City of Gonzales
Climate Action Plan

A "Gonzales Grows Green"
Sustainable Community Initiative

Adopted February 19, 2013

Prepared for the City of Gonzales
By Coastplans

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TABLE OF CONTENTS

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CHAPTER I: INTRODUCTION

INTRODUCTION

The Gonzales Climate Action Plan (CAP) is a product of the "Gonzales Grows Green" Sustainable Community Initiative (G^3 Initiative), an outgrowth of the City's Vision Statement adopted in 2005. The basic concept of sustainability is to allow the needs of current generations to be met in a manner that does not compromise the ability of future generations to meet their own needs. G^3 Initiative is built around three principles:

- ✓ Economic Viability: Diversify and Grow
- ✓ Environmental Responsibility: Do the Right Thing
- ✓ Social Equity: Educate, Provide Context and Relevancy for, and to all City Residents

The City of Gonzales began the G^3 Initiative because sustainability has many benefits for Gonzales residents and businesses. Among other things, sustainability:

- ✓ Saves money on home and business energy bills,
- ✓ Saves money on school and government office energy bills,
- ✓ Results in higher quality neighborhood development with a competitive advantage over neighborhoods that are developed without sustainable features,
- ✓ Promotes healthy life styles with more walking and less car usage, and
- ✓ Allows Gonzales to play a leadership role regionally, which improves its business competitiveness and attracts talented people who enjoy healthy lifestyles.

G^3 AND CLIMATE ACTION PLANNING

The City of Gonzales is taking proactive steps to become a more environmentally sustainable community by extending its G^3 Initiative to respond to state GHG emission reduction mandates. The Gonzales CAP is the cornerstone of this effort and is a culmination of existing and proposed initiatives to reduce greenhouse gas emissions and

create a healthier, more sustainable Gonzales. The purpose of the Gonzales CAP is to identify how Gonzales will achieve near-term GHG emission reduction targets and to create a path to achieving long-term targets. The Gonzales CAP provides GHG reduction targets and associated measures in the sectors of energy use, transportation, land use, water, and solid waste. Specifically, the Gonzales CAP:

- ✓ Identifies sources of greenhouse gas emissions from sources within the City of Gonzales' jurisdictional/political boundary and estimates how these emissions may change over time;

- ✓ Discusses the various outcomes of reduction efforts and how these reduction efforts can be implemented;

- ✓ Provides energy use, transportation, land use, water use, and solid waste strategies to reduce Gonzales' greenhouse gas emissions levels to 15 percent below 2005 levels by 2020;

- ✓ Provides methods for reducing Gonzales' greenhouse gas emissions consistent with the direction of the State of California through the Global Warming Solutions Act (AB 32), Governor's Order S-03-05, and Public Resources Code Section 21083.3. [The California Environmental Quality Act (CEQA) Guidelines encourage the adoption of policies or programs as a means of addressing comprehensively the cumulative impacts of projects (see CEQA Guidelines, § 15064, subd. (h)(3), § 15130, subd. (d).)];

- ✓ Provides substantial evidence that the emissions reductions estimated in the Climate Action Plan are feasible; and

- ✓ Consistent with CEQA Guidelines § 15183.5, establishes a plan for the reduction of greenhouse gas emissions that may be used by the City of Gonzales as a basis to determine that a project's incremental contribution to a cumulative GHG emission effect is not cumulatively considerable, provided the project complies with the requirements of the established plan.

Relationship to the General Plan

The City of Gonzales adopted the *Gonzales 2010 General Plan* (Gonzales GP) on January 18, 2011. In adopting the 2010 GP, the City of Gonzales made sustainability a central theme in its approach to new development. The Gonzales GP emphasizes neighborhood-centered growth with new neighborhoods that are compact and walkable and that contain centrally-located public and commercial facilities. Each element of the Gonzales GP contains features designed to reduce energy usage, curtail greenhouse gas (GHG) emissions in existing development, and/or limit GHG emissions in new development areas.

The Gonzales CAP is a stand-alone implementation plan, which is linked to the Gonzales GP through the latter's Sustainability Element. The Sustainability Element and CAP are two separate but related components of the City's sustainability strategy. The Sustainability Element contains the City's goals, policies, and implementing actions related to sustainability and provides direction and vision for maintaining a healthy and balanced community. The Gonzales CAP focuses specifically on strategies to address energy efficiency and the reduction of GHG emissions consistent with community desires, state law and the CEQA Guidelines. It enables the City to look at its impact on GHG emissions, establish specific goals for the reduction of GHG emissions, and identify the actions necessary to achieve these reduction targets. The Gonzales CAP builds on the goals and vision of the Sustainability Element, but translates these goals into numeric thresholds and targets for GHG emissions.

Relationship to the California Environmental Quality Act

The Gonzales CAP is intended to facilitate the mitigation of significant cumulative GHG impacts as defined in the California Environment Quality Act (CEQA). According to the CEQA Guidelines "Plans for the Reduction of Greenhouse Gas Emissions":

> Public agencies may choose to analyze and mitigate significant greenhouse gas emissions in a plan for the reduction of greenhouse gas emissions or similar document. A plan to reduce greenhouse gas emissions may be used in a cumulative impacts analysis . . . [A] lead agency may determine that a project's incremental contribution to a

> cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously adopted plan or mitigation program under specified circumstances (CEQA Guidelines §15183.5 (b)).

The Gonzales CAP front-loads the analysis needed for many projects in order to decrease the time and money that would be needed for individual analyses for each project. If a proposed development project is consistent the Climate Action Plan, the project shall be considered to have a less than significant impact on greenhouse gas emissions. The metrics for making this determination are presented in Chapter VII, Implementation. If a proposed project fails to meet the metrics set forth in Chapter VII, then there would be a presumption that the project would have a significant GHG emission impact.

A Dual Approach for Addressing Greenhouse Gas Emissions

The Gonzales CAP employs a dual-approach methodology to reducing GHG emissions—baseline reductions for existing development and efficiency measures for new development. Why this dual approach? The City's objective is to adopt GHG emissions reduction targets consistent with State law (currently codified in Health and Safety Code 38500 et seq. (AB 32) and Executive Order S-03-05). State law mandates a *statewide* return to 1990 CO_2e[1] emission levels by 2020, which according to the International Council for Local Environmental Initiatives (ICLEI) is roughly equivalent to a 15 percent reduction over 2005 levels, and an 80 to 95 percent reduction from 2005 levels by 2050.[2] The burden posed on new development by these reduction metrics differs depending on the size of the community in which the new development is planning to locate. By handling *new* development separately from *existing* development, the dual-approach methodology ensures that small communities planning new development do not carry a larger burden than larger communities planning the same amount of new development.

Table CAP-1 demonstrates the bias inherent in combining the AB32 mandate into a single GHG emission reduction target that applies equally to new and existing development.

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[1] CO_2e stands for carbon dioxide equivalent and represents an amount of any greenhouse gas that has a "greenhouse effect" equal to that of carbon dioxide.
[2] "Quick Start Guide for Setting a Greenhouse Gas Reduction Target," Statewide Energy Efficiency Collaborative (SEEC), November 2010.

The table sets up a hypothetical situation to show what happens when a single GHG emission reduction target is applied to a range of community sizes (expressed in terms of 2005 baseline GHG emissions), each of which is projected to add an equal amount of new growth (expressed in terms of a GHG emission increase of 20,000 MT CO_2e). As the table and graph show, smaller communities with 2005 baseline emissions less than 300,000 MT CO_2e carry proportionately higher GHG reduction burdens than larger communities. As is discussed in Chapter III, Gonzales has 2005 baseline GHG emissions of approximately 22,000 MT CO_2e and therefore would be significantly affected by this problem—a problem solved by the use of the dual-approach methodology. Figure CAP-1 shows the information in graph format.

Table CAP-1

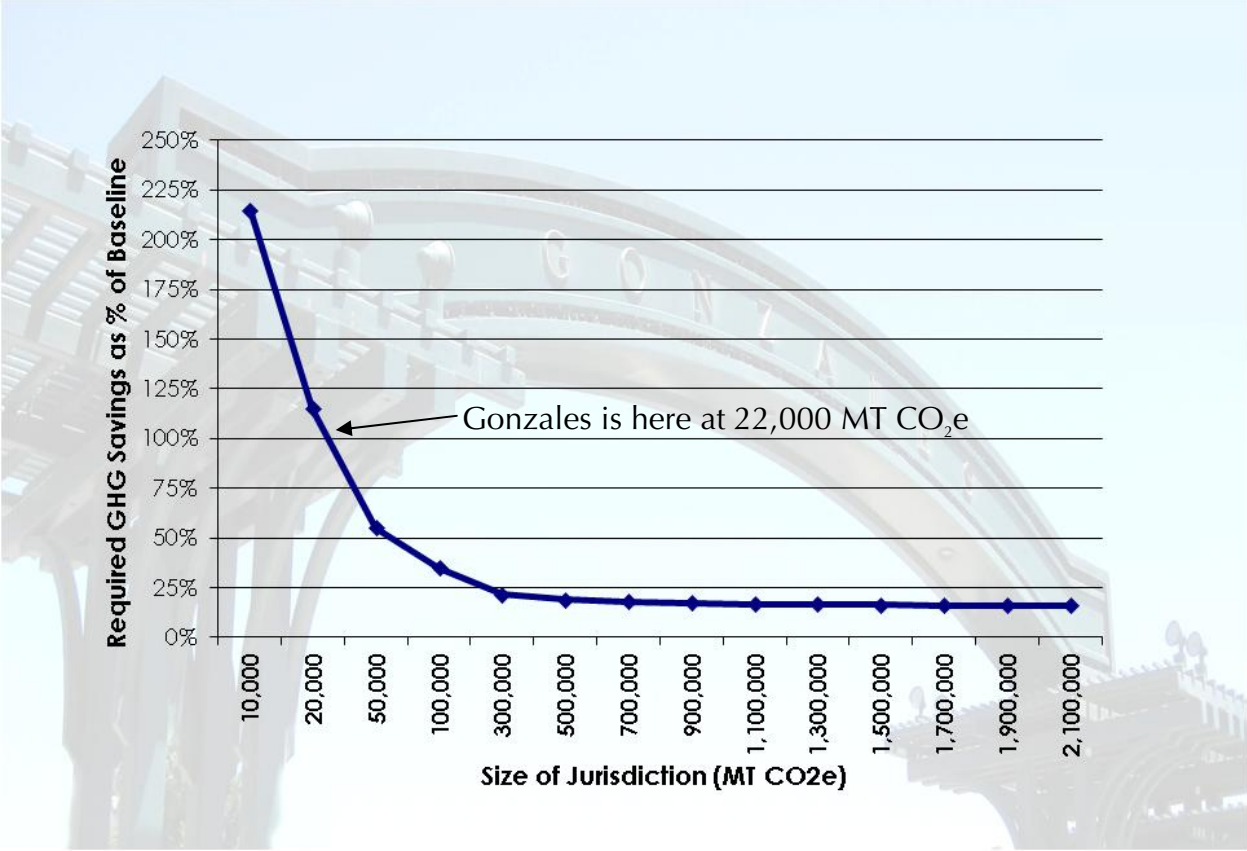
AB32 GHG EMISSION REDUCTION TARGETS
BIAS AGAINST NEW DEVELOPMENT IN SMALL JURISDICTIONS

2005 Baseline Emissions (metric tons CO2e)	2020 Projected Emissions (metric tons CO2e)	2005 to 2020		15% Reduction from Baseline		
		Emissions Increase (metric tons CO2e)	% Change	Reduction Target (metric tons CO2e)	Required Savings thru 2020 (metric tons CO2e)	Required Savings as Percent of Baseline
10,000	30,000	20,000	200.0%	8,500	21,500	215%
20,000	40,000	20,000	100.0%	17,000	23,000	115%
50,000	70,000	20,000	40.0%	42,500	27,500	55%
100,000	120,000	20,000	20.0%	85,000	35,000	35%
300,000	320,000	20,000	6.7%	255,000	65,000	22%
500,000	520,000	20,000	4.0%	425,000	95,000	19%
700,000	720,000	20,000	2.9%	595,000	125,000	18%
900,000	920,000	20,000	2.2%	765,000	155,000	17%
1,100,000	1,120,000	20,000	1.8%	935,000	185,000	17%
1,300,000	1,320,000	20,000	1.5%	1,105,000	215,000	17%
1,500,000	1,520,000	20,000	1.3%	1,275,000	245,000	16%
1,700,000	1,720,000	20,000	1.2%	1,445,000	275,000	16%
1,900,000	1,920,000	20,000	1.1%	1,615,000	305,000	16%
2,100,000	2,120,000	20,000	1.0%	1,785,000	335,000	16%

Source: Coastplans

Figure CAP-1

AB32 GHG EMISSION REDUCTION TARGETS
BIAS AGAINST NEW DEVELOPMENT IN SMALL JURISDICTIONS
(GRAPH)



Source: Coastplans, 2012

In a related matter, the dual-approach methodology allows for the possibility that very small communities that experience high rates of growth could emit greater levels of GHGs in 2020 and beyond than they did in the baseline year of 2005. At first glance, one might conclude that this result is in conflict with statewide GHG emission reduction goals, but one would be wrong. State officials recognize that proportional statewide reduction goals do not scale equally across all type of communities. Large, stable communities (i.e., communities that are not expected to grow substantially or where growth represents a small fraction of total development) could be expected to substantially reduce CO_2e emissions overall, while small communities expecting substantial new urbanization might

be expected to actually increase their emissions overall. When both are balanced together, however, mandated reductions are still met.

In short, applying mandated reductions equally across all jurisdictions in the state could require extraordinary and unrealistic measures in very small jurisdictions—measures not required in larger cities where efficiency measures for existing housing and commercial/industrial growth can provide enough savings to compensate for the new emissions that would come with job growth. Gonzales officials view the dual-approach methodology being used in the Gonzales CAP as an appropriate scaling of statewide targets designed to achieve realistic GHG emission reductions within its special circumstances.

Document Organization

Chapter II of the Gonzales CAP includes a background discussion of climate change, including measures that are being taken at the state and federal level to address climate change. Chapter III summarizes 2005 baseline GHG emissions and 2020 GHG emission projections. Chapter IV contains a discussion of GHG emission targets. Chapter V described existing efforts to reduce GHG emissions through the *Gonzales Grows Green* G^3 initiative. Chapter VI contains an action plan for GHG emission reductions. Chapter VII sets forth an implementation plan. Finally, Chapter VIII discusses ongoing monitoring, reporting, and updating of the Gonzales CAP.

CHAPTER II: BACKGROUND

INTRODUCTION

There is a consensus in the worldwide scientific community that the rapid global climate change currently being experienced is not primarily the result of natural processes that occur gradually over thousands of years. Rather, scientists have concluded that the quick and dramatic rise in temperatures is due to pollutants that are released into the Earth's atmosphere as a result of human activities.

There are dissenting scientists that voice skepticism that the science of climate change is definitive. Nonetheless, policymakers are regularly called upon to use their best judgment to solve problems for which only imperfect information is available. In the State of California, policymakers have accepted the link between global climate change and pollutants released into the atmosphere that are known to play a role in regulating the temperature of the Earth's atmosphere. These pollutants are called greenhouse gases.

GREENHOUSE GASES

Greenhouse gases (GHG), including carbon dioxide, methane, water vapor, nitrous oxide, and other atmospheric gases, play an important role in regulating the surface temperature of the Earth. The Earth's atmosphere acts like a greenhouse, warming the planet similar to a greenhouse warming the air inside its glass walls. GHGs allow light to penetrate, and prevent heat from escaping. GHGs are transparent to solar radiation and are effective in absorbing infrared radiation. As a result, radiation that otherwise would reflect back into space is retained, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect.

The increased consumption of fossil fuels (wood, coal, gasoline, etc.) has substantially increased atmospheric levels of greenhouse gases. As atmospheric concentrations of greenhouse gases rise, so do temperatures. Over time this rise in temperatures would result in climate change. Theories concerning climate change and global warming existed as early as the late 1800s. By the late 1900s that understanding of the Earth's atmosphere had advanced to the point where many climate scientists began to accept that the Earth's

climate is changing. Many climate scientists agree that some warming has occurred over the past century and will continue through this century.

Human activities result in emissions of four principal GHGs: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and the halocarbons (a group of gases containing fluorine, chlorine, and bromine). These gases are long-lived and accumulate in the atmosphere, causing concentrations to increase with time. Significant increases in all of these gases have occurred in the industrial era. All of these increases are attributable to human activities, as described below and shown in Table CAP-2.[3]

- ✓ **Carbon Dioxide.** Carbon dioxide has increased from fossil fuel use in transportation; building heating and cooling; utilities; and manufacturing. Deforestation releases CO_2 and reduces its uptake by plants. CO_2 is also released in natural processes such as the decay of plant matter.

- ✓ **Methane.** Methane has increased as a result of human activities related to agriculture, natural gas distribution, and landfills. CH_4 is also released from natural processes that occur, for example, in wetlands. CH_4 concentrations are not currently increasing in the atmosphere because growth rates have leveled off over the last two decades, but current atmospheric levels are approximately three times higher than the pre-industrial period. CH_4 has an influence on climate ("global warming potential" or GWP) 25 times that of CO_2 (Intergovernmental Panel on Climate Change or IPCC, 2007).

- ✓ **Nitrous Oxide.** Nitrous oxide is emitted by human activities such as fertilizer use and fossil fuel burning. Natural processes in soils and the oceans also release N_2O. N_2O has a GWP 298 times that of CO_2 (IPCC, 2007).

- ✓ **Halocarbon Gas.** Increases in halocarbon gas concentrations are primarily due to human activities, though natural processes are also a small source. Principal halocarbons include the chlorofluorocarbons (e.g., CFC-11 and CFC-12), which

[3] Climate scientists and planners use CO_2 as a basis for measuring the strength of other GHGs. So if CO_2 is assigned a value of "one" in terms of its global warming potential in a 100-year period, then CH_4, for example, would be assigned a value of 25, signifying that it has 25 times the global warming potential of CO_2. CO_2 equivalent (or CO_2e) then, is a measure of the global warming potential of a GHG indexed against CO_2.

were used extensively as refrigerants and in other industrial processes before their presence in the atmosphere was found to cause stratospheric ozone depletion. The abundance of chlorofluorocarbon gases is decreasing as a result of international regulations designed to protect the ozone layer. These gases, however, have GWPs many hundreds or thousands of times that of CO_2 (IPCC, 2007).

Table CAP-2

PRINCIPAL GREENHOUSE GASES

Greenhouse Gas	Source	CO_2 equivalent (CO_2e) Global Warming Potential – 100 year period (relative to CO_2)	Status
Carbon Dioxide (CO_2)	Fossil fuel combustion, deforestation, decay of organic matter	1	Increasing in the atmosphere
Methane (CH_4)	Fossil fuel combustion, natural gas extraction and distribution, agriculture, landfills	25	Not currently increasing in the atmosphere, but current levels are 3 times pre-industrial levels
Nitrous Oxide (N_2O)	Fertilizer use, fossil fuel combustion, industrial processes, biomass burning	298	Increasing in the atmosphere
Chlorofluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF_6)	Refrigerants, propellants, expansion agents, industrial uses and processes, some fire extinguishers	100s-1,000s	Concentrations of some of these gases are decreasing as a result of international regulations implemented to protect the ozone layer, but others are increasing

Source: IPCC, 2007

Impacts of Global Warming

The projected effects of global warming on weather and climate are likely to vary regionally, but are expected to include the following direct effects (IPCC, 2007):

- ✓ Higher maximum temperatures and more hot days over nearly all land areas;
- ✓ Higher minimum temperatures, fewer cold days and frost days over nearly all land areas;
- ✓ Reduced diurnal temperature range over most land areas;
- ✓ Increase of heat index over land areas; and
- ✓ More intense precipitation events.

Many secondary effects are projected to result from global warming, including a rise in sea level; impacts to agriculture; changes in disease vectors; and changes in habitat and biodiversity. While the outcomes and the feedback mechanisms involved are not fully understood, and much research remains to be done, global climate change has the potential to cause catastrophic environmental, social, and economic consequences. Globally, climate change may affect numerous environmental resources through impacts related to changing air temperatures and precipitation patterns. As of 2006, eleven of the past twelve years are on the list of the twelve warmest years since reliable record keeping began in 1850. Arctic sea ice declined in 2006 by the largest amount ever, losing an area roughly the size of Texas and California combined.

The impacts from global warming are widespread and potentially devastating. The impacts are immediate, and they will continue to grow. As stated in a report to the Governor in May 2006:

> *"Today's climate variability and weather extremes already pose significant risks to California's citizens, economy, and environment. They reveal the State's vulnerability and existing challenges in dealing with the vagaries of climate. Continued climate changes, and the risk of abrupt or surprising shifts in climate, will further challenge the state's ability to cope with climate-related stresses."*

The Earth's average surface temperature will increase between 2.5° and 10.4°F (1.4°-5.8°C) between 1990 and 2100 if no major efforts are undertaken to reduce the emissions of greenhouse gases (the "business-as-usual" scenario). This is significantly higher than what the Intergovernmental Panel on Climate Change (IPCC) Panel predicted in 1995 (1.8°-6.3°F, or 1.0°-3.5°C), mostly because scientists expect a reduced cooling effect from tiny particles (aerosols) in the atmosphere. Secondary impacts to the natural environmental in California may include:

- ✓ **Eroding Coastlines.** Sea levels are expected to rise along the California coastline, particularly in San Francisco and the San Joaquin Delta. During the past century, sea levels along California's coast have risen about seven inches. If global warming emissions continue unabated, sea level is expected to rise an additional 22 to 35 inches by the end of the century, inundating coastal areas with salt water, accelerating coastal erosion, threatening vital levees and inland water systems, and disrupting wetlands and natural habitats. In particular, saltwater intrusion would threaten the quality and reliability of the state's major fresh water supply that is pumped from the southern edge of the Sacramento/San Joaquin River Delta into the system of aqueducts which carry it to Southern California.

- ✓ **Severe Heat.** Extreme-heat conditions are expected, such as heat waves and very high temperatures that could last longer and become more frequent. As temperatures rise from global warming, the frequency and severity of heat waves will grow—as will the potential for bad air days. The risk of illness and death due to dehydration, heart attack, and stroke, will increase as a result. Those most likely to suffer are children, the elderly, and other vulnerable populations.

- ✓ **Air Quality.** Deteriorating air quality is expected to cause an increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems. Global warming increases the frequency, duration, and intensity of conditions conducive to the formation of smog. Most vulnerable are the elderly and those whose health is already compromised (such as children with asthma).

- ✓ **Losses to the Sierra Snow Pack.** Reduced snowpack and stream flow in the Sierra Nevada Mountains is expected to affect winter recreation and water supplies. Higher temperatures diminish snowfall and cause the snow that does fall to melt earlier. This reduces the amount of water stored in the Sierra snow pack, which

accounts for approximately half of the surface water stored in the State. Reductions and early melting of the snow pack will aggravate the State's already overstretched water resources and cause increased flooding.

- ✓ **Severity of Storms.** Winter storms are expected to increase in severity, affecting peak stream flows and increasing flooding along waterways and low-lying areas. These heavy runoffs remove natural minerals which are important to local ecosystems. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

- ✓ **Damage to Agriculture.** Changes in growing season conditions are expected to affect California agriculture, causing variations in crop quality and yield. During the period 1951 to 2000, for example, the growing season lengthened by about a day per decade, increasing crops' exposure to heat ("degree days"). Such changes threaten many of the State's most valuable crops, including stone fruits, grapes, tomatoes and lettuce. Earlier spring weather could even upset the natural cycles that cause insect pollinators and fruit tree blossoms to appear at the same time, making widespread crop failure more likely. A rise in sea level is also expected that could render some or all of the Salinas Valley un-farmable due to the intrusion of salts into groundwater.[4] Finally, global warming also threatens livestock. The 2006 summer heat wave killed thousands of dairy cows in California's Central Valley and caused a decrease in milk production in surviving animals. By reducing the State's natural water storage capacity, raising temperatures, increasing salt water intrusion in agricultural regions, causing flooding, and increasing the risk of pest infestations and other calamities, global warming poses a serious threat to California's $68 billion agricultural industry.

- ✓ **Habitat Modification and Destruction.** Changes in the distribution of plant and wildlife species is expected due to changes in temperature, competition from colonizing species, change in hydrologic cycles, and other climate-related effects. While it is difficult to generalize what impacts the changing climate has on the State's varied ecosystems, it already is clear that rising temperatures, altered water

[4] Source: http://www.farmland.org/programs/states/ca/ClimateChangeandAgriculture.asp

supplies, and other environmental variations make some habitats less hospitable for sensitive plants and animals. For example, some local populations of the threatened checkerspot butterfly already have disappeared due to changes in the weather (Stanford Report, May 14, 2004). A similar fate could await other species, such as trout and salmon, which favor cold water and are extremely sensitive to slight changes in temperature. Further, marine algae blooms, associated in part with increases in ocean temperatures, have proliferated in the past eight years and may help explain the alarming increase in beachings and mass die-offs of whales, dolphins, and other ocean mammals that the federal government has documented over the last quarter century. In California alone, more than 14,000 seals, sea lions and dolphins have landed sick or dead along the shoreline in the last decade.

- ✓ **Higher Risk of Wildfires.** Pest infestation and increasing temperatures are expected to make forests more vulnerable to fires. Wildfires are a major environmental hazard that have historically cost California more than $800 million each year and contribute to "bad air days" throughout the state. As global warming accelerates, so will these wildfires, and the damage to health and property that they cause. By century's end, the State may have as many as 55 percent more large wildfires.

- ✓ **Increase Demand for Electricity.** Rising temperatures are expected to increase the demand for electricity and put pressure on the State's power supply system. During the summer of 2006 heat wave, power usage in Los Angeles rose so dramatically, that it caught power officials completely off guard.

- ✓ **Financial Cost to Californians.** Global warming is already placing strain on State finances. The State must pay for programs to re-build levees that protect agricultural lands against salt water infiltration; to study and respond to the impacts of a reduced Sierra snow pack on California's water supply; to protect wildlife and habitats from climate-related degradation; to respond to coastal erosion; to prepare for the increased risk of wildfires; to respond to the increased health risks associated with rising temperatures and declining air quality, and more.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission 2005). As such, the numbers of people potentially affected by climate change as well as the amount of anthropogenic GHG emissions

expected under a "business-as-usual" scenario are expected to increase. Similar changes as those noted above for California would also occur in other parts of the world with regional variations in resources affected and vulnerability to adverse side effects.

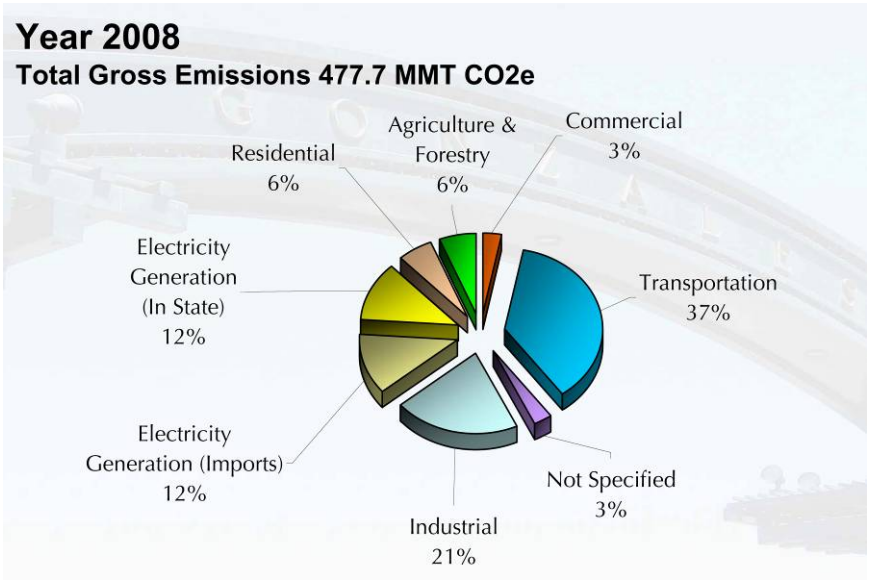
GHG Emissions in the United States and California

The United States is responsible for approximately 20 percent of the world's GHG emissions, with only China producing more.[5] The majority of GHG emissions currently produced in the United States results from burning fossil fuels such as coal and oil for energy. Examples of burning fossil fuels for energy include power plants burning coal to create electricity for home lighting and air conditioning, and automobile engines burning gasoline. In the United States, California ranks second behind Texas in the amount of GHG produced.[6] To put California emissions in a global perspective, California is the world's 12th largest source of carbon dioxide.[7] Over 70 percent of GHG emissions in California come from burning fossil fuels. In addition, over one-third of total GHG emissions in California are from vehicle exhaust[8]. Figure CAP-1 shows the breakdown in CO_2 emissions.

[5] http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions
[6] http://www.au.af.mil/au/awc/awcgate/crs/rl34272.pdf
[7] *AB 32 Fact Sheet*
[8] *Ibid*

Figure CAP-1

BREAKDOWN OF CALIFORNIA'S INVENTORY GREENHOUSE GAS EMISSIONS



Source: Coastplans; California Air Resources Board;
http://www.arb.ca.gov/cc/inventory/data/graph/graph.htm

FEDERAL, STATE, AND REGIONAL PARTNERS

The Gonzales CAP is intended to complement actions taken by federal, state and regional governments to address the threat of climate change. The Federal government has begun to take an increasing interest in solving the challenge of climate change. President Obama issued an executive order in 2009 calling for GHG reductions in Federal government operations. The U.S. Environmental Protection Agency has also begun to take steps to recognize GHG emissions as an environmental problem. In California, the regulatory setting addressing climate change and greenhouse gas emissions is fluid and changing rapidly.

Governor's Executive Order

On June 1, 2005, Governor Schwarzenegger signed Executive Order No. S-3-05, mandating a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The 80 percent emissions reduction target

is consistent with the magnitude of reduction thought necessary to avoid the worst consequences of global climate change (IPCC, 2007).

AB 32: The California Global Warming Solutions Act of 2006

The California State Assembly passed the California Global Warming Solutions Act of 2006 in August 2006, and Governor Schwarzenegger signed the bill into law the following month. Also known as Assembly Bill 32 (AB 32), the law instructs the California Air Resources Board (CARB) to set reporting requirements for GHG emissions and to devise rules and regulations that will achieve the maximum technologically feasible and cost-effective GHG emissions reductions to 1990 levels by 2020, and achieving further reductions in future years. While AB 32 sets out a timeline for the adoption of measures to evaluate and reduce GHG emissions across all source categories, it does not articulate these measures itself; instead, these measures will be determined by CARB in subsequent processes. The emission reduction targets set forth in Chapter IV are designed, in part, to meet the benchmarks set forth in AB32.

Additional Legislation

Senate Bill 97 followed in 2007, which directed the California Office of Planning and Research (OPR) and the Resources Agency to develop California Environmental Quality Act (CEQA) Guidelines "for mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions." New CEQA guidelines became effective on May 18, 2010.

In October 2008, Senate Bill 375 was enacted to connect the reduction of GHG emissions from cars and light trucks to land use and transportation policy. SB 375 asserted that "without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." Accordingly, SB 375 has three goals: 1) to use the regional transportation planning process to help achieve AB 32 goals; 2) to use CEQA streamlining as an incentive to encourage residential projects which help achieve AB 32 goals to reduce GHG emissions; and 3) to coordinate the regional housing needs allocation process with the regional transportation planning process. SB 375 also requires the California Air Resources Board (CARB) to establish GHG emission reduction targets for each region (as opposed to individual cities or households).

The Gonzales CAP supports the goals of SB 375 by incorporating GHG emission reduction measures that are tied to the objectives of the *Gonzales 2010 General Plan*. Objective 6 (Sustainability) from the *Gonzales 2010 General Plan* is as follows:

> *The development of a city that has sustainable, energy efficient development that successfully manages greenhouse gas emissions consistent with state and regional goals by emphasizing compact urban form, high connectivity and mobility within and between neighborhoods, ample opportunity for walking and bicycle use, neighborhood retail and other neighborhood commercial uses within neighborhood centers to reduce vehicle use within the neighborhood, and otherwise designing for the efficient use of energy resources* (pages I-3 and I-4 *Gonzales 2010 General Plan*).

See Chapter VI below for details on GHG emission reduction measures that support the linkages between land use design and transportation planning that are mandated by SB 375.

In December, 2008, CARB adopted its "Scoping Plan" (CARB, 2008) as a framework for achieving the AB 32 mandate of reducing California's greenhouse gas emissions to 1990 levels by 2020. Key elements of the Scoping Plan include the following:

- ✓ Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- ✓ Setting a goal of 33 percent of electricity from renewable sources by 2020;
- ✓ Developing a market-based California cap-and-trade program designed to provide incentives for cleaner industrial operations by requiring large-scale emitters to pay for offsets should they exceed established GHG thresholds, and linking with other Western Climate Initiative (WCI) partner programs to create a regional market system;
- ✓ Establishing targets for transportation-related greenhouse gas emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;

- ✓ Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and

- ✓ Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation.

The measures contained in the Scoping Plan will be developed and adopted through the normal rulemaking process, with public input. GHG emission limits and emission reduction measures from the Scoping Plan must be adopted by regulation on or before January 1, 2011, for enforcement by January 1, 2012. By January 1, 2014 and every five years thereafter, CARB will update the Scoping Plan. While some of these strategies may not affect Gonzales, most will have some impact in Gonzales and are considered in the context of developing local GHG reduction targets and plans to meet the targets.

At the regional level, each region's metropolitan planning organization—such as the Association of Monterey Bay Area Governments (AMBAG)—must create a "sustainable communities strategy" as part of the Regional Transportation Plan that will meet the target for the region. AMBAG is a regional joint-powers organization with 21 member jurisdictions within Monterey, San Benito and Santa Cruz Counties. In May 2011, the AMBAG published a draft of "Envisioning the Monterey Bay Area, A Blueprint for Sustainable Growth and Smart Infrastructure."

AMBAG has also been actively promoting energy efficiency. In 2008, AMBAG started the Energy Watch Program, which is a local government partnership between AMBAG and the Pacific Gas & Electric Company. In July 2010, AMBAG Energy Watch partnered with PG&E's Green Communities Program to begin the preparation of Greenhouse Gas Emission inventories for all AMBAG member jurisdictions. The report prepared by AMBAG Energy Watch for the City of Gonzales provides a 2005 greenhouse gas emissions inventory baseline report, which is the basis for the planning that the City will undertake to reduce greenhouse gas emissions in the coming years.

CHAPTER III: INVENTORY, BASELINE GHG EMISSIONS AND FORECASTS

INTRODUCTION

In July 2009, AMBAG Energy Watch paired local jurisdictional staff with graduate level interns from CSUMB and the Monterey Institute of International Studies in order to complete each jurisdiction's local government operations inventory according to the California Air Resources Board's (CARB) Local Government Operations Protocol. ICLEI provided a series of classes to train interns and local government staff on the GHG inventory procedure. AMBAG staff managed the intern team and ensured accuracy throughout the process.

The inventory used the baseline year of 2005 because of the availability of reliable data and also to maintain consistency with California's Assembly Bill (AB) 32 and other agencies throughout the state. The inventory is an important first step for the City to create a baseline against which it can measure future progress. The largest GHG emitters and opportunities for reduction are revealed through the inventory, making it an integral component of the City's sustainability efforts.

THE STRUCTURE OF THE INVENTORY

The inventory discussed in this CAP is separated into two sections: community-wide and government operations. The community-wide section provides an assessment of activities throughout the community, and the government operations section provides a more detailed analysis of the city government's contribution to GHG emissions, including those from streetlights, building and facility energy use, vehicle fleet and employee commute, water transport and wastewater and solid waste. The government operations inventory is a subset of the community inventory and should not be added to the community analysis. Instead, it should be looked at as a part of the complete picture of local emissions trends.

Although government operations are a small contributor to the community's overall emissions levels, an inventory enables the City of Gonzales to track its individual facilities and vehicles and to evaluate the effectiveness of its emissions reduction efforts at a more detailed level. Specifying municipal emissions and establishing programs for municipal

emissions reductions also demonstrates the City's leadership in achieving the reduction targets of the Gonzales CAP.

COMMUNITY GHG EMISSIONS

Baseline Community GHG Emissions

Baseline community GHG emissions were estimated for both the incorporated area of Gonzales and the currently unincorporated Urban Growth Area established by the *Gonzales 2010 General Plan*. This latter unincorporated area is predominantly agricultural land, so the analysis includes an estimate of baseline GHG emitted by agricultural uses. These emissions will ultimately be supplanted by emissions from urban uses, and the analysis calculates the change in emissions that would result from urbanization. Baseline GHG emission estimates for the incorporated area were prepared by AMBAG, and estimates for the Urban Growth Area were prepared by Coastplans.

Estimated GHG Emissions for Incorporated Gonzales

According to AMBAG, the Gonzales community emitted 22,124 metric tons[9] of CO_2e in the year 2005. This number does not include regional traffic on Highway 101 that is not attributable to Gonzales residents. Regional traffic not attributable to Gonzales is being addressed by the Transportation Agency for Monterey County (TAMC) through the AMBAG blueprint planning process and through the Regional Climate Action Compact group being spearheaded by Ecology Action. Table CAP-3 shows baseline GHG emissions for incorporated Gonzales in 2005.

[9]A metric ton is approximately equivalent to 1.1 US tons or 2,200 pounds.

Table CAP-3

BASELINE GHG EMISSIONS
INCORPORATED GONZALES
2005

Sector	CO_2e Emissions (metric tons)	Percent of Total
Residential Emissions	6,156	27.8%
Commercial and Industrial Emissions	9,303	42.0%
Transportation Emissions[10]	4,278	19.3%
Solid Waste Emissions	1,458	6.6%
Government Operations Emissions	929	4.2%
	22,124	100.0%

Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

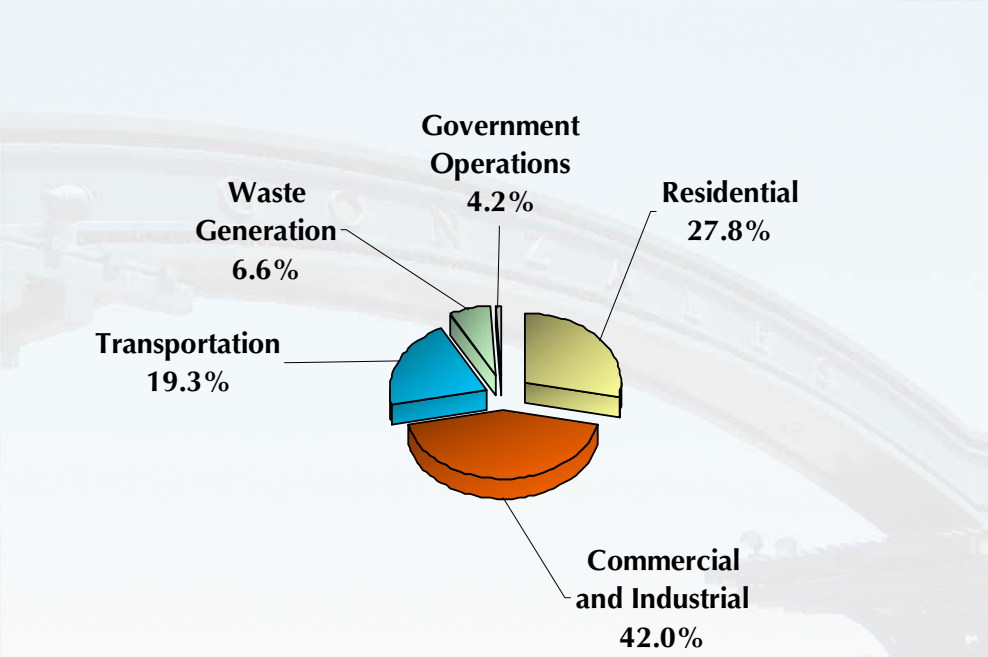
As shown in Table CAP-3, the Commercial/Industrial Sector is the largest source of emissions with 42 percent of total community emissions. Emissions from the Residential and Transportation Sectors accounted for 28 and 19 percent, respectively. Emissions from the Solid Waste Sector accounted for seven percent of the City's overall emissions in 2005, and emissions from the Government Operations Sector accounted for four percent.

Figure CAP-2 shows baseline community GHG emissions by sector in pie chart form. The chart demonstrates that growth in the Commercial, Industrial, and Residential Sectors constitutes the largest source of emissions in Gonzales. The Transportation Sector is the next largest source and includes emissions from vehicle miles traveled on local roads and the local contribution to regional traffic on Highway 101.

[10] Travel on local roads only (see Table 8 of the AMBAG Baseline Report); transportation-related government operations (vehicle fleet and employee commute) have been factored out (see Table 16 of the AMBAG Baseline Report).

Figure CAP-2

DISTRIBUTION OF COMMUNITY GHG EMISSIONS
BY SECTOR, 2005



Source: Coastplans; AMBAG 2005 Baseline Report (AMBAG, 2011)

Estimated GHG Emissions for Urban Growth Area

In order to provide an accurate basis upon which to project future GHG emissions, the Gonzales Climate Action Plan assesses the net impact of converting agricultural land to urban use—an activity anticipated by the *Gonzales 2010 General Plan*. To assess this impact, Coastplans relied on crop production data and crop GHG emission data from a 2012 study by Venkat.[11] While the information contained in the Venkat study is based on crop data published by the University of California, Davis in May 2011, Coastplans assumed that approximately the equivalent agricultural activity was occurring in 2005 and

[11] Venkat, Kumar, 2012. "Comparison of Twelve Organic and Conventional Farming Systems: A Life Cycle Greenhouse Gas Emissions Perspective," Journal of Sustainable Agriculture, 2012. http://www.cleanmetrics.com/pages/ComparisonofTwelveOrganicandConventionalFarmingSystems.pdf

that GHG emissions related to agricultural production was approximately the same in 2005 as it was at the time of the study.

The Urban Growth Area established by the *Gonzales 2010 General Plan* consists of 2,150 acres of land, of which 2,110 acres are in crop production. Of these 2,110 acres, approximately 640 acres are in vineyard use and 1,470 acres are used to grow a variety of row crops.[12] Applying the production and crop emission data from Venkat, Coastplans estimated that agricultural activity in the Urban Growth Area produced 4,723 MT of CO_2e in 2005. In the next section, which addresses GHG emission projections, these emissions will be factored out to account for the discontinuation of agricultural production as urbanization occurs. Table CAP-4 shows the estimated annual baseline GHG emissions produced by agricultural activities in the Urban Growth Area.

Table CAP-4

GHG EMISSIONS FROM AGRICULTURAL PRODUCTION
URBAN GROWTH AREA
2005

Crop	Annual Crop Yield (kg/ac)[13]	GHG Emission per Crop Yield (kg CO2e/kg)[13]	GHG Emission per ac (kg CO2e/ac)	GHG Emission per ac (MT CO2e/Ac)	Acres in Production[14]	Annual GHG Emission (MT CO2e)
Wine Grape[15]	5,443	0.27	1,470	1.47	640	941
Broccoli	6,636	0.36	2,389	2.39	735	1,756
Lettuce	14,515	0.19	2,758	2.76	735	2,027
					2,110	4,723

Sources: Coastplans; Venkat

[12]"Gonzales 2010 General Plan Environmental Impact Report, Volume 1 (SCH# 2009121017)," July 2010. Figure 4.1.2, page 4-37.
[13]Venkat, Kumar, 2012. "Comparison of Twelve Organic and Conventional Farming Systems: A Life Cycle Greenhouse Gas Emissions Perspective," Journal of Sustainable Agriculture, 2012. http://www.cleanmetrics.com/pages/ComparisonofTwelveOrganicandConventionalFarmingSystems.pdf
[14]"Gonzales 2010 General Plan Environmental Impact Report—Volume 1 (SCH# 2009121017)," July 2010. Figure 4.1.2, page 4-37
[15] Chardonney grapes was used here.

Community Emission Projections

GHG emissions in Gonzales are estimated to increase by the year 2020, from 26,847 to 42,564 metric tons CO_2e, under "business-as-usual" circumstances. The emissions from growth in the Commercial, Industrial, and Residential Sectors account for the biggest increase in community emissions (10,566 metric tons of CO_2e). The Transportation Sector contributes the next largest share of the increase in community emissions (3,954 metric tons of CO_2e). The Solid Waste Sector contributes the next largest share of the increase (1,315 metric tons of CO_2e). During the same time period, agricultural-related GHG emissions in the Urban Growth Area are expected to decrease by approximately 20 percent as a portion of the Urban Growth Area is annexed into the City of Gonzales for urbanization. The net increase in GHG emission for the entire area will be approximately 15,717 MT CO_2e by 2020. Table CAP-5 below shows community emissions projections for Gonzales through 2020.

Table CAP-5

COMMUNITY EMISSION PROJECTIONS
BY SECTOR, 2020

	2005		2020		2005 to 2020	
Sector	Emissions CO2e (metric tons)	Percent of Total	Emissions CO2e (metric tons)	Percent of Total	Increase in CO2e (metric tons)	Percent of Total
Urban Uses						
Residential	6,156	22.9%	11,845	27.8%	5,689	36.2%
Commercial and Industrial	9,303	34.7%	14,180	33.3%	4,877	31.0%
Transportation	4,278	15.9%	8,232	19.3%	3,954	25.2%
Solid Waste	1,458	5.4%	2,773	6.5%	1,315	8.4%
Government Operations	929	3.5%	1,788	4.2%	859	5.5%
Subtotal	22,124	82.4%	38,818	91.2%	16,694	106.2%
Agricultural Operations[16]	4,723	17.6%	3,746	8.8%	-977	-6.2%
Net Emissions	26,847	100.0%	42,564	100.0%	15,717	100.0%

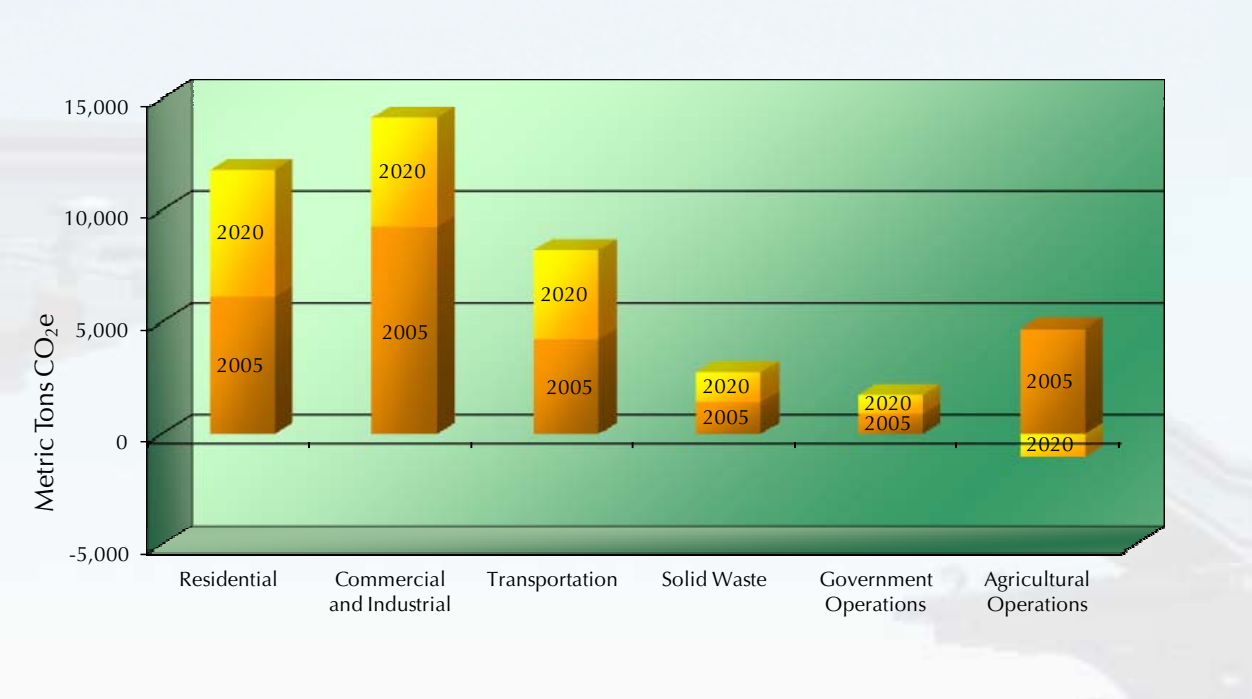
Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Figure CAP-3 shows community GHG emissions projections by sector in chart form. The chart demonstrates that the combined growth in the Residential and Commercial/Industrial Sectors represent about 67 percent of total future emissions in Gonzales. The Residential Sector is the largest single growth sector with about 36 percent of total future emissions. This information will be relevant in a later chapter, when measures to reduce emission from community sources are discussed.

[16] This assumes that 20 percent of the 2,150 acres of Urban Growth Area (approximately 445 acres) will be converted from agricultural to urban use by 2020. Accordingly, emissions from agricultural uses will also decrease by 20 percent.

Figure CAP-3

COMMUNITY EMISSION PROJECTIONS—CO_2e by Sector
2005 and 2020



Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Baseline Government Operations Emissions

In 2005, City of Gonzales's direct emissions from government operations, emissions from electricity consumption and select indirect sources totaled 929 metric tons of CO_2e.[17] This represents approximately 4.2 percent of the total quantified GHG emissions in Gonzales's overall community.[18] Emissions from the Wastewater and Solid Waste[19] Sector were the

[17] "Indirect sources" of emissions include such things as use of electricity. The use of a business, office, or residence creates demand for electricity, but the actual emissions related to the use of electricity occur where the power is actually generated—usually at a remote location at the power plant.
[18] Note that the Community inventory and the Government operations inventory should not be added together. Rather, the government operations inventory should be viewed as a sub-sector of the overall community inventory.

largest source of government operations emissions (35 percent). Emissions from Vehicle Fleet and Employee Commute Sector accounted for 28 percent, the Water Transport Sector accounted for 21 percent, the Buildings and Facilities Sector accounted for 15 percent, and the Public Lighting Sector accounted for less than one percent. Table CAP-6 provides additional detail on baseline emissions from government operations.

Table CAP-6

BASELINE GOVERNMENT OPERATIONS EMISSIONS
BY SECTOR, 2005

Sector	Emissions	Percent of Total
Buildings and Facilities	141	15.2%
Vehicle Fleet and Employee Commute	262	28.2%
Water Transport	192	20.7%
Public Lighting	5	0.5%
Wastewater and Solid Waste	329	35.3%
	929	100.0%

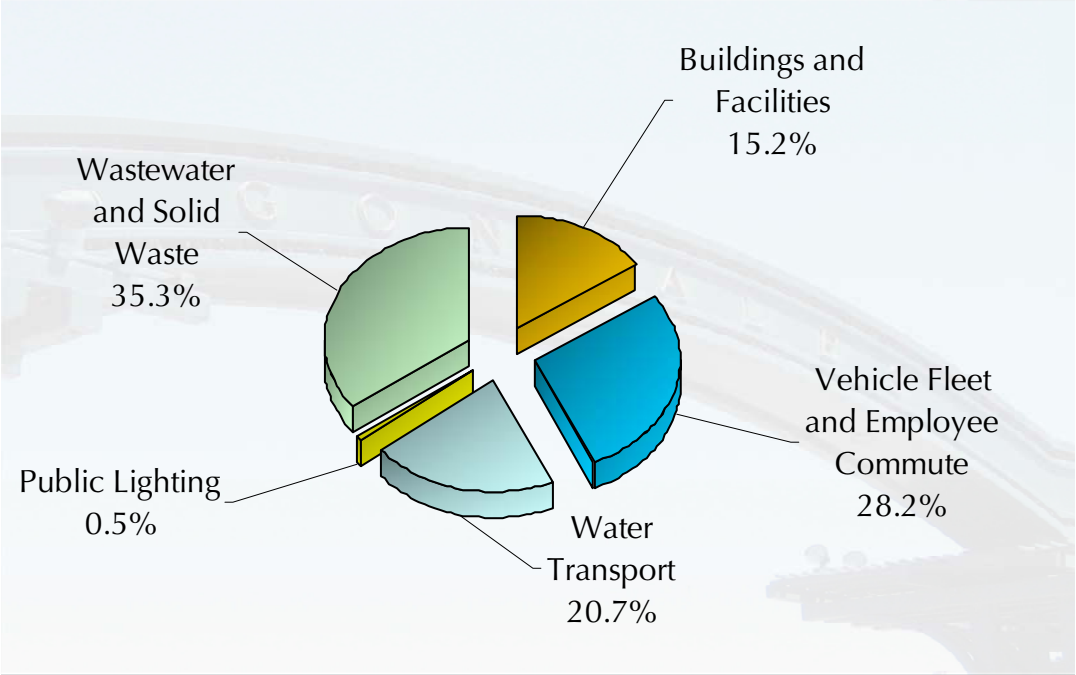
Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Figure CAP-4 shows baseline GHG emissions from government operations by sector in pie chart form. The chart demonstrates that together the wastewater and water transport sectors account for more than half of all emissions from government operations. This information will be relevant in a later chapter, when measures to reduce emission from government sources are discussed.

[19] This represents solid waste generated by government facilities. Of the total 1,734 MT CO2e generated by wastewater and solid waste communitywide, the majority represents solid waste generated by private residences and businesses.

Figure CAP-4

DISTRIBUTION OF GOVERNMENT OPERATIONS EMISSIONS
BY SECTOR, 2005



Source: Coastplans; AMBAG 2005 Baseline Report (AMBAG, 2011)

CHAPTER IV: GHG EMISSIONS REDUCTION TARGETS

INTRODUCTION

The primary purpose of this chapter is to set forth GHG emission reduction targets for the year 2020 and to establish thresholds of significance for the purpose of CEQA project review. In adopting the 2010 GP and certifying the GP EIR, the City of Gonzales committed to the reduction target parameters set forth in GP EIR Mitigation Measure GHG-1.

STATEWIDE GREENHOUSE GAS REDUCTIONS

In calculating reduction forecasts, local governments may include specific external factors that are guaranteed to affect emissions at fixed points in the future (ICLEI, 2010). The most common statewide reductions which are accounted for in Climate Action Plan's are implementation of AB 1493 (Pavley) Level I and II, Low-Carbon Fuel Standard (LCFS) and Regional Portfolio Standard (RPS). These programs or projects require no local involvement. Incorporating them into the forecast and reduction assessment provides a more accurate picture of future emissions growth and the responsibility and ability of local governments versus the state to reduce greenhouse gas emissions. The City adjusted its business-as-usual (BaU) forecast to demonstrate how the State's actions will impact local emissions, even if no local actions are taken.

AB 1493 and LCSF are transportation related measures. AB 1493 (Pavley), California's mobile-source GHG emissions regulation for passenger vehicles, was signed into law in 2002. The California Air Resources Board (ARB), in its Scoping Plan, estimates that implementation of GHG emission reduction standards for new passenger cars, pickup trucks, and sport utility vehicles, as described in AB 1493, will achieve increases in vehicle performance and therefore reduce the overall GHG emissions from on-road mobile sources by 2020. LCFS is designed to reduce the carbon intensity of California's transportation fuels by at least ten percent by 2020 by creating incentives for the development of a diverse set of clean, low-carbon transportation fuel options.

RPS is related to the production of electricity. RPS requires investor-owned utilities to provide at least one-third of their electricity from renewable resources, including wind, solar, geothermal, biomass, and small-scale hydro-electric, by 2020. PG&E delivered 12 percent of its electricity from renewable sources in 2005,[20] and this amount is expected to increase to 33 percent by 2020.

This CAP estimates that taken together, statewide measures will reduce GHG emissions in Gonzales by 11 percent, which is equivalent to 2,886 metric tons (MT) of CO_2e annually. While statewide reductions result in a significant contribution toward achieving the City's target, the limited extent of their impact on GHG emissions requires the City of Gonzales to take further action to reduce GHG emissions.

Community Reduction Targets (Existing Development)

Mitigation Measure GHG-1 specified that targets for existing "development shall, at a minimum, be a 15 percent reduction from the baseline identified in the GHG inventory prepared by AMBAG." A 15 percent reduction in existing baseline CO_2e would amount to a reduction of 3,319 metric tons of CO_2e by 2020. When combined with the statewide reduction efforts described above, overall reductions of GHG emissions from existing sources in Gonzales would be reduced by 28 percent. Table CAP-7 shows the 2020 emission reduction target for existing development—including government operations—with both statewide and CAP reduction efforts.

[20] See http://www.energy.ca.gov/renewables/quarterly_updates/updates/july2004-present/2005-1Q_PROGRAM_SUMMARY.PDF

Table CAP-7

REDUCTION TARGET FOR EXISTING DEVELOPMENT
INCORPORATED GONZALES
2020

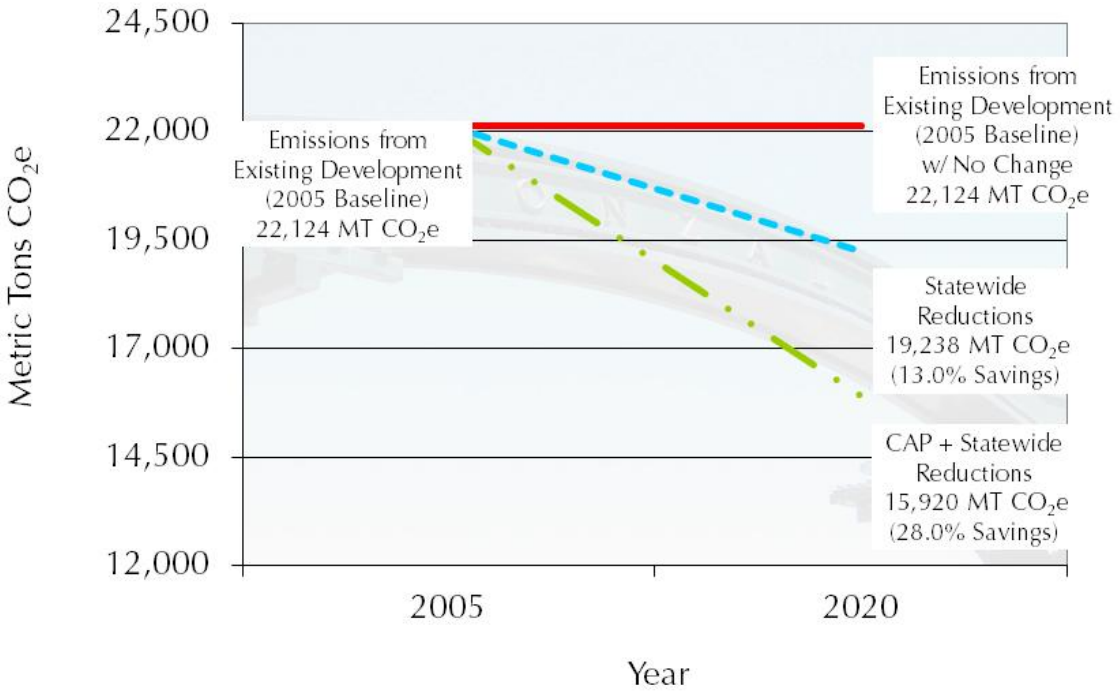
Item	2020
2005 Baseline Emissions (MT CO_2e)	22,124
Statewide Reductions	
Statewide Reductions (MT CO_2e)	2,886
Percent Statewide Reductions	13.0%
Local CAP Reductions	
Local CAP Reductions (MT CO_2e)	3,319
Percent Local CAP Reduction	15.0%
Subtotal (Statewide + Local Reductions) (MT CO_2e)	6,204
2020 Emissions Target (MT CO_2e)	15,920
Percent Reduction from Baseline	28.0%

Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Figure CAP-5 shows a graph of the emission reduction target for existing development with both statewide and local CAP reduction efforts. The GHG reduction measures for existing development set forth in a later chapter will be tailored to meet this reduction target.

Figure CAP-5

REDUCTION TARGET FOR EXISTING DEVELOPMENT



Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Community Reduction Targets (New Development)

Mitigation Measure GHG-1 stated that "allowable increases in GHG emissions," which the GP EIR acknowledged as unavoidably accompanying new development, would be "tempered by appropriate measures to limit GHG emissions from new development on a per capita basis" and that these limits would "be indexed to realistic targets that are readily achievable using GHG Best Management Practices (GHG-BMP) identified as part of the citywide climate action plan." The City of Gonzales has interpreted this mitigation measure as a mandate to require efficiency measures capable of resulting in at least a 15 percent reduction from business-as-usual GHG emissions. When combined with the

statewide reduction efforts described above, the growth in GHG emissions in Gonzales would be reduced by almost 30 percent. Nonetheless, new development will contribute a net increase of GHG emissions that is 41 percent greater than the 2005 baseline. Table CAP-8 summarizes reduction targets for new development.

Table CAP-8

REDUCTION TARGET FOR NEW DEVELOPMENT
CITY OF GONZALES, 2020

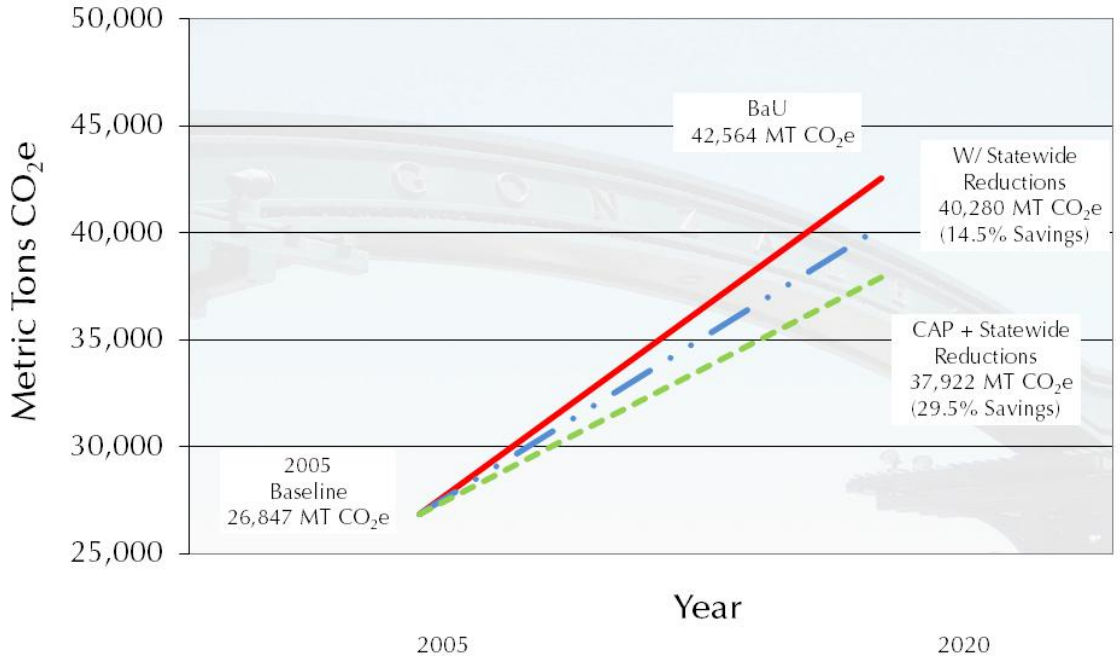
Item	Amount
New Emissions 2005 to 2020 "Business as Usual" (MT CO_2e)	15,717
Statewide Reduction in New Emissions	
Statewide Reduction (MT CO_2e)	2,284
Percent Statewide Reduction	14.5%
Local CAP Reduction in New Emissions	
Local CAP Reduction (MT CO_2e)	2,358
Percent Local CAP Reduction	15.0%
Subtotal (Statewide + Local Reductions) (MT CO_2e)	4,642
2020 Emissions Target (MT CO_2e)	11,075
Percent Reduction from Business as Usual	29.5%

Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Figure CAP-6 shows a graph comparing CO_2e at "business as usual" conditions with statewide and local CAP reduction efforts. The GHG reduction measures for new development set forth in Chapter VI will be tailored to meet this reduction target.

Figure CAP-6

REDUCTION TARGET FOR NEW DEVELOPMENT



Note: The baseline used here includes GHG emission from the Urban Growth Area and is therefore greater than the baseline used in calculating targets for existing development.
Sources: Coastplans; AMBAG 2005 Baseline Report (AMBAG 2011)

Long-Term Projections and Reduction Targets

In addition to setting short-term numerical targets associated with the reduction of GHG emissions for 2020, the Gonzales CAP is also designed to put the City of Gonzales on the path to the achieving the long-term reduction goals set forth in Executive Order No S-3-05 for the year 2050. However, it should be acknowledged at the outset that the ability to project with any confidence future conditions related to the management of GHG emissions is very limited. Planners and policymakers can expect in the years ahead, new technologies and policy mandates that will make the long-term analysis contained below

obsolete. This obsolescence will be managed through periodic updates of the Gonzales CAP as described in Chapter VII.

In keeping with the dual target approach developed for the Gonzales CAP as described in Chapter I, separate long-term targets are established for both existing and new development.

2050 GHG Emission Projections

While the "City of Gonzales Greenhouse Gas Inventory 2005 Baseline Report" (AMBAG 2011) contained GHG emission projections for the year 2020, it did not contain similar projections for the year 2050. For the purpose of the Gonzales CAP, the City of Gonzales generated a 2050 GHG emission projection based on the most recent AMBAG projection of employment and population.[21] According to the AMBAG projections, Gonzales is expected to have a population of 23,418 persons by 2035. This represents an annual average growth rate of 3.48 percent.[22] Long-term projections for 2050 were generated by applying this growth rate to the estimate of 2005 GHG emissions. Table CAP-9 shows long-term GHG emission projections for the City of Gonzales.

[21] *Monterey Bay Area 2008 Regional Forecast Population, Housing Unit and Employment Projections for Monterey, San Benito and Santa Cruz Counties to the Year 2035* (AMBAG, June 11, 2008).
[22] This rate is less than the rate used to project 2020 GHG emissions for Gonzales in the AMBAG Baseline Report. It's less than ideal to use different growth rates for the 2020 analysis and the 2050 analysis, but it seemed most prudent to adhere to the AMBAG Baseline Report as closely as possible for the 2020 analysis. It made less sense to use the higher growth rates to project long-term GHG emissions, as they are inconsistent with AMBAG's own population and employment projections last issued in 2008.

Table CAP-9

LONG-TERM GHG EMISSION PROJECTIONS
2020 to 2050

Item	2020 CO_2e	Percent of Total	Annual Growth Rate	2050 CO_2e	Percent of Total	Change
Residential Emissions	11,845	27.8%	0.0348	33,055	30.5%	21,210
Commercial and Industrial Emissions	14,180	33.3%	0.0348	39,571	36.5%	25,391
Transportation Emissions	8,232	19.3%	0.0348	22,971	21.2%	14,739
Waste Generation Emissions	2,773	6.5%	0.0348	7,739	7.1%	4,966
Government Operations	1,788	4.2%	0.0348	4,988	4.6%	3,201
Subtotal	38,818	91.2%		108,326	100.0%	69,507
Agricultural Operations	3,746	8.8%		0	0.0%	-3,746
Total	42,564	100.0%		108,326	100.0%	65,762

Sources: Coastplans; AMBAG; *Gonzales 2010 General Plan*

2050 GHG Emission Reduction Target (Existing Development)

According to the analysis above, statewide efforts could account for approximately 11 percent of overall GHG emission reductions by 2020, and for the purpose of this long-term analysis, the Gonzales CAP assumes that the State of California will increase its efforts in the years after 2020 to reduce statewide emissions by an additional 25 percent.[23] If this assumption holds true, an overall 90 percent reduction in GHG emissions could be achieved if local programs implemented through the Gonzales CAP reached approximately 61-percent reduction levels in existing development. Table CAP-10 shows long-term GHG reductions targets for existing development.

[23] This assumption is based solely upon the judgment of Coastplans that the State of California is likely to increase its efforts over the long term to reduce GHGs. This assumption will be reevaluated in subsequent updates of the Gonzales CAP as better information becomes available.

Table CAP-10

LONG-TERM GHG REDUCTION TARGETS
EXISTING DEVELOPMENT
2050

Item	2005	2020	2050
Baseline Emissions (MT CO2e)	22,124	15,920	2,229
Statewide Reductions			
Statewide Reductions (MT CO2e)	2,886	3,980	
Percent Statewide Reductions	13.0%	25.0%	
Local CAP Reductions			
Local CAP Reductions (MT CO2e)	3,319	9,711	
Percent Local CAP Reduction	15.0%	61.0%	
Total Statewide + Local CAP Reductions (MT CO2e)	6,204	13,691	
Percent Total Reductions	28.0%	61.9%	89.9%
Target Emissions	15,920	2,229	

Source: Coastplans

2050 GHG Emission Reduction Target (New Development)

Consistent with the approach used throughout the Gonzales CAP, targets for new development are structured as reductions in the growth of GHG emissions, rather than outright reductions (as is the case for existing development). Assuming the State of California increases its programs to achieve 25 percent reduction in statewide emissions after 2020 then the best overall reduction in growth between 2005 and 2050 that could be achieved by the Gonzales CAP would be approximately 71 percent. Such an outcome would, however, require that emissions from new development across all sectors—building sectors, local transportation sectors, and government services—be net zero after 2020.[24] Table CAP-11 shows long-term GHG reductions targets for new development.

[24] This is based on an analysis of Table CAP-10 below, which shows a GHG reduction of 100% for statewide and local measures combined for the period 2020 to 2050.

Table CAP-11

LONG-TERM REDUCTION TARGET
NEW DEVELOPMENT
2050

Item	2005 to 2020	2020 to 2050	2005 to 2050
2005 Baseline Emissions (MT CO_2e)	26,847	37,922	37,922
New Emissions "Business as Usual" (MT CO_2e)	15,717	65,762	
Statewide Reductions			
Statewide Reductions (MT CO_2e)	2,284	16,440	
Percent Statewide Reductions	14.5%	25.0%	
Local CAP Reductions			
Local CAP Reductions (MT CO_2e)	2,358	49,321	
Percent Local CAP Reduction	15.0%	75.0%	
Total Statewide + Local CAP Reductions (MT CO_2e)	4,642	65,762	
Percent Total Reductions	29.5%	100.0%	71.5%
Target Emissions (MT CO_2e)	37,922	37,922	

Source: Coastplans

Long-Term GHG Reduction Measures

Long-term GHG reduction measures for existing development will, no doubt, be a continuation of retrofitting existing residences and commercial buildings to be more energy efficient. As described in Chapter V below, residential and commercial retrofits account for less than 10 percent of GHG reductions through 2020. The long-term approach will, no doubt, involve retrofitting the other 90 percent. The biggest constraint to achieving widespread retrofitting is cost. Without generous grant programs, it will continue to be a challenge to convince homeowners to incur the expense of energy efficiency retrofits. It is also unlikely that local government will have the resources to fund such retrofits. On another front, it's not unreasonable to expect that the price of solar power generation will come down enough to make the installation of solar panels more

cost effective than it is today. Therefore, this strategy will probably play a more significant role in the long term.

With regard to new development, there is an expectation that the State of California will continue to move forward with building code revisions that require net-zero energy usage. This, in combination with better fuel efficiency, should account for much of the long-term progress in reduction GHG emissions from new development. Nonetheless, the City of Gonzales should work with Monterey-Salinas Transit to institute local transit service in Gonzales over the long term. The *Gonzales 2010 General Plan* anticipates this by identifying Fifth Street/Johnson Canyon Road as a future transit corridor that would connect to regional transit services via a transit center in Downtown Gonzales.

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CHAPTER V: EXISTING EFFORTS TO REDUCE GHG EMISSIONS IN GONZALES

INTRODUCTION

The primary purpose of this chapter is to describe measures to reduce existing GHG emissions already taken by the City of Gonzales under the auspices of the G^3 Initiative and to quantify the remaining reductions that need to occur by 2020. New measures for GHG emission reductions are set forth in Chapter VI.

EARLY SUCCESS BY THE G^3 INITIATIVE

The City of Gonzales began the G^3 Initiative in 2006 to make Gonzales a more environmentally sustainable community, and since that time the G^3 Initiative has made substantial progress working with local businesses and homeowners to implement voluntary measures to reduce GHG emissions.

As a result of G^3 Initiative programs, the City of Gonzales about 37 percent of the city's 2020 CO_2e reduction target for existing development. In order to achieve the additional 63 percent of GHG emission reductions, the City of Gonzales will undertake a set of new programs as set forth in Chapter VI. Table CAP-12 shows progress to date in reducing existing CO_2e emissions.

Table CAP-12

PROGRESS TO DATE AND ADJUSTED REDUCTION TARGET

Measure No.	Current Reduction Measures	Expected Savings CO_2e Emissions (metric tons)	Percent of Total 2020 Reduction Target
Local CAP Target for Existing Development		3,319	100.0%
Residential Emissions			
CAP-1-E	Weatherization Program (Central Coast Energy Services)	54	1.6%
Commercial Emissions			
CAP-2-E	RightLights CO_2 Diversion Program (Ecology Action)	5	0.2%
CAP-3-E	Constellation Wines, U.S. Solar Project	500	15.1%
CAP-4-E	AMBAG Energy Watch Retrofit Project	337	10.2%
Transportation Emissions			
CAP-5-E	Gonzales Biodiesel Program (50 vehicles)	272	8.2%
Solid Waste Emissions			
CAP-6-E	Gonzales Reuse/Recycle Program	2	0.1%
CAP-7-E	Waste Reduction (37% Diversion)	61	1.8%
Government Operations			
CAP-8-E	City-Owned Vehicles CNG Conversions (1 Vehicle)	2	0.1%
	TOTAL CURRENT G^3 PROGRAMS	1,233	37.1%

Sources: Coastplans; City of Gonzales; PG&E; AMBAG

Each of these programs is described in detail in Appendix A. Appendix A also includes information on implementation, progress indicators, and monitoring for each of the programs listed above in Table CAP-12. Calculations and methodology for each program is contained in Appendix D.

CHAPTER VI: ACTION PLAN FOR REDUCING GREENHOUSE GAS EMISSIONS

INTRODUCTION

This chapter presents a discussion of new measures to be taken by the City of Gonzales to reduce greenhouse gas emissions. The Chapter is organized into two major parts—additional reduction measures for existing development and reduction measures for new development. Each of these two sections begins with a summary table, which is then followed by a more detailed description of the items in the table.

The objective of selecting the reduction measures and actions in this plan was to start out with measures that are of a low cost to the City, and which had the most successful chance of being implemented and embraced by the community. The success of the measures and action in this plan will be evaluated at a future date at which time the scope of the measure may be modified and the actions revised to result in achieving the most overall efficiencies.

The emissions reductions estimate for each measure was obtained using the Climate and Air Pollution Planning Assistant (CAPPA) tool developed by ICLEI. The tool was created to assist local governments in developing customized plans for reducing climate change. CAPPA provides information and quantification tools for over 100 emission reduction strategies in its current form. City-specific data is entered into the CAPPA software and combined with emission coefficients and current research.

Where a CAPPA reduction analysis was not available, current research was compiled to create an estimate or to display that an estimate is not currently possible.

REDUCTION MEASURES FOR EXISTING DEVELOPMENT

Table CAP-13 shows expected savings from new GHG emission reduction measures targeted at existing development.

Table CAP-13

NEW MEASURES FOR EXISTING DEVELOPMENT

Measure No.	Program Element	Expected Savings CO_2e Emissions (metric tons)	Percent of Total 2020 Reduction Target
	Local CAP Target for Existing Development	3,319	100.0%
	Savings from Existing G[3] Programs	1,233	37.1%
	Further Needed Reductions from Local CAP Programs	2,086	62.9%
Residential			
CAP-9-E	Personal Responsibility		
	10 Energy-Saving Measures (5% Household Participation)	68	3.3%
	Energy Efficiency Education (20 Businesses)	120	5.8%
CAP-10-E	Residential Energy Retrofits		
	High Efficiency Water Heaters (30 heaters replaced)	20	1.0%
	HOME Program Residential Energy Retrofits (30 Houses)	30	1.4%
	Low Maintenance Landscaping (30 Residential Properties)	13	0.6%
CAP-11-E	Urban Forest Program (350 New Trees)	88	4.2%
Commercial and Industrial			
CAP-12-E	Commercial/Industrial Energy Retrofits		
	Right Lights CO_2 Diversion Program (Ecology Action)	18	0.9%
	Commercial Buildings Retrofitted (75,000 sf)	55	2.6%
	Cool Roofs (75,000 sf)	23	1.1%
CAP-13-E	Renewable Energy Generation		
	Commercial/Industrial Solar Power[2] (125,000 sf)	365	17.5%
	Municipal Solar Powered Facilities (Chevron Program)	286	13.7%
Transportation			
CAP-14-E	Expansion of Gonzales Biofuel Program (150 Vehicles)	815	39.1%
Solid Waste			
CAP-15-E	Waste Reduction (75% Diversion)	62	3.0%
Water Conservation			
CAP-16-E	Municipal Water Conservation Ordinance	125	6.0%
TOTAL NEW LOCAL CAP PROGRAMS		2,088	100.1%

Notes: [1]This represents a proposed solar project by an existing food processing company in Gonzales (50% of total roof area ≈ 50,000 sf), plus 75,000 sf of unnamed facility; same production efficiency as Constellation Wines Project

Source: City of Gonzales

Reduction Measures for New Development

Table CAP-14 shows expected savings from new GHG emission reduction measures targeted at new development.

Table CAP-14

MEASURES FOR NEW DEVELOPMENT

Measure No.	Program Element	Expected Savings CO2e Emissions (metric tons)	Percent of Total 2020 Reduction Target
	Reduction Target for New Development	2,358	100.0%
Residential			
CAP-17-N	Neighborhood-based design w/ mixed use	61	2.6%
CAP-18-N	Urban Forest (1,500 Trees)	379	16.1%
CAP-19-N	Green building practices and sustainable site planning	712	30.2%
CAP-19A-N	Solar Power Generation in New Residential Development	216	9.2%
Commercial and Industrial			
CAP-20-N	Green building practices and sustainable site planning	531	22.5%
CAP-21-N	Solar Power Generation in New Commercial Development	365	15.5%
Transportation			
CAP-22-N	Bike Lane Programs (as specified in GP)	10	0.4%
Solid Waste			
CAP-23-N	Waste Reduction (75% Diversion)	216	9.2%
Government Operations			
CAP-24-N	Anaerobic Digester at Wastewater Treatment Plant	133	5.6%
TOTAL ALL PROGRAMS		2,623	111.2%

Source: Coastplans; City of Gonzales

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CHAPTER VII: IMPLEMENTATION

INTRODUCTION

The primary purpose of this chapter is to describe how the City will implement the GHG reduction programs contained in the CAP.

IMPLEMENTING PROGRAMS FOR EXISTING DEVELOPMENT

The City of Gonzales will continue to implement GHG reduction programs aimed at existing development (including government operations) through its G^3 Program. The G^3 Program has a proven track record of success—it has already achieved 37 percent of the City's 2020 target for existing development—and the G^3 program managers worked closely on the list of GHG reduction measures contained in Table CAP-13. The G^3 Program has the expertise and financial support required to achieve the other 63 percent of targeted GHG reductions.

IMPLEMENTING PROGRAMS FOR NEW DEVELOPMENT

The City of Gonzales will implement GHG reduction programs aimed at new development through the Specific Plan and other development review processes. Program implementation is to be facilitated by the application of a simple metric of GHG emission reductions savings to be achieved—MT CO_2e saved per unit of development. This metric is described below.

According to Table CAP-14, through 2020, GHG reduction programs aimed at new development have the potential to save up to 2,623 MT of CO_2e annually. This amount deliberately exceeds the amount needed to meet the target for new development established in Chapter IV (i.e., 2,358 MT CO_2e) in the expectation that some measures may fall short of achieving their objective. In this way, the GHG reduction program provides for a significant amount of miscalculation and therefore a greater likelihood that the actual minimum target will be reached by 2020.

To establish metrics for new development, and an appropriate nexus between the GHG emission impacts of new development and the measures contained in this CAP for

reducing such impacts, the first task is to factor out those measures over which private developers exercise no control. Solid waste reduction efforts and improvements to the wastewater treatment plant represent 14.8 percent of total reductions by 2020. This leaves 96.4 percent (2,274 MT CO_2e) to be achieved by private developers as they develop new neighborhoods and employment areas. Of this amount, measures aimed at new residential development, plus bike lanes, account for 58.5 percent of potential savings (1,378 MT CO_2e); measures aimed at new commercial and industrial development account for 38 percent of potential savings (896 MT CO_2e). This is roughly proportional to the impacts of these two types of development.

The next task is to calculate per unit savings for both types of development (residential and commercial/industrial). The City of Gonzales estimates that it could add 540 houses and 727,400 square feet of commercial/industrial space (see the discussion in Chapter VI above, which was derived from the "Gonzales 2010 General Plan EIR"). When these unit numbers are applied to their respective targets, new residential construction would need to achieve savings of approximately 2.55 MT CO_2e per dwelling unit to be deemed consistent with the Gonzales CAP. New commercial and industrial construction for its part would need to achieve savings of approximately 1.23 MT CO_2e per 1,000 square feet of construction. In both cases, GHG reductions will be measured against "business-as-usual" conditions, which are defined as conditions under which none of the programs listed in Table CAP-14 (see Chapter VI above) would be implemented. Table CAP-15 summarizes the GHG emission reduction metric to be applied to new development.

Table CAP-15

GHG REDUCTION METRIC
(Per Unit of New Development)

	Projected Development by 2020	Targeted Savings (MT CO2e)	GHG Reduction Metric (MT CO2e per unit of new development)
Residential Construction	540 du	1,378	2.55 per du
Commercial/Industrial Construction	727,400 sf	896	1.23 per 1,000 sf

Source: City of Gonzales

Table CAP-14 also identifies 349 MT CO_2e to be saved through measures aimed at solid waste emissions and government operations emissions. These programs will be folded into the G^3 Program effort described in the section above. These savings are not factored into the metric for new development set forth in Table CAP-15 above.

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CHAPTER VIII: MONITORING, REPORTING, AND UPDATING

INTRODUCTION

The primary purpose of this chapter is to describe how the City will monitor its plan's success, how (and how often) it will report on the CAP, and the process for updating the CAP.

MONITORING AND REPORTING ON PROGRESS

Please see the detailed sheets in Appendices A through C, which include information on progress indicators and program monitoring for each GHG reduction measure.

KEEPING THE PLAN UP TO DATE

The Gonzales CAP will be updated every four years, including updates to Gonzales GHG inventories.

The City will benefit from monitoring the implementation of priority actions during the next four years (2012-2016), and will have the opportunity to learn from these observations to improve plans going forward. Successful programs may be continued and expanded, while unsuccessful actions can be dropped or reconfigured. Other unforeseen changes (e.g., technological advancements, energy price changes, economic growth rates, updated climate models, funding availability) will be considered in future updates to this plan.

The City will provide ongoing opportunities for the public to receive information on the City's progress in implementing Gonzales CAP actions, and to provide input as the implementation process proceeds. These will include periodic community climate forums.

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APPENDIX A: EXISTING G^3 GHG REDUCTION MEASURES

INTRODUCTION

The primary purpose of this chapter is to provide detailed description of GHG reduction measures contained in this CAP, the time frame for implementing the measure (i.e., short-, medium-, or long-term), and the agency or department responsible for implementing the measure.

DETAILED PROGRAM DESCRIPTIONS

The following tables provide details for existing GHG reduction programs, including information on program description, program implementation, progress indicators, and program monitoring.

RESIDENTIAL REDUCTION MEASURES

Measure CAP-1-E: Weatherization Program	**54 Metric Tons CO_2e**

Program Description

Central Coast Energy Services, Inc. (CCES) is a not-for-profit organization which provides energy conservation, consumer education & advocacy, home improvement, utility assistance, job training, and other services to people in need. CCES has been assisting households in Gonzales since 2009. Its accomplishments to date include:

- ✓ In 2011, CCES weatherized 54 homes in Gonzales. CCES' Home Weatherization program provides eligible, low-income families with the installation of up to $6,500 worth of energy efficient upgrades such as windows, doors, refrigerators, attic insulation, weather-stripping, carbon monoxide alarms, compact fluorescent light bulbs, low-flow showerheads, thermostats, and porch lamps.
- ✓ 2,969 door hangers distributed in Gonzales during summer of 2009 door-to-door campaign (July-Sept.) CCES distributed information to the entire City of Gonzales once and returned a second time to distribute additional information and "knock and talk" with the residents. The door hangers included BILINGUAL program information, application, and energy saving tips.
- ✓ 1,700 water bill inserts mailed out with City of Gonzales water bill in January 2010; CCES received 70 application requests through the 888 toll-free line for the California Alternate Rates for Energy (CARE), a discount rate program offered by PG&E which gives eligible low-income households a 20 percent discount on their energy bill.
- ✓ In 2011, CCES assisted 263 applicants with HEAP benefit, with credit of up to $385 on home PG&E bills.
- ✓ CCES is currently working on a new program to install solar panels on apartment complexes, and the City of Gonzales is working to be included in the program.

Program Implementation

Actions	***Responsibility***
Coordinate with Central Coast Energy Services, Inc. to facilitate program implementation	G^3 Program staff

Progress Indicator

This program is complete	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information provided by Central Coast Energy Services, Inc.

COMMERCIAL REDUCTION MEASURES

Measure CAP-2-E: RightLights CO_2 Diversion Program	**5 Metric Tons CO_2e**

Program Description

The RightLights Program provides subsidized energy efficiency upgrades of lighting and refrigeration systems, with free professional assistance to help you lower your energy bills and boost your cash flow. RightLights is available to qualified PG&E customers in San Mateo, Santa Clara, Santa Cruz, Monterey, and San Benito counties. RightLights specifies ultra-low mercury fluorescent lamps wherever possible and ensures that all your old fluorescent lamps (which contain much higher levels of mercury) are properly recycled. The program also supplies local information that makes it easy to recycle new lamps when they reach the end of their useful life. The five (5) metric tons are attributable to "Healthy Soil Phase I, which has a savings of 11,547 pounds of CO_2e.

Program Implementation

Actions	***Responsibility***
Coordinate with Ecology Action to facilitate program implementation for 20 percent of targeted savings	G^3 Program Staff

Progress Indicator

20% of program is complete	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information provided by Ecology Action.

Measure CAP-3-E: Constellation Wines, U.S. Solar Project	**500 Metric Tons CO_2e**

Program Description

The City of Gonzales, through its G^3 Initiative worked with Constellation Wines, U.S. to install a one-megawatt solar electric system covering approximately 170,000 square feet of the main winery warehouse roof. The system, which went online in 2009, produces more than 1.7 gigawatt-hours of electricity per year, providing approximately 50 percent of the winery's total energy requirements. During the summer months, when the winery is not crushing grapes, the system exports enough electricity onto PG&E's power lines to supply the electrical needs for about 21 percent of the roughly 2,033 households in Gonzales in 2010.

Program Implementation

Actions	***Responsibility***
Coordinate with Constellation Wines, U.S. to facilitate program implementation	G^3 Program Staff

Progress Indicator

This project is complete	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on project success during CAP update (approximately three (3) years) based on information provided by Constellation Wines, U.S..

Measure CAP-4-E: AMBAG Energy Watch Retrofit Project	**337 Metric Tons CO_2e**

Program Description

In January 2009, AMBAG Energy Watch Program completed the direct installation of free energy efficient measures in ten buildings. These buildings include the Gonzales City Fire Department, City Hall, City Wells No. 4, 5, and 6, City of Gonzales Medical Building, New Police Department, Public Works Yard Well No. 3, Day Care Center and Municipal Pool. Where applicable, lighting was replaced with energy efficient CFLs, T8 lamps and new electronic ballast fixtures, and LED exit signs, vending machine controllers and occupancy sensors were installed.

Program Implementation

Actions	***Responsibility***	
Coordinate with AMBAG to facilitate program implementation	G^3 Program Staff	

Progress Indicator

This project is complete	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on project success during CAP update (approximately three (3) years) based on information provided by AMBAG.

TRANSPORTATION REDUCTION MEASURES

Measure CAP-5-E: Gonzales Biodiesel Program	**272 Metric Tons CO_2e**

Program Description

Starting in 2006, Energy Alternative Solutions, Inc., a private company operating in the City of Gonzales, began producing bio diesel from food oils collected from regional grease traps. The locally produced biodiesel is sold within ½ mile of the refinery site. The City estimates that 50 vehicles currently benefit from this program.

Program Implementation

Actions	***Responsibility***
Coordinate with Energy Alternative Solutions, Inc. to facilitate program implementation for 50 targeted vehicles	G^3 Program Staff

Progress Indicator

This phase of the project is complete; program is ongoing	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information provided by Energy Alternative Solutions, Inc.

SOLID WASTE REDUCTION MEASURES

Measure CAP-6-E: Gonzales Reuse/Recycle Program	**2 Metric Tons CO_2e**

Program Description

In 2010, the city hosted two special collection events in the summer and fall. Both events provided for the collection of electronic waste, mixed recyclables, metal, wood, household hazardous waste. Used clothing and household goods were collected for charities. Books were collected by the Gonzales branch of the Monterey County Library and shelved, sold at their book sale or recycled. The summer event featured a "Free-cycle" area along with community outreach from the SVSWA and Monterey County Library. The fall event featured the same recycling services as the spring event along with mattress and appliance collection. Educational materials and outreach were provided at both events. These events are now scheduled annually.

Also, the City of Gonzales worked with Converted Organics to form an innovative partnership with the City to implement numerous programs to facilitate recycling and reduce landfill waste, including grasscycling, backyard and on-site composting/mulching, and curbside recycling. In 2009, La Gloria School began a "Zero Waste Lunch" project that includes a fully compostable lunch tray and cutlery. Fairview Middle School began the same program in the 2010-11 school year. The food waste is taken twice weekly to an in-vessel composter in Gonzales for conversion into an agricultural fertilizer product. The fertilizer is made using Converted Organics' proprietary technology and process known as High Temperature Liquid Composting.

Program Implementation

Actions	***Responsibility***
Coordinate with Monterey County Library and GUSD to facilitate program implementation	G^3 Program Staff

Progress Indicator

This phase of the project is complete; program is ongoing	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information collected during collection events.

Measure CAP-7-E: Solid Waste Reduction Program	**61 Metric Tons CO_2e**

Program Description

The City of Gonzales instituted curbside recycling in 2005 for single family residences. The program includes both recycling and green waste. In addition, the City of Gonzales has a voluntary recycling program for multi-family and commercial development. As of 2010, approximately 23 percent of the total refuse collected in Gonzales was being diverted by the curbside and voluntary multi-family programs. This program accounts for 521 pounds/person/year of solid waste diversion.

Program Implementation

Actions	***Responsibility***	
Continue in-house implementation of this program	Public Works Department	

Progress Indicator

This phase of the project is complete; program is ongoing	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information collected by the Public Works Department.

GOVERNMENT OPERATIONS REDUCTION MEASURES

Measure CAP-8-E: City-Owned Vehicle CNG Conversion	**2 Metric Tons CO_2e**

Program Description

The City of Gonzales has converted one city vehicle to compressed natural gas (CNG) since 2005. This program accounts for 2 MT CO_2e each year.

Program Implementation

Actions	***Responsibility***	
Continue in-house implementation of this program	Public Works Department	
Progress Indicator		
This phase of the project is complete; program is ongoing	Short Term	n/a
	Med Term	n/a
	Long Term	n/a

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on information collected by the Public Works Department.

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APPENDIX B: REDUCTION MEASURES FOR EXISTING DEVELOPMENT

INTRODUCTION

This appendix provides detailed information about new GHG reduction measures *for existing development* to be implemented through the Gonzales G^3 Program, starting in 2012.

DETAILED PROGRAM DESCRIPTIONS

The following tables provide details for new GHG reduction programs *for existing development*, including information on program description, program implementation, progress indicators, and program monitoring.

New Residential Reduction Measures

Measure CAP-9-E: Personal Responsibility	188 Metric Tons CO_2e

Program Description

The success of the City's GHG Emission reduction strategies begins with each Gonzales resident. All of us must take personal responsibility for reducing greenhouse gas emissions, particularly carbon dioxide. Each of us will be able to do various things to assist the City in reaching its short-term and long-term goal for the reduction of GHG emissions.

The easiest and most direct way for all of us to do our part in assisting the City in meeting its GHG reduction goals is to save energy. Saving energy is directly correlated to emission reduction. Listed below are ten energy-saving measures, which we all should put into practice.

1. **Efficient Lighting.** Change to energy-saving compact fluorescent light bulbs or LED bulbs. Doing so is one of the easiest ways to save energy and money. Not only do fluorescent bulbs last up to 10 times longer than regular ones, but they produce significantly less carbon. If you change only 10 bulbs in your home today, you can expect to save an average of $150 and 1,400 lbs of carbon every year. The cost of LED bulbs, which has been high, is dropping each year and making this nearer technology competitive.
2. **Heating & Cooling.** Charges for heating and cooling of your home constitute half of the average electricity bill. Set your thermostat a little higher in the summer and a little lower in the winter to save energy. Typical recommendations are for a thermostat setting of 68° in the winter and 78° in the summer, but you can adjust these limits according to your comfort. Just by making smaller adjustment to room temperature will reduce your carbon footprint by about 2,000 lbs annually.
3. **Recycle.** Recycling plastic, metal, glass, and paper products will result in a reduction of the carbon emissions of an average home by over 1,500 lbs every year.
4. **Wash Full loads (clothes & dishes).** For every two loads that you can fit into one, you save about one pound of carbon. Assuming 6 full loads per week of washing (3 of dishes and 3 of clothes) you cut your carbon emissions by 300 lbs.
5. **Use Water Saving Shower Head.** Showers use an average of 2/3 of a household's hot water, and installing a low flow shower head can cut this drastically reducing carbon emission by 300 lbs per year.
6. **Adjust Your Water Heater.** When initially installed, water heaters are typically set to 140°F. However, most households' needs can still be met after decreasing this setting to 120°F or lower. By making this temperature change you can reduce your carbon emissions by 500 lbs per year.
7. **Properly Inflate Your Tires.** By ensuring that your tires are properly inflated you can improve your mileage by approximately 3.3 percent and reduce carbon emissions by almost 400 lbs per year.
8. **Reduce Passive Energy Use.** Unplug appliances that you don't use frequently. Most electronics have a standby mode that siphons energy even when not in use. Cell phone chargers, laptops, televisions, stereos — there's a whole list of items that should be unplugged when not in use. Try using a power strip for groups of electronic items. One touch of the switch and all appliances are turned off.
9. **Walking and Biking, including walking to school.** By walking or riding a bicycle, instead of driving you can save a substantial amount of money annually and assist the community in meeting its target for reducing carbon emissions. The average car produces 6,614 lbs of CO_2 a year; walking or cycling

produces none. Not only do you lower your use of gas, decrease your emissions and save money, you also get exercise which will keep you healthier.

10. **Take Advantage of SmartMeter™ technology.** Thanks to SmartMeter technology, you can now see how much gas and electricity you're using (and when you're using it) up to the previous day. To get started, you'll need to convert your existing meter to a SmartMeter. Call PG&E to initiate the conversion, if it has not already been done. Once your SmartMeter is installed, sign up via the internet for PG&E's My Account. Once you have established an on-line account, you will find many ways to use your SmartMeter data to better understand your energy use and find ways to save.

In addition to the 10 energy-saving measures, the City of Gonzales will target 20 businesses for energy efficiency education.

Program Implementation		
Actions	***Responsibility***	
Distribute pamphlets and do door-to-door follow-up ; ask households to participate in certificate program; Approve City Council resolution every three years honoring program participants	G^3 Program Staff; City Council	
Progress Indicator		
Percentage of households that adopt personal responsibility measures, as outlined above	Short Term	5% of Households 20 Businesses
	Med Term	10% of Households 40 Businesses
	Long Term	20% of Households 80 Businesses
Monitoring		
The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on participation in certificate program.		

Measure CAP-10-E: Residential Energy Retrofits	**63 Metric Tons CO_2e**

Program Description

In the City of Gonzales, approximately 36 percent of the housing stock was built before California's Energy Code, Title 24, Part 6, came into force in the 1980s. Consequently, the residential building stock, while relatively small, offers opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas.

The City of Gonzales has identified three retrofit actions/programs to address energy efficiency in existing residential construction—1) high efficiency water heaters for 30 homes, 2) residential energy retrofits through the HOME Program[25] for 30 homes, and 3) low maintenance landscaping for 30 homes.

Program Implementation

Actions	***Responsibility***
1. Work with AMBAG, PG&E, and other organizations to replace water heaters in 30 homes with high efficiency water heaters 2. Utilize funds from the HOME Program to retrofit 30 homes for improved energy efficiency 3. Promote low maintenance landscaping for 30 homes	G^3 Program Staff; Planning Department

Progress Indicator

Percentage of residential buildings that have implemented energy efficiency retrofits (see Appendices D for methods of calculation.	Short Term	30 homes
	Med Term	60 homes
	Long Term	120 homes

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately three (3) years) based on homes retrofitted.

[25] http://www.hud.gov/offices/cpd/affordablehousing/programs/home/index.cfm

Measure CAP-11-E: Urban Forest Program	**88 Metric Tons CO_2e**

Program Description

Through the process of photosynthesis, trees remove CO_2 from the atmosphere, use the carbon to form the physical structure of the tree (roots, trunk, branches and leaves), and return the oxygen to the atmosphere. A single mature tree can absorb as much as 48 lbs of CO_2 per year. It is estimated that between 660 and 990 million tons of carbon is stored in our urban forests nationally. By maintaining a healthy urban forest, prolonging the life of trees, and continually increasing tree stock, communities can increase their net carbon storage over the long term. Additionally, trees:

- ✓ Reduce overall local temperatures of the urban heat island, which reduces cooling-related energy use,
- ✓ Absorb air pollutants from the air,
- ✓ Reduce the urban heat island effect thereby reducing ozone formation,
- ✓ Reduce storm water runoff, create a more attractive environment, and increase property values, and
- ✓ Finally, studies have found that access to trees and natural environments can improve mental and physical health, improve job productivity, and reduce crime.

The Gonzales Urban Forest Program will result in the planting of 350 trees in the community between 2012 and 2020.

Program Implementation

Actions	***Responsibility***
1. Require the planting of large-specie street trees during review and approval of Specific Plans 2. Institute urban tree program to increase the number of large-specie trees along existing streets in Gonzales	Planning Department; City Council

Progress Indicator

Number of new trees planted (see Appendices D for methods of calculation.	Short Term	350 trees
	Med Term	700 trees
	Long Term	1,400 trees

Monitoring

The Planning Department staff will report on program success during CAP update (approximately every three (3) years) based on trees planted.

NEW COMMERCIAL/INDUSTRIAL REDUCTION MEASURES

Measure CAP-12-E: Commercial/Industrial Energy Retrofits	**96 Metric Tons CO_2e**

Program Description

As with residential construction, approximately a third of the commercial and industrial building stock in the City of Gonzales was built before California's Energy Code, Title 24, Part 6, came into force in the 1980s. Consequently, the commercial/industrial building stock, while relatively small, offers opportunity for cost-effective energy efficiency retrofits to decrease the use of both electricity and natural gas.

The City of Gonzales has identified three retrofit actions/programs to address energy efficiency in existing commercial/industrial construction—1) energy retrofits for 75,000 square feet of existing commercial/industrial space, 2) installation of reflective roofing (cool roofs) for 75,000 square feet of existing commercial/industrial space, and 3) RightLights CO_2 Diversion Program (Ecology Action).

Program Implementation

Actions	***Responsibility***
1. Coordinate with AMBAG, PG&E and commercial property owners to install energy retrofits for 75,000 square feet of existing commercial/industrial space 2. Coordinate with AMBAG, PG&E and commercial property owners to install reflective roofing (cool roofs) for 75,000 square feet of existing commercial/industrial space 3. Coordinate with Ecology Action implement the RightLights CO_2 Diversion Program (Ecology Action). This will focus on the remaining 80 percent of the program began prior to 2012.	G^3 Program Staff

Progress Indicator

Number of square feet of commercial and industrial buildings retrofitted (see Appendices D for methods of calculation).	Short Term	75,000 sf
	Med Term	150,000 sf
	Long Term	300,000 sf

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately every three (3) years) based on number of square feet retrofitted.

Measure CAP-13-E: Renewable Energy Generation

651 Metric Tons CO_2e

Program Description

Putting solar panels on commercial and government buildings is a good way to increase the visibility of solar energy in the community, while providing clean energy for building use. Contrary to popular belief solar power has been shown to be viable in a wide variety of climates that are not thought of as "sunny". Local governments can borrow money at low interest rates through bond issues, making solar more economical than it is for individuals or businesses. Some cities have combined solar energy with efficiency measures, with the shorter payback period of the efficiency measures helping to pay for the solar.

An increasingly popular way for a local government to overcome the financial hurdles of installing a photovoltaic system is through the "solar services model" also known as a Power Purchase Agreement (PPA). Through this type of arrangement the owner of a property can provide the space for a power producer to install the system. The property owner then agrees to buy the power produced from that system at a set rate that is competitive with grid electricity.

Beginning in June 2011, Gonzales set out to implement a comprehensive energy conservation and infrastructure improvement initiative in partnership with Chevron to reduce the City's electricity, gas, and water expenditures/usage, and generate clean power at multiple facilities through solar photovoltaic and wind power. The project scope includes an assessment of all electrical and mechanical infrastructure (lighting, heating, ventilation, air-conditioning, demand-side management control systems), water and irrigation systems, water meters, street-lighting, and the City's well pumps.

In addition to the Chevron Program, the City of Gonzales has identified new solar power for 110,000 square feet of existing commercial/industrial space.

Program Implementation

Actions	***Responsibility***
1. Coordinate with Chevron to Implement its Municipal Solar Powered Facilities Program 2. Coordinate with AMBAG, PG&E and commercial property owners to install new solar power systems on 110,000 square feet of commercial and industrial roof top.	G^3 Program Staff

Progress Indicator

Number of square feet of commercial and industrial buildings equipped with solar powered energy systems (see Appendices D for methods of calculation).	Short Term	110,000 sf + Chevron
	Med Term	220,000 sf
	Long Term	440,000 sf

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately every three (3) years) based on number of square feet of roof top upon which solar powered energy systems are installed.

New Transportation Reduction Measures

Measure CAP-14-E: Gonzales Biodiesel Program	**815 Metric Tons CO_2e**

Program Description

Starting in 2006, Energy Alternative Solutions, Inc., a private company operating in the City of Gonzales, began producing bio diesel from food oils collected from regional grease traps. The locally produced biodiesel is sold within ½ mile of the refinery site. While the ownership of this company is in transition, biofuel has become available at several area locations. The City estimates that 50 vehicles in Gonzales currently benefit from the use of biofuel. The City of Gonzales will work to expand this program to convert an additional 150 vehicle by 2020.

Program Implementation

Actions	***Responsibility***	
Coordinate with Energy Alternative Solutions, Inc. to facilitate program implementation for an additional 150 targeted vehicles	G^3 Program Staff	

Progress Indicator

Number of vehicles converted to biodiesel	Short Term	150 vehicles
	Med Term	300 vehicles
	Long Term	600 vehicles

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately every three (3) years) based on number of vehicles converted to biodiesel.

New Solid Waste Reduction Measures

Measure CAP-15-E: Solid Waste Reduction Program	**62 Metric Tons CO_2e**

Program Description

The City of Gonzales instituted curbside recycling in 2005 for single family residences. The program includes both recycling and green waste. In addition, the City of Gonzales has a voluntary recycling program for multi-family and commercial development. As of 2011, approximately 61 percent of the total refuse collected in Gonzales was being diverted by the curbside and voluntary multi-family programs. This program accounted for 38 MT CO_2e each year prior to 2012. The City of Gonzales will expand this program to achieve 75% diversion in existing development.

Program Implementation

Actions	***Responsibility***
Expand solid waste reduction program to achieve 75 percent diversion rates	Public Works Department

Progress Indicator

Number of tons of solid waste diverted from the landfill	Short Term	75% Diversion
	Med Term	75% Diversion
	Long Term	75% Diversion

Monitoring

The Public Works Department staff will report on program success during CAP update (approximately every three (3) years) based on number of tons of solid waste diverted each year.

New Water Conservation Measures

Measure CAP-16-E: Municipal Water Conservation Ordinance	**125 Metric Tons CO_2e**

Program Description

Urban water supplies require energy to transport, treat, distribute, and to treat wastewater. In Northern California, 10,000 gallons of water takes 54 kWh for indoor use and 35 kWh for outdoor use (outdoor water uses less because it does not require wastewater treatment). Your local water supply may use less energy if the water source is local or more if it is a long distance away.

The City of Gonzales adopted a water conservation ordinance in August 2011. The purpose of the ordinance, which is entitled "Mandatory Water Conservation" and codified as Chapter 10.08 of the Gonzales Municipal Code, is:

> *To increase public awareness of the need for water conservation and to provide regulations and restrictions on the delivery of water and the consumption within the city limits of water supplied for public use, the City of Gonzales will: a) conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation and fire protection; and b) ensure compliance with water regulations of other governmental agencies of appropriate jurisdiction (Gonzales Municipal Code, Section 10.08.010).*

Program Implementation

Actions	***Responsibility***
Continue to implement the City of Gonzales Water Conservation Ordinance	Public Works Department

Progress Indicator

Number of gallons of water conserved	Short Term	15% Conservation
	Med Term	15% Conservation
	Long Term	15% Conservation

Monitoring

The Public Works Department staff will report on program success during CAP update (approximately every three (3) years) based on number of gallons of water conserved each year.

APPENDIX C: REDUCTION MEASURES FOR NEW DEVELOPMENT

INTRODUCTION

This appendix provides detailed information about GHG reduction measures *for new development* to be implemented by the City of Gonzales through its development review and approval process, starting in 2012.

DETAILED PROGRAM DESCRIPTIONS

The following tables provide details for new GHG reduction programs *for new development*, including information on program description, program implementation, progress indicators, and program monitoring.

New Residential Reduction Measures

Measure CAP-17-N: Neighborhood-Based Design	**61 Metric Tons CO_2e**

Program Description

Residents who live close to vibrant neighborhood centers are more likely to walk or bike in order to purchase daily goods and services. Enhancing the quality and diversity of uses in the City's neighborhood commercial centers will help decrease transportation-related GHG emissions and improve residents' quality of life.

The *Gonzales 2010 General Plan* uses the neighborhood as the fundamental building block for new development. A well designed neighborhood contains activity centers like schools, parks, community facilities, and small-scale retail and commercial services—all within easy walking distance. A well designed neighborhood also provides a variety of housing types that creates an interesting residential character suited to a variety of living situations and income status.

Specific Plans adopted under the *Gonzales 2010 General Plan* are required to contain one or more neighborhoods and designed to be consistent with adopted Neighborhood Design Guidelines and Standards. Neighborhoods would usually contain at least the following:

- ✓ One centrally-located elementary school (in some cases, a middle school),
- ✓ One centrally-located neighborhood park,
- ✓ A full mix of residential types, and
- ✓ Neighborhood-serving commercial and civic uses and public services.

Any given neighborhood may also include community-wide facilities such as major parks, high school campuses, or places of worship.

According to AMBAG, the City of Gonzales will add approximately 540 new housing units by 2020. Of these, 10 percent—54 units—are expected to be in mixed-use configurations.

Program Implementation

Actions	***Responsibility***
Ensure new Specific Plan proposals incorporate neighborhood-based design, including approximately 100 dwelling units in a mixed-use configuration	Community Development Department

Progress Indicator

Number of new housing units developed in mixed-use configuration	Short Term	100 units
	Med Term	200 units
	Long Term	400 units

Monitoring

The Community Development Department staff will report on program success during CAP update (approximately every three (3) years) based on number of units developed in mixed-use configuration.

Measure CAP-18-N: Urban Forest	**379 Metric Tons CO2e**

Program Description

According to AMBAG, the City of Gonzales will add approximately 540 new housing units by 2020. Under the Gonzales Urban Forest Program, neighborhood developers would plant about three trees for every house built, resulting in 1,500 new trees being planted in the community between 2012 and 2020. For a more detailed description of the Gonzales Urban Forest Program, see the discussion provided under Measure CAP-12-E above.

Program Implementation

Actions	***Responsibility***
Ensure new Specific Plan proposals incorporate street trees into neighborhood and street design	Community Development Department

Progress Indicator

Number of new housing units developed in mixed-use configuration	Short Term	1,500 trees
	Med Term	3,000 trees
	Long Term	6,000 trees

Monitoring

The Community Development Department staff will report on program success during CAP update (approximately every three (3) years) based on number of trees planted in new Specific Plan areas.

Measure CAP-19-N: Green Building Practices	**712 Metric Tons CO_2e**

Program Description

Buildings account for 40 percent of total energy use and about 35 percent of GHG emissions in the United States. Design and construction of new buildings, or major renovation of existing ones, provides an opportunity to implement energy saving measures that reduce GHG emissions. Green building design views buildings as a complete system in order to maximize health, comfort, and productivity of occupants while minimizing resource use for construction and operation. An example of the kind of savings possible by carefully considering the whole building system before construction is that windows, insulation, and lighting systems can be chosen to minimize the cooling load, allowing for a smaller cooling unit to be used for savings in both capital and operations costs.

The State of California has taken an aggressive stance on increasing energy efficiency in new development. Tough new standards were implemented in Title 24 in 2008 and by 2020 the code will require that all new residential buildings be net zero energy (i.e., they must produce as much energy as they consume). The standard for net-zero-energy in commercial buildings will be mandated in 2030.

Program Implementation

Actions	***Responsibility***	
Ensure new Title 24 standards are implemented in new residential development	Community Development Department	
Progress Indicator		
Number of new housing units developed using green building and sustainable site design practices	Short Term	540 units
	Med Term	1,190 units
	Long Term	1,970 units

Monitoring

The Community Development Department staff will report on program success during CAP update (approximately every three (3) years) based on number of units developed using green building and sustainable site design practices.

Measure CAP-19a-N: Renewable Energy Generation	**216 Metric Tons CO_2e**

Program Description

Putting solar panels on new residences is a good way to increase the visibility of solar energy in the community, while providing clean energy for building use. Solar power has been shown to be viable in a wide variety of climates that are not thought of as "sunny." Local governments can borrow money at low interest rates through bond issues, making solar more economical than it is for individuals or businesses. Some cities have combined solar energy with efficiency measures, with the shorter payback period of the efficiency measures helping to pay for the solar. For a more detailed description of this program, see the discussion provided under Measure CAP-14-E above.

The City of Gonzales has identified new solar power for 43,200 square feet of new residential space.

Program Implementation

Actions	***Responsibility***
Coordinate with AMBAG, PG&E and residential developers to install solar power systems on 43,200 square feet of new residential roof top.	G^3 Program Staff

Progress Indicator

Number of square feet of residential rooftops equipped with solar powered energy systems	Short Term	43,200 sf
	Med Term	43,200 sf
	Long Term	86,400 sf

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately every three (3) years) based on number of square feet of roof top upon which solar powered energy systems are installed.

COMMERCIAL AND INDUSTRIAL REDUCTION MEASURES

Measure CAP-20-N: Green Building Practices	**531 Metric Tons CO_2e**

Program Description

For the purposes of estimating the benefit of green building practices and sustainable site planning for new commercial construction, the City of Gonzales estimated that 727,404 square feet of commercial and industrial development will occur by 2020. For a more detailed description of green building practices and sustainable site planning, see the discussion provided under "Residential Reduction Measures—New Development" immediately above.

Program Implementation

Actions	***Responsibility***
Ensure new Title 24 standards are implemented in new residential development	Community Development Department

Progress Indicator

Number of new square feet of new commercial and industrial space developed using green building and sustainable site design practices	Short Term	727,400 sf
	Med Term	1,400,000 sf
	Long Term	2,800,000 sf

Monitoring

The Community Development Department staff will report on program success during CAP update (approximately every three (3) years) based on number of square feet of commercial and industrial space developed using green building and sustainable site design practices.

Measure CAP-21-N: Renewable Energy Generation	**365 Metric Tons CO_2e**

Program Description

Putting solar panels on commercial and government buildings is a good way to increase the visibility of solar energy in the community, while providing clean energy for building use. Solar power has been shown to be viable in a wide variety of climates that are not thought of as "sunny." Local governments can borrow money at low interest rates through bond issues, making solar more economical than it is for individuals or businesses. Some cities have combined solar energy with efficiency measures, with the shorter payback period of the efficiency measures helping to pay for the solar. For a more detailed description of the this program, see the discussion provided under Measure CAP-14-E above.

The City of Gonzales has identified new solar power for 125,000 square feet of new commercial/industrial space.

Program Implementation

Actions	***Responsibility***
Coordinate with AMBAG, PG&E and commercial property owners to install solar power systems on 125,000 square feet of new commercial and industrial roof top.	G^3 Program Staff

Progress Indicator

Number of square feet of commercial and industrial buildings equipped with solar powered energy systems	Short Term	125,000 sf
	Med Term	250,000 sf
	Long Term	500,000 sf

Monitoring

The G^3 Program staff will report on program success during CAP update (approximately every three (3) years) based on number of square feet of roof top upon which solar powered energy systems are installed.

TRANSPORTATION REDUCTION MEASURES

Measure CAP-22-N: Bike Lane Program	**10 Metric Tons CO_2e**

Program Description

The *Gonzales 2010 General Plan* requires Class III bike lanes on all new non-local streets, plus the "General Plan Circulation Diagram" provides a network of Class I bicycle facilities servicing the urban growth area. For the purposes of estimating the benefit of new bicycle facilities in the urban growth area, the City of Gonzales estimated that approximately 100 trips will be diverted each week from automobile to bicycle.

Program Implementation

Actions	***Responsibility***	
Ensure new Specific Plan proposals incorporate Class I and Class II bike lanes into neighborhood and street design as specified in the *Gonzales 2010 General Plan*.	Community Development Department	
Progress Indicator		
Miles of bicycle lanes constructed	Short Term	5 miles
	Med Term	10 miles
	Long Term	20 miles

Monitoring

The Community Development Department staff will report on program success during CAP update (approximately every three (3) years) based on number of miles of bike lanes constructed.

SOLID WASTE REDUCTION MEASURES

Measure CAP-23-N: Solid Waste Reduction	**216 Metric Tons CO_2e**

Program Description

As discussed above, the City of Gonzales has a curbside recycling program for single family residential development and a voluntary program for multi-family and commercial development. The rate of diversion achieved through these programs is expected to increase to 75 percent from the current 61 percent. For a more detailed description of the Gonzales Recycling programs, see the discussion provided under Measure CAP-16-E above.

Program Implementation

Actions	***Responsibility***	
Achieve 75 percent diversion rates in all new neighborhoods	Community Development Department	
Progress Indicator		
Number of tons of solid waste diverted from the landfill	Short Term	75% diversion
	Med Term	75% diversion
	Long Term	75% diversion

Monitoring

The Public Works Department staff will report on program success during CAP update (approximately every three (3) years) based on number of tons of solid waste diverted each year.

GOVERNMENT OPERATIONS REDUCTION MEASURES

Measure CAP-24-N: Anaerobic Digester	**133 Metric Tons CO_2e**

Program Description

Wastewater treatment plants decompose organic matter under anaerobic conditions and generate methane, a GHG that is 21 times more powerful than carbon dioxide. Anaerobic digesters are used to breakdown the "sludge" or "biosolids" that result from wastewater treatment. Anaerobic digesters perform several useful functions. The digestion process reduces the volume of solids by approximately half, which in turn reduces costs associated with disposal and reduces truck traffic to haul the solids. Through anaerobic digestion, the maximum amount of methane from the wastewater treatment process can be captured and put to beneficial use by burning it to produce onsite electricity generation and or process heat.

Program Implementation

Actions	***Responsibility***
Installation of anaerobic digester at Gonzales Wastewater Treatment Plant	Public Works Department

Progress Indicator

Degree of project completion	Short Term	100% complete
	Med Term	100% complete
	Long Term	100% complete

Monitoring

The Public Works Department staff will report on program success during CAP update (approximately every three (3) years) based on degree of project completion.

APPENDIX D: CALCULATIONS AND METHODOLOGY

INTRODUCTION

The primary purpose of this chapter is to provide information on how the information contained in the Gonzales CAP, including baseline GHG emissions, GHG emission projections, GHG emission reduction targets, and GHG emissions reduction estimates for new programs.

CALCULATIONS AND METHODOLOGY

Calculations and methodologies used in the Gonzales CAP are described below.

Measure CAP-1-E

Community

54	Homes Weatherized

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below**Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.1094	Price of Electricity ($ per kWh)
$ 1.55	Price of Natural Gas ($ per therm)
$2.59	Price of Fuel Oil ($ per gallon)
55	Percentage of Homes Heated with Gas
7	Percentage of Households Using Fuel Oil
3,436	Average Electrical Energy (kWh) Used for Heating per Household
710	Average Natural Gas Energy (Therms) Used for Heating per Household
698	Typical Household Fuel Oil Use (gallons)
20	Percent Savings of Energy Used for Heating (kWh)
32	Percent Savings of Energy Used for Heating (therms)
32	Percent Savings of Energy Used for Heating (Fuel Oil)
$2,913	Program Cost ($ per home)
14,101	Total Annual Electricity Savings (kWh)
6,748	Total Annual Natural Gas Savings (therms)
844	Total Annual Fuel Oil (gallons)
$263	Annual Cost Savings per Household
$14,189	Total Annual Cost Savings
11	Simple Payback (years)

Find my HDD
Find my CDD

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
54	638	46	148	148	47

Per Unit Reductions

CO2e (metric tons) per home	NOx (lbs) per home	SOx (lbs) per home	CO (lbs) per home	VOCs (lbs) per home	PM10 (lbs) per home
0.99	11.82	0.85	2.75	2.75	0.87

RightLights Multiple Property Summary Sheet

Gonzales Grows Green Program

EcologyAction
Innovation • Partnership • Community

Property/Area	Total Project Cost	Program Incentive	Customer Obligation	Projected Annual Utility Savings	Projected Monthly Savings	Projected CO2 Reductions (lbs)
Healthy Soil Phase I	$ 18,697.26	$ 15,767.81	$ 2,929.45	$ 5,168.08 *	$ 430.67	11,547.00
Healthy Soil Phase II	$ 1,123.27	$ 265.63	$ 857.64	$ 99.73 *	$ 8.31	118.00
Valley Electric Motor Service	$ 4,835.48	$ 4,661.95	$ 173.53	$ 2,837.33 *	$ 236.44	8,133.00
General Vinyard Services (Office)	$ 1,797.87	$ 1,223.30	$ 574.57	$ 665.96 **	$ 55.50	1,909.00
General Vinyard Services (Storage)	$ 367.39	$ 257.85	$ 21.92	$ 21.92 **	$ 1.83	62.87
General Vineyard Services (Shop)	$ 1,893.92	$ 1,051.47	$ 842.45	$ 933.97 ***	$ 77.83	2,677.00
Shaw Development - Gonzales Shopping Center	$ 12,261.87	$ 5,057.64	$ 7,204.23	$ 7,272.67 ***	$ 606.06	21,777.00
Gonzales Irrigation Systems	$ 8,349.74	$ 3,538.38	$ 4,811.36	$ 1,664.19 ***	$ 138.68	4,770.00
Totals	$ 49,326.80	$ 31,824.03	$ 17,415.15	$ 18,663.85	$ 1,555.32	50,993.87

Payback on Investment (in years) = 0.93

Carbon Footprint Report

Equivalent Number of Cars off the Road	4
Equivalent Number of Acres of Trees Planted	7
Equivalent Number of Plane Trips	9
Equivalent Number of Single Family Homes Powered	9

* Job Complete

** Contract Signed. Job Scheduled

*** Energy Efficiency Analysis Completed. Customer Considering Proposal

Scott A. Farmer 8/26/2010

Measure CAP-3-E

Community

1,000	kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$7,800	Cost of PV installation ($ per kW)
0	Annual Energy Production (kWh)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.1094	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$9,000	Cost of PV installation ($ per kW)
1,460,000	Annual Energy Production (kWh)
$159,724	Annual Cost Savings
56	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
500	902	775	826	93	730

Measure CAP-4-E

Martin Carver

From: Charlie Buck [cbuck@ambag.org]
Sent: Thursday, September 29, 2011 1:57 PM
To: mcarver@coastplans.com
Subject: AMBAG Energy Watch Numbers

Hi Martin,
So far, this is what I've dug up through our program data for City of Gonzales:

Municipal Direct Install at City facilities: 164,051 kWh
Customized municipal facility projects in process: 37,840 kWh
Just above low-income residential direct install (MIDI): 30,747 kWh
Gonzales Schools: 749,313 kWh

Hopefully this helps. I will give you a call to follow up.

Best,

Charlie Buck | Special Projects Associate | Association of Monterey Bay Area Governments | Energy Watch Program | 831.264.5095

Rideshare Month is October 2011!

Sign up today at http://www.ridesharemonth.com

Total kWh saved =	981,951
WECC California (CAMX) =	0.000343
CO_2e saved	337

Measure CAP-5-E

Community

50	Number of Vehicles Switching from Diesel to Biodiesel

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$2.79	Price of Diesel ($ per gallon)
$2.88	Price of Biodiesel ($ per gallon)
14.0	Average Fuel Economy of Vehicles switching to Biodiesel (mpg)
10,000	Average Annual Miles Driven by Vehicles switching to Biodiesel
0	Gallons of Fossil Diesel Reduced
0	Gallons of Biodiesel Purchased
$0.00	Increased Fuel Costs

Community

$2.79	Price of Diesel ($ per gallon)
$2.88	Price of Biodiesel ($ per gallon)
14.0	Average Fuel Economy of Vehicles switching to Biodiesel (mpg)
10,000	Average Annual Miles Driven by Vehicles switching to Biodiesel
35,714	Gallons of Fossil Diesel Reduced
36,039	Gallons of Biodiesel Purchased
$4,148.41	Increased Fuel Costs

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
272	-26	0	202	0	21

Measure CAP-6-E

Community

17	Waste Prevented (lbs/person/yr)

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

100,000	Population
24	Percent of Reused Material Plastic (by weight)
31	Percent of Reused Material Steel (by weight)
31	Percent of Reused Material Glass (by weight)
14	Percent of Reused Material Wood (by weight)
420	Life Cycle Emissions Avoided for Plastic (metric tons CO2e)
850	Life Cycle Emissions Avoided for Steel (metric tons CO2e)
162	Life Cycle Emissions Avoided for Glass (metric tons CO2e)
110	Life Cycle Emissions Avoided for Wood (metric tons CO2e)
2	Annual Methane Emission/lb Wood Waste (metric tons CO2e)
0	Total Annual kWh Saved

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software. Utility region for this calculation is US average, since avoided manufacturing may be in any region.

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
2	0	0	0	0	0

	Tons	Lbs
Community-Wide "Green Sales"	6.2	12,400
Reuse, Recycle & Clean-Up Day Event	7.1	14,200
Recycling & Clean-Up Week	12	24,000
School District Zero Lunch Food Waste	46.1	92,200
City of Gonzales Community Landfill Diversion Activities	5.3	10,600
TOTAL	76.7	153,400
2010 Population		9,114
Pounds/person/year		17

Measure CAP-7-E

Community

521	Waste Diverted from Landfill (lbs/person/yr)

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

9,114	City Population
1	Percent of Recycled Material Aluminum
3	Percent of Recycled Material Plastic
8	Percent of Recycled Material Steel
5	Percent of Recycled Material Glass
36	Percent of Recycled Material Paper
36	Percent of Recycled Material Cardboard
358	Life Cycle Emissions Avoided for Aluminum (metric tons CO2e)
122	Life Cycle Emissions Avoided for Plastic (metric tons CO2e)
362	Life Cycle Emissions Avoided for Steel (metric tons CO2e)
35	Life Cycle Emissions Avoided for Glass (metric tons CO2e)
2,334	Life Cycle Emissions Avoided for Paper (metric tons CO2e)
1,990	Life Cycle Emissions Avoided for Cardboard (metric tons CO2e)
29	Annual Landfill Methane Emissions Avoided - Paper (metric tons CO2e)
32	Annual Landfill Methane Emissions Avoided - Cardboard (metric tons CO2e)
0	Change in kWh Generated from Energy Recovery

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
61	0	0	0	0	0

Tri-Cities Disposal & Recycling
CITY OF GONZALES 2010 ANNUAL WEIGHT REPORT

Source	Residential						Commercial		Drop Box										All*				
																			Total	Total	Total	Total	Total
Material	Refuse^	Yard Waste	Comingle^	Stops	Oil (gal.)	Filters	Refuse	OCC	Refuse	Yard Waste	Con-crete	C&D	Metal	Co-mingle	Ag-Plas	OCC	Food Waste	Dirt	Refuse	Recycle	Yard Waste	Diverted	All
January	137.43	49.40	44.67	36	93.00	76	73.27	8.01	66.59	1.23	0.00	0.00	0.00	25.13	0.00	6.38	0.00	0.00	277.29	84.19	50.63	134.82	412.11
February	130.70	66.59	43.70	39	106.50	89	75.77	8.03	78.16	11.24	0.00	0.00	0.00	25.15	0.00	18.24	0.00	0.00	284.63	95.12	77.83	172.95	457.58
March	168.53	106.29	57.55	63	152.50	159	95.58	12.96	81.73	10.86	0.00	0.00	0.00	23.15	0.00	32.17	0.00	0.00	345.84	125.83	117.15	242.98	588.82
April	137.95	77.27	45.05	50	112.00	105	86.88	10.52	73.26	32.39	0.00	6.51	0.00	11.72	15.16	2.93	0.00	0.00	298.09	85.38	109.66	201.55	499.64
May	159.95	86.48	53.66	48	105.00	100	97.50	17.95	79.46	36.14	0.00	8.33	2.77	7.52	18.14	4.87	0.00	0.00	336.91	102.14	122.62	235.86	572.77
June	158.37	77.11	55.22	52	118.00	125	93.24	14.02	122.29	22.97	0.00	8.31	2.33	24.69	0.00	12.15	0.00	0.00	373.90	106.08	100.08	216.80	590.70
July	152.87	66.18	48.12	66	122.00	129	98.24	14.37	87.98	37.66	0.00	0.00	0.00	0.00	13.21	11.77	0.00	0.00	339.09	87.47	103.84	191.31	530.40
August	192.70	79.72	61.85	72	150.50	172	107.38	17.85	99.09	26.77	0.00	7.18	0.00	0.00	21.75	10.25	0.00	0.00	399.17	111.70	106.49	225.37	624.54
September	153.82	65.45	49.85	44	88.00	111	92.17	12.72	93.26	16.07	0.00	0.00	0.00	1.54	28.84	10.99	0.00	0.00	339.25	103.94	81.52	185.46	524.71
October	143.53	58.54	48.01	52	104.00	133	88.57	18.54	105.95	3.03	0.00	0.00	1.25	0.00	27.54	7.32	0.00	0.00	338.05	101.41	61.57	164.23	502.28
November	181.17	67.65	63.60	57	114.00	152	99.15	12.76	111.35	2.68	0.00	0.00	5.92	2.87	24.76	20.68	0.00	0.00	391.67	124.67	70.33	200.92	592.59
December	134.55	55.47	48.95	49	102.00	115	81.89	6.74	77.38	4.49	0.00	5.08	0.00	0.00	46.50	38.70	0.00	0.00	293.82	140.89	59.96	205.93	499.75
Total	1851.57	856.15	620.23	628	1367.50	1466	1089.64	154.47	1076.50	205.53	0.00	35.41	12.27	121.77	195.90	176.45	0.00	0.00	4017.71	1268.82	1061.68	2378.18	6395.89

All data are in tons except for Oil (gallons) and Filters (each).
* Oil & Filter data not included the totals Section
^ Residential Refuse & Comingle also include Commercial Can/Cart Services
"Total Trash" includes dirt.
"Total Recycle" is the total material processed at MDS MRF.
"Total Diverted" is all materials not processed as trash (except oil & filters).

2,378 tons = 4,756,000 lbs; 4,756,000 lbs/9,114 persons = 521 lbs/person/yr

Measure CAP-8-E

Government Operations

1	Number of CNG vehicles

Community

-	Number of CNG vehicles

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$2.64	Price of Gasoline ($ per gallon)
$ 1.86	Price of Natural Gas ($ per gallon gasoline equivalent)
19.7	Miles per Gallon of Vehicle Replaced
12,042	Average Annual Miles per Vehicle
$3,000	Incremental Cost of CNG Vehicle
611	Annual Gasoline Savings (gallons)
77,837	Increased Natural Gas Usage (Standard Cubic Feet)
417.0	Annual Fuel Cost Savings
7.2	Simple Payback Period (years)

Community

$2.64	Price of Gasoline ($ per gallon)
$ 1.86	Price of Natural Gas ($ per therm)
19.7	Miles per Gallon of Vehicle Replaced
12,042	Average Annual Miles per Vehicle
$3,000	Incremental Cost of CNG Vehicle
0	Annual Gasoline Savings (gallons)
0	Increased Natural Gas Usage (Standard Cubic Feet)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
2	1	0	341	42	1

Measure CAP-9-E

Community

100	Number of Households Targeted

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.1094	Price of Electricity ($ per kWh)
$ 1.55	Price of Natural Gas ($ per therm)
12,850	Typical Household Electricity Use (kWh)
425	Typical Household Natural Gas Use (therms)
10	Percent Electricity Savings
10	Percent Natural Gas Savings
$1,000	Cost of Program ($ per household)
128,500	Total Annual Electricity Savings (kWh)
4,250	Total Annual Natural Gas Savings (therms)
$206	Annual Cost Savings per Household
$20,645	Total Annual Cost Savings
4.8	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
68	151	71	91	12	66

Community

20	Businesses Participating

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
11,500	Annual Energy Savings per Business (kWh)
367	Annual Energy Savings per Business (therms)
$1,000	Cost of Program ($ per business)
230,000	Total Annual Electricity Savings (kWh)
7,340	Total Annual Natural Gas Savings (therms)
$30,504	Annual Cost Savings
0.7	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
120	265	127	162	22	119

Measure CAP-10-E (part 1)

Community

30	Water Heaters Replaced

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.1094	Price of Electricity ($ per kWh)
$ 1.55	Price of Natural Gas ($ per therm)
2,870	Annual Energy Savings of Efficient Electric Water Heater (kWh)
76	Annual Energy Savings of Efficient Natural Gas Water Heater (therms)
42	Percent of Homes with Electric Water Heaters
$910	Incremental Cost of Efficient Electric Water Heater
$1,150	Incremental Cost of Efficient Natural Gas Water Heater
0	Total Annual Electricity Savings (kWh)
0	Total Annual Natural Gas Savings (therms)
$0	Total Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.1094	Price of Electricity ($ per kWh)
$ 1.55	Price of Natural Gas ($ per therm)
2,870	Annual Energy Savings of Efficient Electric Water Heater (kWh)
76	Annual Energy Savings of Efficient Natural Gas Water Heater (therms)
42	Percent of Homes with Electric Water Heaters
$910	Incremental Cost of Efficient Electric Water Heater
$1,150	Incremental Cost of Efficient Natural Gas Water Heater
36,162	Total Annual Electricity Savings (kWh)
1,322	Total Annual Natural Gas Savings (therms)
$6,006	Total Annual Cost Savings
5.2	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
20	45	20	26	4	19

Measure CAP-10-E (part 2)

Community

30	Homes Weatherized

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below**Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$	0.1094	Price of Electricity ($ per kWh)
$	1.55	Price of Natural Gas ($ per therm)
	$2.59	Price of Fuel Oil ($ per gallon)
	55	Percentage of Homes Heated with Gas
	7	Percentage of Households Using Fuel Oil
	3,436	Average Electrical Energy (kWh) Used for Heating per Household
	710	Average Natural Gas Energy (Therms) Used for Heating per Household
	698	Typical Household Fuel Oil Use (gallons)
	20	Percent Savings of Energy Used for Heating (kWh)
	32	Percent Savings of Energy Used for Heating (therms)
	32	Percent Savings of Energy Used for Heating (Fuel Oil)
	$2,913	Program Cost ($ per home)
	7,834	Total Annual Electricity Savings (kWh)
	3,749	Total Annual Natural Gas Savings (therms)
	469	Total Annual Fuel Oil (gallons)
	$263	Annual Cost Savings per Household
	$7,883	Total Annual Cost Savings
	11	Simple Payback (years)

Find my HDD
Find my CDD

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
30	355	26	82	82	26

Measure CAP-10-E (part 3)

Community

30	Residences Using Low Maintenance Landscaping

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

38	Annual VOC per Acre (lbs)
8	Annual Gasoline Use per Acre (gal)
652,000	Annual Gallons of Water Used per Acre
0.0035	Energy Use per Gallon of Water (kWh)
0	Total Annual Water Savings (gallons)
0	Total Annual Electricity Savings (kWh)
0	Total Annual Gasoline Savings (gal)

Community

19	Annual VOC Produced by one Mower (lbs)
4	Annual Gasoline Use per Lawn (gal)
0.5	Yard Size per Home (acres)
652,000	Annual Gallons of Water Used per Acre
0.0035	Energy Use per Gallon of Water (kWh)
9,780,000	Total Annual Water Savings (gallons)
34,230	Total Annual Electricity Savings (kWh)
120	Total Annual Gasoline Savings (gal)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	42	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
13	22	18	100	581	17

Measure CAP-11-E

Community

350	Trees Planted

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.1094	Price of Electricity ($ per kWh)
7	Annual Energy Savings of one Tree (kWh)
0.25	Annual CO2 Absorbed by one Mature Tree (metric tons)
$224	Cost of Planting Tree
2,450	Total Annual Energy Savings (kWh)
$268	Annual Cost Savings
293	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
88	2	1	1	0	1

Measure CAP-12-E (part 1)

RightLights Multiple Property Summary Sheet

Gonzales Grows Green Program

EcologyAction
Innovation • Partnership • Community

Property/Area	Total Project Cost	Program Incentive	Customer Obligation	Projected Annual Utility Savings	Projected Monthly Savings	Projected CO2 Reductions (lbs)
Healthy Soil Phase I	$ 18,697.26	$ 15,767.81	$ 2,929.45	$ 5,168.08 *	$ 430.67	11,547.00
Healthy Soil Phase II	$ 1,123.27	$ 265.63	$ 857.64	$ 99.73 *	$ 8.31	118.00
Valley Electric Motor Service	$ 4,835.48	$ 4,661.95	$ 173.53	$ 2,837.33 *	$ 236.44	8,133.00
General Vinyard Services (Office)	$ 1,797.87	$ 1,223.30	$ 574.57	$ 665.96 **	$ 55.50	1,909.00
General Vinyard Services (Storage)	$ 367.39	$ 257.85	$ 21.92	$ 21.92 **	$ 1.83	62.87
General Vineyard Services (Shop)	$ 1,893.92	$ 1,051.47	$ 842.45	$ 933.97 ***	$ 77.83	2,677.00
Shaw Development - Gonzales Shopping Center	$ 12,261.87	$ 5,057.64	$ 7,204.23	$ 7,272.67 ***	$ 606.06	21,777.00
Gonzales Irrigation Systems	$ 8,349.74	$ 3,538.38	$ 4,811.36	$ 1,664.19 ***	$ 138.68	4,770.00
Totals	$ 49,326.80	$ 31,824.03	$ 17,415.15	$ 18,663.85	$ 1,555.32	50,993.87

Payback on Investment (in years) = 0.93

Carbon Footprint Report

Equivalent Number of Cars off the Road	4
Equivalent Number of Acres of Trees Planted	7
Equivalent Number of Plane Trips	9
Equivalent Number of Single Family Homes Powered	9

* Job Complete
** Contract Signed, Job Scheduled
*** Energy Efficiency Analysis Completed, Customer Considering Proposal

Scott A. Farmer 8/26/2010

Measure CAP-12-E (part 2)

Community

75,000	Square Foot of Facilities Retrofitted

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings
10	Percent Natural Gas Savings
$1.50	Retrofit Cost ($ per square foot)
0	Total Annual Electricity Savings (kWh)
0	Total Annual Natural Gas Savings (therms)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings
10	Percent Natural Gas Savings
$1.50	Retrofit Cost ($ per square foot)
116,850	Total Annual Electricity Savings (kWh)
2,625	Total Annual Natural Gas Savings (therms)
$14,327	Annual Cost Savings
7.9	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
55	116	64	78	10	60

Measure CAP-12-E (part 3)

Community

75,000	Square Foot of Facilities Retrofitted

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings
10	Percent Natural Gas Savings
$1.50	Retrofit Cost ($ per square foot)
0	Total Annual Electricity Savings (kWh)
0	Total Annual Natural Gas Savings (therms)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings
10	Percent Natural Gas Savings
$1.50	Retrofit Cost ($ per square foot)
116,850	Total Annual Electricity Savings (kWh)
2,625	Total Annual Natural Gas Savings (therms)
$14,327	Annual Cost Savings
7.9	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
55	116	64	78	10	60

Measure CAP-13-E (part 1)

Community

730	kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$7,800	Cost of PV installation ($ per kW)
0	Annual Energy Production (kWh)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.1094	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$9,000	Cost of PV installation ($ per kW)
1,065,800	Annual Energy Production (kWh)
$116,599	Annual Cost Savings
56	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
365	658	566	603	68	533

Measure CAP-13-E (part 2)

Martin Carver

From: Jenkins, Courtney [Courtney.Jenkins@chevron.com]
Sent: Friday, October 07, 2011 8:08 AM
To: Thomas Truszkowski
Cc: mcarver@coastplans.com
Subject: RE: GHG Emission Reductions - Gonzales Project
Attachments: Gonzales - GHG Reduction.pdf

Hi Thomas and Martin:

Sorry for the delay. Attached is the GHG reduction calculation based on the conservation and clean power generation of 834,064 kWh. Let me know if you have questions or if I can provide more information.

Thanks,

Courtney Jenkins
Chevron Energy Solutions
(510) 502-7314
www.chevronenergy.com

WECC California (CAMX) = 0.000342697789188159
834,064 * 0.000342697789188159 = 286 MT CO2e

Measure CAP-14-E

Community

150	Number of Vehicles Switching from Diesel to Biodiesel

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$2.79	Price of Diesel ($ per gallon)
$2.88	Price of Biodiesel ($ per gallon)
14.0	Average Fuel Economy of Vehicles switching to Biodiesel (mpg)
10,000	Average Annual Miles Driven by Vehicles switching to Biodiesel
0	Gallons of Fossil Diesel Reduced
0	Gallons of Biodiesel Purchased
$0.00	Increased Fuel Costs

Community

$2.79	Price of Diesel ($ per gallon)
$2.88	Price of Biodiesel ($ per gallon)
14.0	Average Fuel Economy of Vehicles switching to Biodiesel (mpg)
10,000	Average Annual Miles Driven by Vehicles switching to Biodiesel
107,143	Gallons of Fossil Diesel Reduced
108,116	Gallons of Biodiesel Purchased
$12,445.22	Increased Fuel Costs

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
815	-77	0	607	0	64

Measure CAP-15-E

Community

533	Waste Diverted from Landfill (lbs/person/yr)

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

9,114	City Population
1	Percent of Recycled Material Aluminum
3	Percent of Recycled Material Plastic
8	Percent of Recycled Material Steel
5	Percent of Recycled Material Glass
36	Percent of Recycled Material Paper
36	Percent of Recycled Material Cardboard
366	Life Cycle Emissions Avoided for Aluminum (metric tons CO2e)
125	Life Cycle Emissions Avoided for Plastic (metric tons CO2e)
370	Life Cycle Emissions Avoided for Steel (metric tons CO2e)
36	Life Cycle Emissions Avoided for Glass (metric tons CO2e)
2,387	Life Cycle Emissions Avoided for Paper (metric tons CO2e)
2,035	Life Cycle Emissions Avoided for Cardboard (metric tons CO2e)
29	Annual Landfill Methane Emissions Avoided - Paper (metric tons CO2e)
33	Annual Landfill Methane Emissions Avoided - Cardboard (metric tons CO2e)
0	Change in kWh Generated from Energy Recovery

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
62	0	0	0	0	0

Tri-Cities Disposal & Recycling
CITY OF GONZALES 2010 ANNUAL WEIGHT REPORT

Source	Residential						Commercial		Drop Box										All*				
Material	Refuse^	Yard Waste	Comingle^	Stops	Oil (gal.)	Filters	Refuse	OCC	Refuse	Yard Waste	Con-crete	C&D	Metal	Co-mingle	Ag-Plas	OCC	Food Waste	Dirt	Total Refuse	Total Recycle	Total Yard Waste	Total Diverted	Total All
January	137.43	49.40	44.67	36	93.00	76	73.27	8.01	66.59	1.23	0.00	0.00	0.00	25.13	0.00	6.38	0.00	0.00	277.29	84.19	50.63	134.82	412.11
February	130.70	66.59	43.70	39	106.50	89	75.77	8.03	78.16	11.24	0.00	0.00	0.00	25.15	0.00	18.24	0.00	0.00	284.63	95.12	77.83	172.95	457.58
March	168.53	106.29	57.55	63	152.50	159	95.58	12.96	81.73	10.86	0.00	0.00	0.00	23.15	0.00	32.17	0.00	0.00	345.84	125.83	117.15	242.98	588.82
April	137.95	77.27	45.05	50	112.00	105	86.88	10.52	73.26	32.39	0.00	6.51	0.00	11.72	15.16	2.93	0.00	0.00	298.09	85.38	109.66	201.55	499.64
May	159.95	86.48	53.66	48	105.00	100	97.50	17.95	79.46	36.14	0.00	8.33	2.77	7.52	18.14	4.87	0.00	0.00	336.91	102.14	122.62	235.86	572.77
June	158.37	77.11	55.22	52	118.00	125	93.24	14.02	122.29	22.97	0.00	8.31	2.33	24.69	0.00	12.15	0.00	0.00	373.90	106.08	100.08	216.80	590.70
July	152.87	66.18	48.12	66	122.00	129	98.24	14.37	87.98	37.66	0.00	0.00	0.00	0.00	13.21	11.77	0.00	0.00	339.09	87.47	103.84	191.31	530.40
August	192.70	79.72	61.85	72	150.50	172	107.38	17.85	99.09	26.77	0.00	7.18	0.00	0.00	21.75	10.25	0.00	0.00	399.17	111.70	106.49	225.37	624.54
September	153.82	65.45	49.85	44	88.00	111	92.17	12.72	93.26	16.07	0.00	0.00	0.00	1.54	28.84	10.99	0.00	0.00	339.25	103.94	81.52	185.46	524.71
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November	181.17	67.65	63.60	57	114.00	152	99.15	12.76	111.35	2.68	0.00	0.00	5.92	2.87	24.76	20.68	0.00	0.00	391.67	124.67	70.33	200.92	592.59
December	134.55	55.47	48.95	49	102.00	115	81.89	6.74	77.38	4.49	0.00	5.08	0.00	0.00	46.50	38.70	0.00	0.00	293.82	140.89	59.96	205.93	499.75
Total	1851.57	856.15	620.23	628	1367.50	1466	1089.64	154.47	1076.50	205.53	0.00	35.41	12.27	121.77	195.90	176.45	0.00	0.00	4017.71	1268.82	1061.68	2378.18	6395.89

All data are in tons except for Oil (gallons) and Filters (each).
* Oil & Filter data not included the totals Section
^ Residential Refuse & Comingle also include Commercial Can/Cart Services
"Total Trash" includes dirt.
"Total Recycle" is the total material processed at MDS MRF.
"Total Diverted" is all materials not processed as trash (except oil & filters).

Existing housing stock
2010 diversion = 37%
2020 diversion = 75%
Difference = 38%

6,395 tons x 38% = 2,430 tons
2,430 tons = 4,860,000 lbs
4,860,000 lbs/9,114 persons (2010 pop) = 533 lbs/person/yr

Measure CAP-16-E

Community	
15	Percent Household Savings Under Ordinance

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community	
$ 0.0025	Price of Water ($ per gallon)
350	Water Used per Household per Day (gallons)
9,114	City Population
0.0054	Energy Use per Gallon of Water (kWh)
67,692,645	Total Annual Water Savings (gallons)
365,540	Total Annual Electricity Savings (kWh)
$169,232	Annual Cost Savings

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
125	226	194	207	23	183

Measure CAP-17-N

APPENDIX B: GHG REDUCTIONS | Union City Climate Action Plan

Introduction

This appendix summarizes the assumptions and parameters used to calculate GHG emission reduction performance of CAP measures. The table below summarizes the GHG reductions generated by measures in the CAP. See Table B-1 at the end of the Appendix for a summary of the GHG reductions for each measure.

GHG Reduction Analysis for CAP Measures

Land Use Action Area (L)

L-2: Mixed Use and Neighborhood Commercial Centers

Measure	Performance	Participation Rate	GHG Reduction (MT CO_2e/year)	Sources
L-2.1: Enhance existing neighborhood-serving commercial centers in the city to increase residents' access to daily goods and services.	This measure estimates the reduction in transportation-related emissions resulting from locating 6% (approximately 230 units of the approximately 3,800 total units that are projected to be built in the city by 2020) of the city's future new development within mixed-use neighborhood commercial districts. Literature indicates that mixed-use neighborhood center development can reduce residents' VMT by 10%. City planning staff and project documents indicate that approximately 230 residential units could be located within mixed-use neighborhood centers.			
	Annual VMT reduction of 588,673 (10% reduction in VMT associated with new development)	6% of new growth located in neighborhood commercial areas	260 MT CO_2e/yr	*Mixed-use neighborhood center VMT reduction performance* *Development projections: Union City Economic and Community Development Staff, 2010* *Dagang, Deborah. 1995. Transportation impact factors: Quantifiable relationships. Victoria Transport Policy Institute. Victoria BC.*

540 du (new units by 2020)
10% in mixed-use neighborhood
540 * 10% = 54 du

260 MT CO2e; 230 du (Union City calculations)

260/230 = x/54
x = 61 MY CO2e

Measure CAP-18-N

Community

1,500	Trees Planted

Cost Impacts

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Community

$ 0.1094	Price of Electricity ($ per kWh)
7	Annual Energy Savings of one Tree (kWh)
0.25	Annual CO2 Absorbed by one Mature Tree (metric tons)
$224	Cost of Planting Tree
10,500	Total Annual Energy Savings (kWh)
$1,149	Annual Cost Savings
293	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
379	6	6	6	1	5

Measure CAP-19-N

Community

975,600	Square Foot of New Construction & Renovation

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings Compared to Existing Code
10	Percent Natural Gas Savings Compared to Existing Code
$1.50	Increased Building Cost ($ per square foot)
1,519,985	Total Annual Electricity Savings (kWh)
34,146	Total Annual Natural Gas Savings (therms)
$186,369	Annual Cost Savings
7.9	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
712	1,513	830	1,008	129	778

540 new dwelling units (2020)
540 du x 1,800 sf/du = 975,600 sf

Measure CAP-19a-N

432	kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$7,800	Cost of PV installation ($ per kW)
0	Annual Energy Production (kWh)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.1094	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$9,000	Cost of PV installation ($ per kW)
630,720	Annual Energy Production (kWh)
$69,001	Annual Cost Savings
56	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
216	390	335	357	40	315

20% of 540 new dwelling units = 108 units;

400 sf of solar panel per house = 43,200 sf of solar panel;

1 kW per 100 sf of solar panel = 432 kW

Measure CAP-20-N

Community

727,404	Square Foot of New Construction & Renovation

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Community

$ 0.0988	Price of Electricity ($ per kWh)
$ 1.06	Price of Natural Gas ($ per therm)
15.6	Typical New Construction Annual Energy Use per Square Foot (kWh)
0.35	Typical New Construction Annual Energy Use per Square Foot (therms)
10	Percent Electricity Savings Compared to Existing Code
10	Percent Natural Gas Savings Compared to Existing Code
$1.50	Increased Building Cost ($ per square foot)
1,133,295	Total Annual Electricity Savings (kWh)
25,459	Total Annual Natural Gas Savings (therms)
$138,956	Annual Cost Savings
7.9	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
531	1,128	619	752	96	580

2009 Comm/Ind sf = 2,010,000 sf
2050 Comm/Ind sf = 6,180,000 sf
Change = 4,170,000 sf (2009 to 2050)

Growth Rate (2009 to 2050) = 2.85%

2,010,000 x (1+2.85%)^11
Projected 2020 Comm/Ind sf = 2,737,404 sf

New sf 2009 to 2020 = 727,404 sf

Measure CAP-21-N

Community

730	kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$ 0.0988	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$7,800	Cost of PV installation ($ per kW)
0	Annual Energy Production (kWh)
$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

$ 0.1094	Price of Electricity ($ per kWh)
4.0	Sun Hours per Day
$9,000	Cost of PV installation ($ per kW)
1,065,800	Annual Energy Production (kWh)
$116,599	Annual Cost Savings
56	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Select Utility Region: WECC California (CAMX)

Government Operations

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
365	658	566	603	68	533

Measure CAP-22-N

Community

100	Weekly Trips Switching from Car to Bicycle

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICLEI network. CAPPA will assist you in estimating emissions and cost impacts and developing a local climate action plan based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Changes made to blue cells here need to be saved using the Save function from the Excel File Menu.**

Government Operations

$2.64	Price of Gasoline ($ per gallon)
10	Percent of Employees Switching to Bicycle Commuting
2.0	Average One-way Bicycle Commute Length (mi)
19.7	Average Fuel Economy
0	Annual Vehicle Mile Reduction
0	Annual Gasoline Savings (gallons)
$0	Annual Cost Savings

Community

$2.64	Price of Gasoline ($ per gallon)
4	Avg length of avoided trip (mi)
19.7	Average Fuel Economy
20,800	Annual Vehicle Mile Reduction
1,056	Annual Gasoline Savings (gallons)
$2,787	Annual Cost Savings

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

The values below are calculated using default emissions factors consistent with those contained in the Clean Air and Climate Protection software.

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
0	0	0	0	0	0

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
10	3	0	714	75	2

Measure CAP-23-N

Community

1,052	Waste Diverted from Landfill (lbs/person/yr)

Cost Impacts

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Community

15,969	City Population
1	Percent of Recycled Material Aluminum
3	Percent of Recycled Material Plastic
8	Percent of Recycled Material Steel
5	Percent of Recycled Material Glass
36	Percent of Recycled Material Paper
36	Percent of Recycled Material Cardboard
1,267	Life Cycle Emissions Avoided for Aluminum (metric tons CO2e)
433	Life Cycle Emissions Avoided for Plastic (metric tons CO2e)
1,279	Life Cycle Emissions Avoided for Steel (metric tons CO2e)
125	Life Cycle Emissions Avoided for Glass (metric tons CO2e)
8,256	Life Cycle Emissions Avoided for Paper (metric tons CO2e)
7,039	Life Cycle Emissions Avoided for Cardboard (metric tons CO2e)
102	Annual Landfill Methane Emissions Avoided - Paper (metric tons CO2e)
114	Annual Landfill Methane Emissions Avoided - Cardboard (metric tons CO2e)
0	Change in kWh Generated from Energy Recovery

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
216	0	0	0	0	0

Tri-Cities Disposal & Recycling
CITY OF GONZALES 2010 ANNUAL WEIGHT REPORT

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"Total Diverted" is all materials not processed as trash (except oil & filters).

6,395 tons/9,114 persons = x/15,969 persons (2020 pop)
x = 11,205 tons
.75x = 8,403 tons
8,403 tons = 16,806,000 lbs
16,806,000/15,969 = 1,052 lbs/person/yr

Measure CAP-24-N

Government Operations

15,969	Population Served by Wastewater Treatment Plant

Cost Impacts

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Government Operations

$ 0.0980	Price of Electricity ($ per kWh)
0.32	Electrical Efficiency of Generator Technology
1.6	Approximate System Cost ($ millions)
7,868,725	Annual Bio-Gas Production (ft^3)
388,289	Annual Energy Production (kWh)
$38,052	Annual Cost Savings
43.2	Simple Payback (years)

Associated Annual Greenhouse Gas and Criteria Air Pollutant Emissions Reductions

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Select Utility Region: WECC California (CAMX)

Government Operations

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
133	240	206	220	25	194