in the maximum allowable amount of energy used from new construction. The energy impact of

2008 Title 24 Standards for non-residential alterations is modeled. Future updates to Title 24 standards for non-residential alterations are not taken into consideration for lack of data and certainty.

Part 11, 2010 California Green Building Code

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 a mandatory code beginning 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. Local governments can adopt a Tier 1 or Tier 2 standard in order to achieve greater energy, water, and health benefits.

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. For the voluntary energy efficiency prerequisites, Tier 1 is a 15 % improvement and Tier 2 is a 30 % improvement over minimum Title 24 Part 6 requirements. The County has adopted the minimum requirements of CALGreen and is currently preparing a Green Building Ordinance which will go beyond those minimum requirements and is described in more detail in **Chapter 5.**

Citations:

California Energy Commission. 2010. 2009 California Residential Appliance Saturation Study. Sacramento, CA. http://www.energy.ca.gov/2010publications/CEC-200-2010-004/CEC-200-2010-004-ES.PDF

California Energy Commission. 2007. Impact Analysis: 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings.