

Gonzales Climate Action Plan

2018 Update

A “Gonzales Grows Green”
Sustainable Community Initiative



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Prepared for the City of Gonzales
By ZeroCity LLC



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TABLE OF CONTENTS

CHAPTER I: INTRODUCTION	I-1
INTRODUCTION	I-1
G ³ AND CLIMATE ACTION PLANNING	I-1
RELATIONSHIP TO THE GENERAL PLAN	I-2
RELATIONSHIP TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT	I-3
A DUAL APPROACH FOR ADDRESSING GREENHOUSE GAS EMISSIONS	I-4
DOCUMENT ORGANIZATION	I-7
CHAPTER II: BACKGROUND	II-1
INTRODUCTION	II-1
GREENHOUSE GASES	II-1
IMPACTS OF GLOBAL WARMING	II-3
GHG EMISSIONS IN THE UNITED STATES AND CALIFORNIA	II-8
FEDERAL, STATE, AND REGIONAL PARTNERS	II-9
<i>Governor’s Executive Order</i>	<i>II-10</i>
<i>SB 1078: Renewable Portfolio Standard (2002)</i>	<i>II-10</i>
<i>AB 32: The California Global Warming Solutions Act of 2006</i>	<i>II-10</i>
<i>SB 32: 2030 Climate Bill</i>	<i>II-10</i>
<i>SB 350: Clean Energy and Pollution Reduction Act of 2015</i>	<i>II-11</i>
<i>California Cap and Trade Program</i>	<i>II-11</i>
<i>Additional Legislation</i>	<i>II-11</i>
<i>Monterey Bay Community Power</i>	<i>II-14</i>
CHAPTER III: INVENTORY, BASELINE GHG EMISSIONS AND FORECASTS	III-1
INTRODUCTION	III-1
THE STRUCTURE OF THE INVENTORY	III-2
COMMUNITY GHG EMISSIONS	III-2
<i>Baseline Community GHG Emissions</i>	<i>III-2</i>
<i>Community Emission Projections</i>	<i>III-6</i>
BASELINE GOVERNMENT OPERATIONS EMISSIONS	III-8
CHAPTER IV: GHG EMISSIONS REDUCTION TARGETS	IV-1
INTRODUCTION	IV-1
STATEWIDE GREENHOUSE GAS REDUCTIONS	IV-1
COMMUNITY REDUCTION TARGETS (EXISTING DEVELOPMENT)	IV-2
COMMUNITY REDUCTION TARGETS (NEW DEVELOPMENT)	IV-4
LONG-TERM PROJECTIONS AND REDUCTION TARGETS	IV-6
<i>2050 GHG Emission Projections</i>	<i>IV-7</i>
<i>2050 GHG Emission Reduction Target (Existing Development)</i>	<i>IV-8</i>
<i>2050 GHG Emission Reduction Target (New Development)</i>	<i>IV-9</i>
<i>Long-Term GHG Reduction Measures</i>	<i>IV-10</i>

CHAPTER V: EXISTING EFFORTS TO REDUCE GHG EMISSIONS IN GONZALES	V-1
INTRODUCTION	V-1
EARLY SUCCESS BY THE G³ GONZALES GROWS GREEN SUSTAINABLE COMMUNITIES INITIATIVE	V-1
<i>Sustainability Best Practices</i>	V-1
<i>Community GHG Reduction</i>	V-2
<i>Agency Energy Savings</i>	V-2
<i>Summary</i>	V-2
CHAPTER VI: ACTION PLAN FOR REDUCING GREENHOUSE GAS EMISSIONS.....	VI-1
INTRODUCTION	VI-1
MONTEREY BAY COMMUNITY POWER	VI-1
GHG EMISSION REDUCTION MEASURES FOR EXISTING DEVELOPMENT	VI-2
REDUCTION MEASURES FOR NEW DEVELOPMENT	VI-3
<i>Long-Term GHG Reduction Measures</i>.....	VI-3
CHAPTER VII: IMPLEMENTATION	VII-1
INTRODUCTION	VII-1
PROGRAM IMPLEMENTATION S FOR EXISTING DEVELOPMENT	VII-1
<i>Monterey Bay Community Power</i>.....	VII-1
<i>Gonzales Renewables Program</i>.....	VII-2
IMPLEMENTING PROGRAMS FOR NEW DEVELOPMENT	VII-3
GENERAL PLAN AND MUNICIPAL CODE ADDITIONS	VII-3
CHAPTER VIII: MONITORING, REPORTING, AND UPDATING.....	VIII-1
INTRODUCTION	VIII-1
MONITORING AND REPORTING ON PROGRESS	VIII-1
KEEPING THE PLAN UP TO DATE.....	VIII-1
APPENDIX A: EXISTING G³ GHG REDUCTION MEASURES.....	1
INTRODUCTION	1
DETAILED PROGRAM DESCRIPTIONS	1
RESIDENTIAL REDUCTION MEASURES.....	2
COMMERCIAL AND INDUSTRIAL REDUCTION MEASURES	4
TRANSPORTATION REDUCTION MEASURES.....	9
SOLID WASTE REDUCTION MEASURES	10
GOVERNMENT OPERATIONS REDUCTION MEASURES	12
APPENDIX B: GHG REDUCTION MEASURES FOR EXISTING DEVELOPMENT	1
INTRODUCTION	1
DETAILED PROGRAM DESCRIPTIONS	1
NEW RESIDENTIAL REDUCTION MEASURES	2
NEW COMMERCIAL/INDUSTRIAL REDUCTION MEASURES	6

NEW TRANSPORTATION REDUCTION MEASURES 9
NEW SOLID WASTE REDUCTION MEASURES..... 10
APPENDIX DC: CALCULATIONS AND METHODOLOGY..... 1
INTRODUCTION 1
CALCULATIONS AND METHODOLOGY 1

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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 (G³ 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. G³ 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 G³ 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.

G³ AND CLIMATE ACTION PLANNING

The City of Gonzales is taking proactive steps to become a more environmentally sustainable community by extending its G³ 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 CO₂e¹ 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. 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 CO₂e). As the table and graph show, smaller communities with 2005 baseline emissions less than 300,000 MT CO₂e 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 CO₂e 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.~~

¹ CO₂e stands for carbon dioxide equivalent and represents an amount of any greenhouse gas that has a “greenhouse effect” equal to that of carbon dioxide.

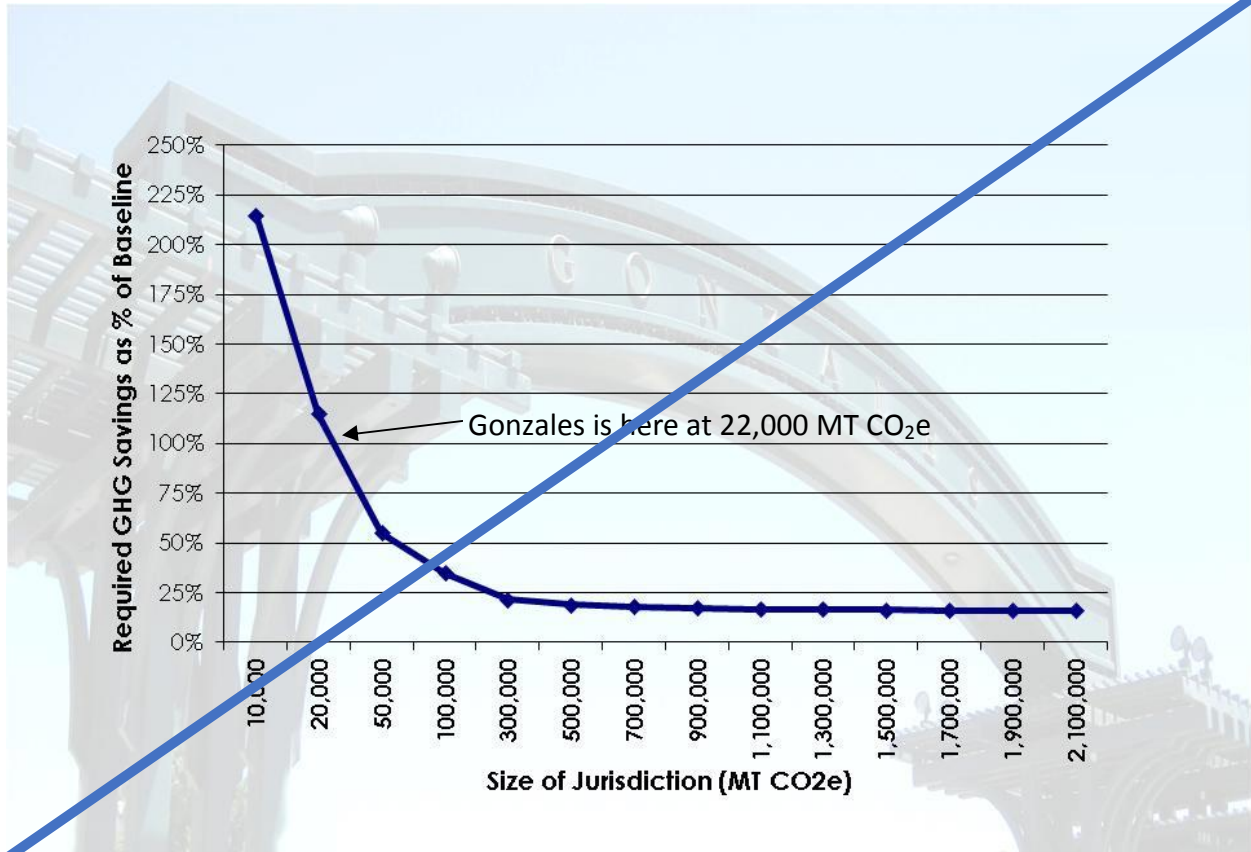
² “Quick Start Guide for Setting a Greenhouse Gas Reduction Target,” Statewide Energy Efficiency Collaborative (SEEC), November 2010.

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: ZeroCity LLC

Figure CAP 1
AB32 GHG EMISSION REDUCTION TARGETS
BIAS AGAINST NEW DEVELOPMENT IN SMALL JURISDICTIONS
(GRAPH)



Source: ZeroCity LLC, 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 CO₂e 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* G³ 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.

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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 (CO₂), methane (CH₄), nitrous oxide (N₂O) 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 CO₂ and reduces its uptake by plants. CO₂ 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. CH₄ is also released from natural processes that occur, for example, in wetlands. CH₄ 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. CH₄ has an influence on climate (“global warming potential” or GWP) 25 times that of CO₂ (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 N₂O. N₂O has a GWP 298 times that of CO₂ (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 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 CO₂ (IPCC, 2007).

³ Climate scientists and planners use CO₂ as a basis for measuring the strength of other GHGs. So if CO₂ is assigned a value of “one” in terms of its global warming potential in a 100-year period, then CH₄, for example, would be assigned a value of 25, signifying that it has 25 times the global warming potential of CO₂. CO₂ equivalent (or CO₂e) then, is a measure of the global warming potential of a GHG indexed against CO₂.

Table CAP-2
PRINCIPAL GREENHOUSE GASES

Greenhouse Gas	Source	CO ₂ equivalent (CO ₂ e) 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 ₂ O)	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~~ In January 2017, several scientific agencies around the world, including NASA and the NOAA in the United States and the Met Office in the United Kingdom, named 2016 the warmest year recorded. This marked the third consecutive year reaching a new record temperature, the first time since the current warming trend began in the 1970s that three years in a row were record highs. 2016's record meant that 16 of the 17 warmest years have occurred since 2000.⁴ ~~Arctic sea ice declined in 2006 by the largest amount ever, losing an area roughly the size of Texas and California combined.~~ On September 13, 2017, sea ice extent reached an annual minimum of 1.79 million square miles. This was 610,000 square miles below the 1981 to 2010 median extent for the same day, and 1,000 square miles and 193,000 square miles above the 2012 and 2016 extents for the same day, respectively.⁵

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.”

⁴ New York Times. 18 January 2017. Retrieved 19 January 2017

⁵ <http://nsidc.org/arcticseaicenews/> (National Snow & Ice Data Center)

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 environment 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 snowpack, 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.⁶ 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 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

⁶ Source: <http://www.farmland.org/programs/states/ca/ClimateChangeandAgriculture.asp>

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 snowpack 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~~15 percent of the world's GHG emissions, with only China producing more.⁷ 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.⁸ To put California emissions in a global perspective, California is the world's 12th largest source of carbon dioxide.⁹ 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 exhaust¹⁰. Figure CAP-1 shows the breakdown in CO₂ emissions.

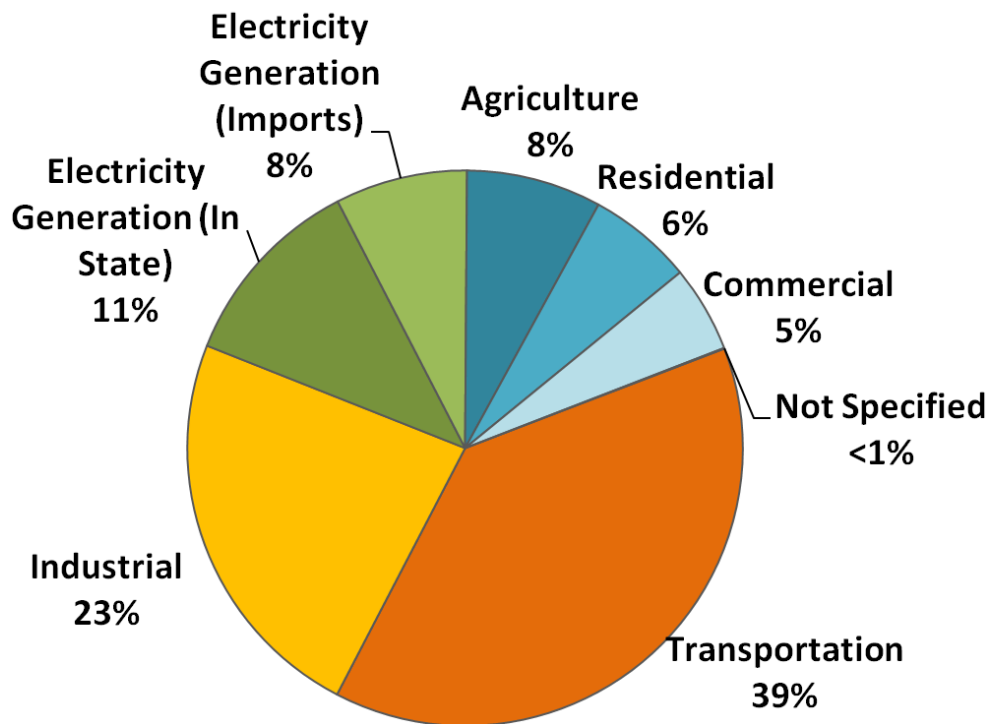
⁷ <https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data#Country>

⁸ https://en.wikipedia.org/wiki/List_of_U.S._states_by_carbon_dioxide_emissions (2014 data)

⁹ *AB 32 Fact Sheet*

¹⁰ *Ibid*

Figure CAP-1
BREAKDOWN OF CALIFORNIA'S INVENTORY GREENHOUSE GAS EMISSIONS



2015 Total CA Emissions: 440.4 MMTCO₂e

Source: ZeroCity LLC; 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).

SB 1078: Renewable Portfolio Standard (2002)

Established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107, expanded in 2011 under Senate Bill 2(1x), and enhanced in 2015 by Senate Bill 350, California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities (IOUs), publicly owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 50 percent of total procurement by 2030. The RPS requires all power portfolios to contain 33 percent renewable energy by 2020.

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.

SB 32: 2030 Climate Bill

In 2016, the Governor Brown signed SB 32, extended the reach of 2006 AB 32 (see above) by codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels.

SB 350: Clean Energy and Pollution Reduction Act of 2015

SB 350 increased California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030. This increased the use of Renewables Portfolio Standard (RPS) eligible resources, including solar, wind, biomass, geothermal, and others. In addition, SB 350 required the state to double statewide energy efficiency savings in electricity and natural gas end uses by 2030. To help ensure these goals are met and greenhouse gas emission reductions are realized, large utilities are now required to develop and submit Integrated Resource Plans.

California Cap and Trade Program

California's cap-and-trade rules came into effect on January 1, 2013 and apply to large electric power plants and large industrial plants. In 2015, the program was extended to fuel distributors (including distributors of heating and transportation fuels) to encompass around 360 businesses throughout California and nearly 85 percent of the state's total greenhouse gas emissions.

Under a cap-and-trade system, companies must hold enough emission allowances to cover their emissions, and are free to buy and sell allowances on the open market. California held its first auction of greenhouse gas allowances on November 14, 2012. This marked the beginning of the first greenhouse gas cap-and-trade program in the United States since the group of nine Northeastern states in the Regional Greenhouse Gas Initiative (RGGI), a greenhouse gas cap-and-trade program for power plants, held its first auction in 2008.

California's emissions trading system will reduce greenhouse gas emissions from regulated entities by more than 16 percent between 2013 and 2020. It is a central component of the state's broader strategy to reduce total greenhouse gas emissions to 1990 levels by 2020. In July 2017, Governor Brown signed Assembly Bill 398, which will keep cap and trade operating until 2030 rather than letting it expire in 2020.

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.

Monterey Bay Community Power

In spring 2017, 19 jurisdictions in the three-county Monterey Bay Region (Monterey, Santa Cruz, and San Benito Counties), including the City of Gonzales, joined together to form a joint powers community choice aggregation (CCA) agency. The new CCA agency, called Monterey Bay Community Power (MBCP), is expected to begin service in March 2018 and serve over 285,000 customers with 100 percent carbon-free and renewable power.

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.

In early 2018, AMBAG published an update to the Gonzales 2005 Baseline Emissions Report. This 2018 report provides new GHG emission data on the Gonzales Wastewater Treatment Plant and updated information on GHG emissions from residential, commercial, and industrial emission sectors. In recent years, with the development of smart meters, the California Public Utilities Commission engaged in proceedings regarding customer data privacy with the result that more extensive data regulatory processes were developed. These more rigorous data privacy regulations have affected the availability of the energy data used to calculate GHG emissions. As a result, the AMBAG baseline data now shows a dramatic (but inaccurate) 80 percent decline in GHG emissions from 2005 (8,363 MT CO₂e to 1,699 MT CO₂e). In actuality, the Gonzales Business Park has added new tenants since the last baseline update in 2012, and while these users have aggressively pursued renewable energy resources (e.g., tall wind turbines, large arrays of solar panels, and cogeneration), there is every reason to assume that GHG emissions have increased somewhat or at least remained the same from the 8,363 MT CO₂e reported in 2012. Nonetheless, the 2018 AMBAG report contains an updated 2005 baseline estimate that is unaffected by this methodological anomaly, and this 2018 Gonzales Climate Action Plan Update uses this updated data.

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 ZeroCity LLC.

Estimated GHG Emissions for Incorporated Gonzales

According to AMBAG, the Gonzales community emitted 20,798,618 metric tons¹¹ of CO₂e 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

¹¹A metric ton is approximately equivalent to 1.1 US tons or 2,200 pounds.

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.

Table CAP-3
BASELINE GHG EMISSIONS
INCORPORATED GONZALES
2005

Sector	CO ₂ e Emissions (metric tons)	Percent of Total
Residential Emissions	6,251	30.3%
Commercial and Industrial Emissions	8,363	40.6%
Transportation Emissions	3,926	19.0%
Waste Generation Emissions	2,055	10.0%
Wastewater	23	0.1%
	20,618	100.0%

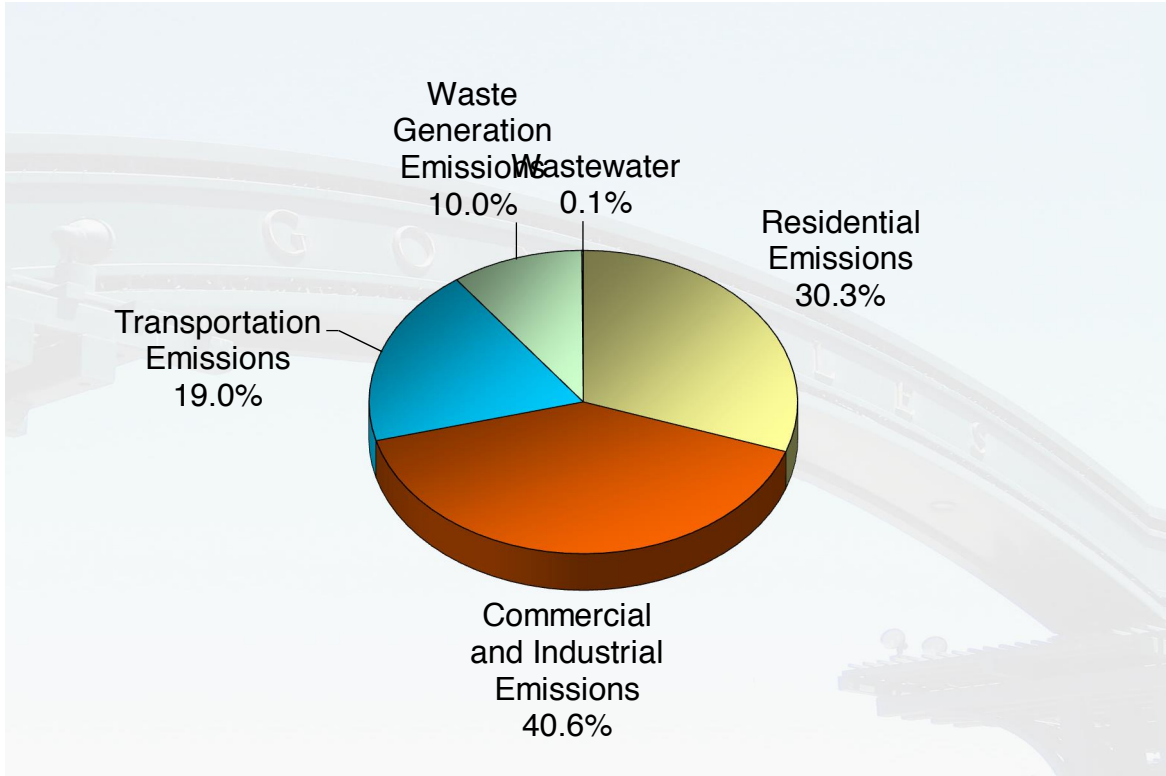
Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2018)

As shown in Table CAP-3, the Commercial/Industrial Sector is the largest source of emissions with almost 41 percent of total community emissions. Emissions from the Residential and Transportation Sectors accounted for 30 and 19 percent, respectively. Emissions from the Solid Waste Sector accounted for 10 percent of the City’s overall emissions in 2005.

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.

Figure CAP-2

DISTRIBUTION OF COMMUNITY GHG EMISSIONS
BY SECTOR, 2005



Source: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG, 2018)

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, ZeroCity LLC relied on crop production data and crop GHG emission data from a 2012 study by Venkat.¹² While the information contained in the Venkat study is based on crop data published by the University of California, Davis in May 2011, ZeroCity LLC assumed that approximately the

¹² 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>

equivalent agricultural activity was occurring in 2005 and 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.¹³ Applying the production and crop emission data from Venkat, ZeroCity LLC estimated that agricultural activity in the Urban Growth Area produced ~~4,723~~ 4,520 MT of CO₂e 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) ¹⁴	GHG Emission per Crop Yield (kg CO ₂ e/kg) ¹³	GHG Emission per ac (kg CO ₂ e/ac)	GHG Emission per ac (MT CO ₂ e/Ac)	Acres in Production ¹⁵	Annual GHG Emission (MT CO ₂ e)
Wine Grape ¹⁶	5,443	0.27	1,470	1.47	640	941
Broccoli	6,636	0.36	2,389	2.39	735 <u>695</u>	1,756 <u>1,660</u>
Lettuce	14,515	0.19	2,758	2.76	735 <u>696</u>	2,027 <u>1,919</u>
					2,110 <u>2,031</u>	4,723 <u>4,520</u>

Sources: ZeroCity LLC; Venkat

¹³"Gonzales 2010 General Plan Environmental Impact Report, Volume 1 (SCH# 2009121017)," July 2010. Figure 4.1.2, page 4-37.

¹⁴Venkat, 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>

¹⁵"Gonzales 2010 General Plan Environmental Impact Report—Volume 1 (SCH# 2009121017)," July 2010. Figure 4.1.2, page 4-37

¹⁶ Chardonnay 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~~ 25,138 to 30,129 metric tons CO₂e, under “business-as-usual” circumstances. By 2030, these emissions are expected to reach 48,612 metric tons CO₂e, and by 2050 these emissions are expected to reach 88,375 metric tons CO₂e. In the near term, The emissions from growth in the Commercial and Industrial and Residential Sectors will account for the biggest increase in community emissions (10,566 metric tons of CO₂e). In the longer term, emissions from the Residential and Transportation Sectors are expected to pick up pace, as the housing market more fully rebounds to fuel residential construction in Gonzales’s Urban Growth Area. The Transportation Sector contributes the next largest share of the increase in community emissions (3,954 metric tons of CO₂e). The Solid Waste Sector contributes the next largest share of the increase (1,315 metric tons of CO₂e). 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 CO₂e by 2020. Table CAP-5 below shows community emissions projections for Gonzales through ~~2020~~ 2050.

Table CAP-5
COMMUNITY EMISSION PROJECTIONS
BY SECTOR, 2020, 2030, and 2050

Sector	2005		2020		2030		2050	
	Emissions CO ₂ e (metric tons)	Percent of Total	Emissions CO ₂ e (metric tons)	Percent of Total	Emissions CO ₂ e (metric tons)	Percent of Total	Emissions CO ₂ e (metric tons)	Percent of Total
Urban Uses								
Residential	6,155	24.5%	6,633	22.0%	14,546	29.9%	28,943	32.8%
Commercial and Industrial	8,069	32.1%	12,299	40.8%	14,457	29.7%	23,051	26.1%
Transportation	3,664	14.6%	3,949	13.1%	10,907	22.4%	26,104	29.5%
Solid Waste	1,988	7.9%	2,142	7.1%	4,698	9.7%	9,348	10.6%
Government Operations	742	3.0%	800	2.7%	841	1.7%	929	1.1%
Subtotal	20,618	82.0%	25,823	85.7%	45,448	93.5%	88,375	100.0%
Agricultural Operations	4,520	18.0%	4,306	14.3%	3,164	6.5%	0	0.0%
Net Emissions	25,138	100.0%	30,129	100.0%	48,612	100.0%	88,375	100.0%

Notes: Assumes 0.5% growth rate thru 2020 and then AMBAG growth rates thru 2030;
Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011 and 2017)

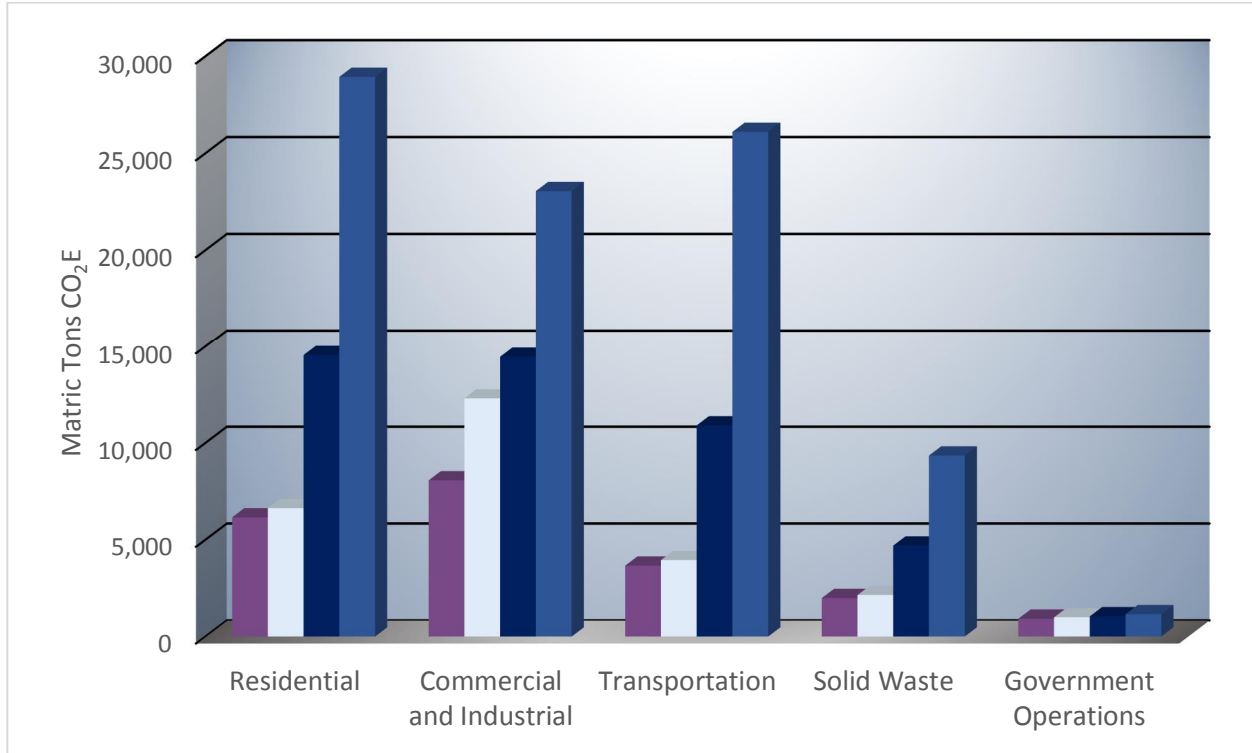
Sector	2005		2020	
	Emissions CO ₂ e (metric tons)	Percent of Total	Emissions CO ₂ e (metric tons)	Percent of Total
Urban Uses				
Residential	6,156	22.9%	11,845	27.8%
Commercial and Industrial	9,303	34.7%	14,180	33.3%
Transportation	4,278	15.9%	8,232	19.3%
Solid Waste	1,458	5.4%	2,773	6.5%
Government Operations	929	3.5%	1,788	4.2%
Subtotal	22,124	82.4%	38,818	91.2%
Agricultural Operations ¹⁷	4,723	17.6%	3,746	8.8%
Net Emissions	26,847	100.0%	42,564	100.0%

Sources: ZeroCity LLC; 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 67.60 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.

¹⁷ This assumes that 20 less than five (5) percent of the 2,150 acres of Urban Growth Area (approximately 445.100 acres) will be converted from agricultural to urban use by 2020 and that 30 percent (approximately 645 acres) will be converted by 2030. Accordingly, emissions from agricultural uses will also decrease by 20 < 5 and 30 percent, respectively.

Figure CAP-3
COMMUNITY EMISSION PROJECTIONS—CO₂e by Sector
2005, 2020, 2030, and 2050



Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011 and 2018)

BASELINE GOVERNMENT OPERATIONS EMISSIONS

In 2005, City of Gonzales’s direct emissions from government operations, emissions from electricity consumption and select indirect sources totaled ~~922~~ 742 metric tons of CO₂e.¹⁸ This represents approximately ~~4.4~~ 3.6 percent of the total quantified GHG emissions in Gonzales’s overall community.¹⁹ Emissions from the Wastewater and Solid Waste²⁰ Sector were the largest

¹⁸ “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.

¹⁹ 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.

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

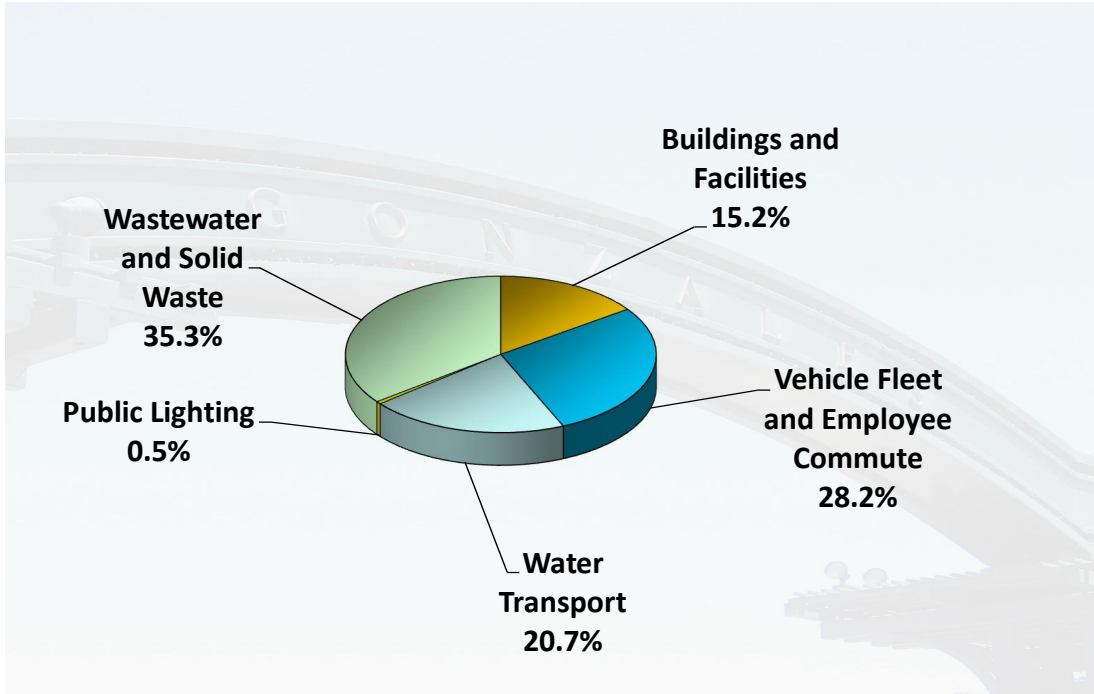
Sector	Emissions	Percent of Total
Buildings and Facilities	141	15.2%
Vehicle Fleet and Employee Commute	262	28.2%
Water Transport	192	20.7%
Public Lighting	5	0.5%
Wastewater and Solid Waste	328	35.3%
	929	100.0%

Sources: ZeroCity LLC; 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.

²⁰ 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: ZeroCity LLC; 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 2030 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. 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.”

The California Global Warming Solutions Act, otherwise known as AB 32, (September 2006) recognized that climate change poses a serious threat to the economic well-being, public health, and natural resources of the State of California. AB 32 established a goal to reduce statewide GHG emissions to 1990 levels by 2020 and required the California Air Resources Board to develop a scoping plan for meeting AB 32 requirements. The ensuing Climate Change Scoping Plan recommended that local governments perform greenhouse gas inventories and reduce their emissions to 15 percent below 2005 levels by 2020. In 2016, the State of California set a GHG emission reduction goal for 2030 of 40 percent below 1990 levels.

These statewide goals are consistent with the 2005 executive order signed by Governor Schwarzenegger. Executive Order No. S-3-05 mandated a reduction of GHG emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050.

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 Plans 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 2005,²¹ 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 CO₂e 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 CO₂e would amount to a reduction of ~~3,319~~ 3,771 metric tons of CO₂e by 2020; a 49 percent reduction in 2005 baseline emissions would amount to a reduction of 12,318 metric tons of CO₂E by 2030; and an 83 percent reduction in 2005 baseline emissions would amount to a reduction of 20,865 metric tons of CO₂e by 2050. ~~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 emission reduction targets for the 2020, 2030 and 2050. emission

²¹ See http://www.energy.ca.gov/renewables/quarterly_updates/updates/july2004-present/2005-1Q_PROGRAM_SUMMARY.PDF

reduction target for existing development—including government operations—with both statewide and CAP reduction efforts.

Table CAP-7
GHG EMISSION REDUCTION TARGETS FOR EXISTING DEVELOPMENT
INCORPORATED GONZALES
2020, 2030, and 2050

Item	2020	2030	2050
2005 Baseline Emissions (MT CO ₂ e)	25,138	25,138	25,138
New Emissions “Business as Usual” (MT CO ₂ e)	4,991	23,474	63,237
Total Emissions	30,129	48,612	88,375
GHG Emission Reduction			
Statewide Reductions	3,214	6,239	12,851
Local CAP Reductions	5,548	29,553	71,250
Total Reduction (MT CO ₂ e)	8,762	35,792	84,101
GHG Emissions Target (MT CO ₂ e)	21,367	12,820	4,273
Reduction from Baseline (MT CO ₂ e)	3,771	12,318	20,865
Percent Reduction from Baseline	15.0%	49.0%	83.0%

Notes: ¹40% reduction from 1990 levels is calculated as follows: 1990 level = 85% of 2005 level (15% reduction); 40% reduction of 1990 level = 40% x 85% = 34%; 34% + 15% = 49%.

²80% reduction from 1990 levels is calculated as follows: 1990 level = 85% of 2005 level (15% reduction); 80% reduction of 1990 level = 80% x 85% = 68%; 68% + 15% = 83%.

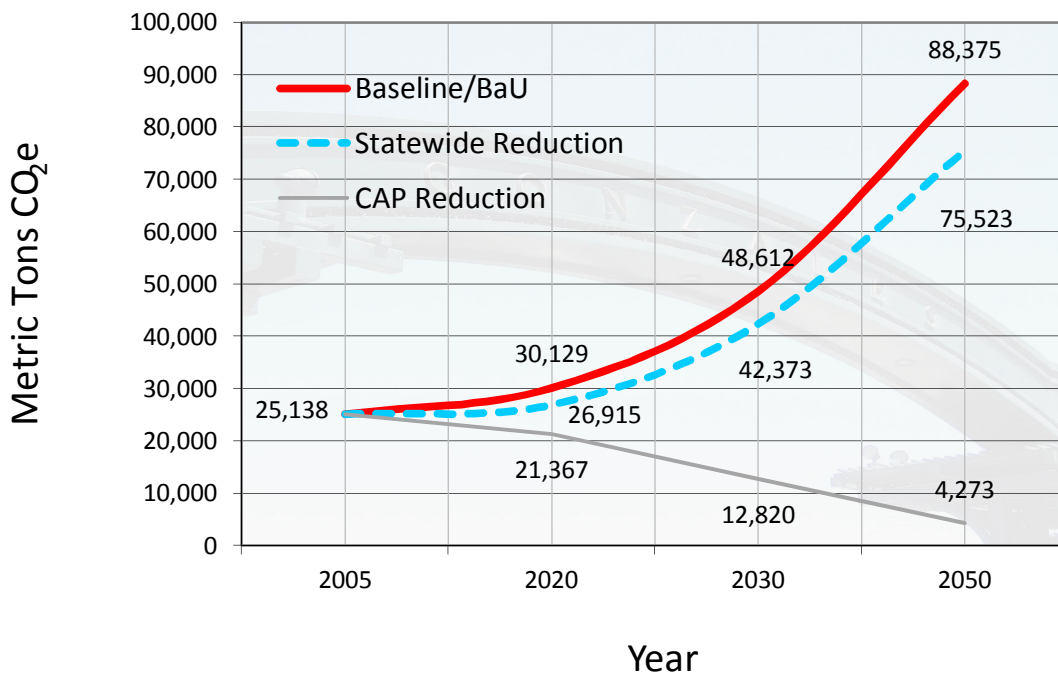
Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011 and 2017)

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

Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011 and 2017)

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
GHG EMISSION REDUCTION TARGETS
2020, 2030, and 2050



Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011 and 2018)

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.

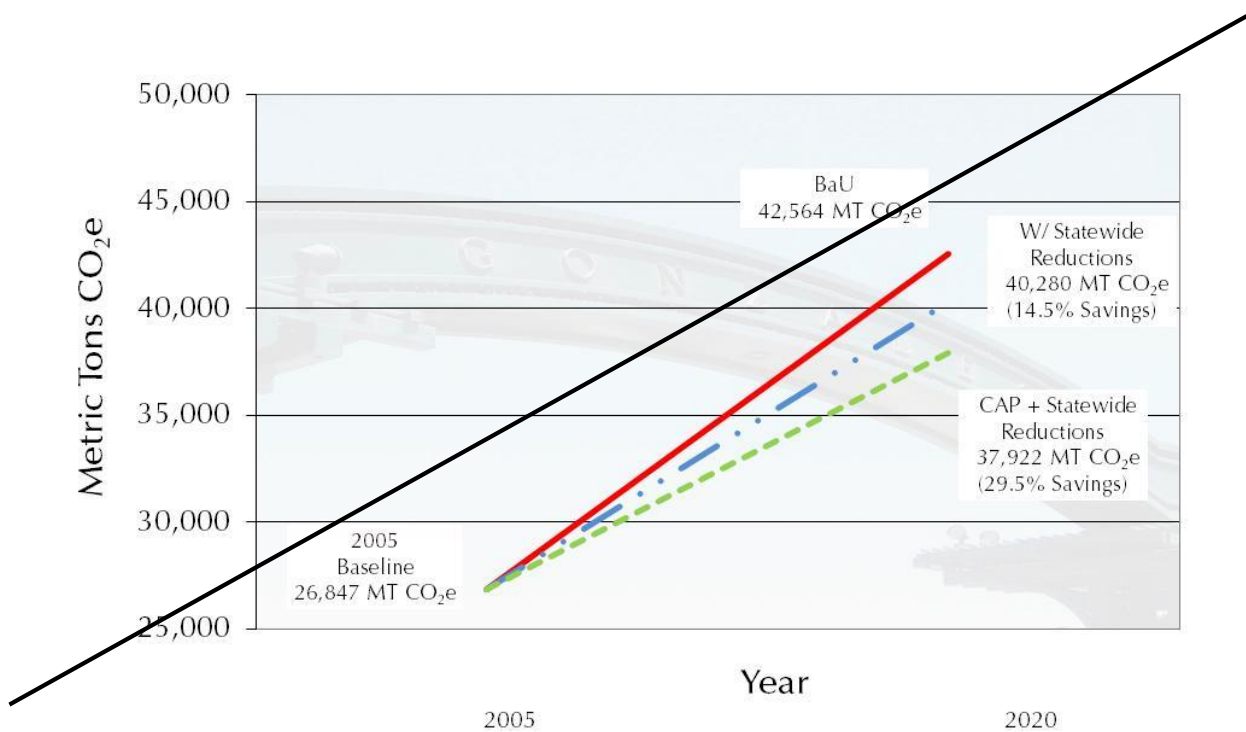
Table CAP-8
REDUCTION TARGET FOR NEW DEVELOPMENT
CITY OF GONZALES, 2020

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

Sources: ZeroCity LLC; AMBAG 2005 Baseline Report (AMBAG 2011)

Figure CAP-6 shows a graph comparing CO₂e 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: ZeroCity LLC; 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.²² 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.²³ 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.

Table CAP 9
LONG TERM GHG EMISSION PROJECTIONS
2020 to 2050

Item	2030 CO ₂ e	Percent of Total	Annual Growth Rate	2050 CO ₂ e	Percent of Total	Change
Residential Emissions	14,548	28.1%	0.0348	28,836	30.0%	14,288
Commercial and Industrial Emissions	16,668	32.2%	0.0348	33,038	34.4%	16,370
Transportation Emissions	12,735	24.6%	0.0348	25,242	26.3%	12,507
Waste Generation Emissions	3,446	6.7%	0.0348	6,830	7.1%	3,384
Government Operations	1,052	2.0%	0.0348	2,086	2.2%	1,034
Subtotal	48,449	93.6%		96,031	100.0%	47,582
Agricultural Operations	3,306	6.4%		0	0.0%	-3,306
Total	51,755	100.0%		96,031	100.0%	44,276

²² *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).

²³ 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.

Sources: ZeroCity LLC; AMBAG; *Gonzales 2010 General Plan*

Item	2020 CO ₂ e	Percent of Total	Annual Growth Rate	2050 CO ₂ e	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: ZeroCity LLC; 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.²⁴ 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.

²⁴ This assumption is based solely upon the judgment of ZeroCity LLC 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: ZeroCity LLC

~~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 2020.²⁵ Table CAP-11 shows long term GHG reductions targets for new development.~~

²⁵ 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 ₂ e)	26,847	37,922	37,922
New Emissions "Business as Usual" (MT CO ₂ e)	15,717	65,762	
Statewide Reductions			
Statewide Reductions (MT CO ₂ e)	2,284	16,440	
Percent Statewide Reductions	14.5%	25.0%	
Local CAP Reductions			
Local CAP Reductions (MT CO ₂ e)	2,358	49,321	
Percent Local CAP Reduction	15.0%	75.0%	
Total Statewide + Local CAP Reductions (MT CO ₂ e)	4,642	65,762	
Percent Total Reductions	29.5%	100.0%	71.5%
Target Emissions (MT CO ₂ e)	37,922	37,922	

Source: ZeroCity LLC

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 G³ 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 G³~~ GONZALES GROWS GREEN SUSTAINABLE COMMUNITIES INITIATIVE

The City of Gonzales began the G³ Initiative in 2006 to make Gonzales a more environmentally sustainable community, and since that time the G³ Initiative has made substantial progress working with local businesses and homeowners to implement voluntary measures to reduce GHG emissions.

In 2017, the Institute for Local Government awarded its Beacon Spotlight Award to the Gonzales G³ Initiative, earning the City a Platinum rating for Sustainability Best Practices, a Gold for Community GHG Reduction, and Silver for Agency (City) Energy Savings.

Sustainability Best Practices

The Beacon Spotlight Platinum Award for Sustainability Best Practices recognized the City of Gonzales for adopting best practices that support sustainability. The Sustainability Best Practices included nine categories of effort, including:

- Σ Energy Efficiency & Conservation
- Σ Green Building
- Σ Renewable Energy and Low Carbon Fuels
- Σ Water and Wastewater Systems
- Σ Waste Reduction and Recycling
- Σ Climate-Friendly Purchasing
- Σ Land Use and Community Design
- Σ Open Space and Offsetting Carbon Emissions
- Σ Community and Individual Action

Community GHG Reduction

The Beacon Spotlight Gold Award for Community GHG Reduction recognized the Gonzales community for GHG reductions through the development of solar power generation. The G³ Initiative reports that a total of 3,051 kilowatts (kW) of solar power generation was installed in Gonzales between the years 2009 and 2017. Installations included:

- Σ 549 kW installed in the residential sector
- Σ 34 kW installed in the commercial sector
- Σ 2,467 kW installed in the commercial and industrial sector

In all, these solar power generation facilities reduced GHG emissions by 1,234 MT CO₂e per year.

In addition, Taylor Farms installed a 1.85 megawatts (kW) wind turbine in 2014, which at capacity will reduce GHG emissions by 964 MT CO₂e annually, and a cogeneration plant, which is estimated to save 814 MT CO₂e annually.

Agency Energy Savings

The Beacon Spotlight Silver Award for Agency (City) Energy Savings recognized the City of Gonzales (as a government agency) for GHG reductions through the development of solar power generation. The G³ Initiative also reports that the City of Gonzales installed 129 kW of new solar capacity since 2009. These solar generation facilities reduced agency GHG emissions by 65 MT CO₂e per year.

Summary

As a result of G³ Initiative programs, the City of Gonzales achieved about 37 73 percent of the city's 2020 CO₂e reduction target for existing development. In order to achieve the additional 63 27 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 CO₂e emissions.

Table CAP-12
PROGRESS TO DATE AND ADJUSTED REDUCTION TARGET

Measure No.	Existing GHG Reduction Measures	2005 - 2017	
		Annual Savings MT CO ₂ e Emissions	Percent of Total
E-1.0 Residential Emissions			
E-1.1	Weatherization Program (Central Coast Energy Services)	54	1.3%
E-1.2	<u>Residential Solar</u>	<u>275</u>	6.7%
Subtotal		329	8.0%
E-2.0 Commercial and Industrial Emissions			
E-2.1	RightLights CO ₂ Diversion Program (Ecology Action)	23	0.6%
E-2.2	Constellation Wines, U.S. Solar Project	525	12.8%
E-2.3	AMBAG Energy Watch Retrofit Project	337	8.2%
E-2.4	<u>Taylor Farms Solar, Wind, CoGen Projects</u>	<u>1,535</u>	<u>37.4%</u>
E-2.5	<u>Commercial Solar</u>	<u>17</u>	<u>0.4%</u>
Subtotal		2,437	59.4%
E-3.0 Transportation Emissions			
E-3.1	Gonzales Biodiesel Program (50 vehicles)	272	6.6%
E-4.0 Solid Waste Emissions			
E-4.1	Gonzales Reuse/Recycle Program	2	0.0%
E-4.2	Waste Reduction (69% Diversion)	992	24.2%
Subtotal		994	24.3%
E-5.0 Government Operations			
E-5.1	City-Owned Vehicles CNG Conversions (1 Vehicle)	2	0.0%
E-5.2	<u>Government Operations Solar</u>	<u>65</u>	1.6%
Subtotal		67	1.6%
TOTAL		4,099	100.0%

Sources: ZeroCity LLC; 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.

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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.

MONTEREY BAY COMMUNITY POWER

In 2017, the City of Gonzales joined with 18 other jurisdictions in the three-county Monterey Bay Region (Monterey, Santa Cruz, and San Benito Counties) to form Monterey Bay Community Power (MBCP), a community choice aggregation agency. MBCP is expected to begin service in March 2018 providing 100 percent carbon-free and renewable energy to its customers.

As a result of its participation in MBCP, Gonzales expects to significantly reduce GHG emissions from existing and new development, as well as government operations. According to the AMBAG “Greenhouse Gas Emissions Inventory 2005 Baseline Report” (2011), one-third of residential emissions are from the use of electricity (two-thirds from natural gas).

GHG EMISSION REDUCTION MEASURES FOR EXISTING DEVELOPMENT

Table CAP-13 presents GHG emission reduction measures to be implemented by the City of Gonzales and the shows expected savings from new GHG emission each of these reduction measures. targeted at existing development.

Table CAP-13
NEW MEASURES FOR EXISTING DEVELOPMENT
GHG REDUCTION MEASURES

Measure No.	Prescribed GHG Reduction Measures	2020		2030	
		Annual Savings MT CO ₂ e Emissions	Percent of Total	Annual Savings MT CO ₂ e Emissions	Percent of Total
P-1.0 Residential Emissions					
P-1.1	MBCP 100% Carbon-Free Power	1,698	10.4%	3,723	12.4%
P-1.2	Residential Electrification Program (500 Existing Units)	0	0.0%	1,154	3.9%
P-1.3	Residential Electrification Program (New Residential)	344	2.1%	6,042	20.2%
P-1.4	Urban Forest (2,200 Trees Planted)	0	0.0%	555	1.9%
Subtotal		2,042	12.5%	11,474	38.3%
P-2.0 Commercial and Industrial Emissions					
P-2.1	MBCP 100% Carbon-Free Power (Existing C&I)	9,339	57.4%	9,339	31.2%
P-2.2	MBCP 100% Carbon-Free Power (New C&I)	0	0.0%	819	2.7%
P-2.3	Gonzales Renewables Program	274	1.7%	274	0.9%
Subtotal		9,613	59.1%	10,432	34.8%
P-3.0 Transportation Emissions					
P-3.1	Gonzales/MBCP Electric Vehicle Program (600 vehicles)	0	0.0%	3,452	11.5%
P-4.0 Solid Waste Emissions					
P-4.1	Waste Reduction (75% Diversion)	1,071	6.6%	1,029	3.4%
P-5.0 Government Operations					
P-5.1	MBCP 100% Carbon-Free Power	440	2.7%	463	1.5%
Total Program Savings		13,165	80.9%	26,849	89.6%
Progress to Date (2017)		3,107	19.1%	3,107	10.4%
Total GHG Savings		16,272	100.0%	29,956	100.0%
Local CAP Reduction Target		5,548		29,553	
Account Balance (Exceeds GHG Reduction Target by:)		10,724	293.3%	403	101.4%

Source: ZeroCity LLC, 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: ZeroCity LLC; City of Gonzales

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 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.

PROGRAM IMPLEMENTATION ~~FOR EXISTING DEVELOPMENT~~

The City of Gonzales will continue to implement GHG reduction programs aimed at existing development (including government operations) through its G³ Initiative. The G³ Initiative has a proven track record of success—it has already achieved ~~37~~54 percent of the City's 2020 target for existing development—and the G³ Initiative managers worked closely on the list of GHG reduction measures contained in Table CAP-13. The G³ Initiative has the expertise and financial support required to achieve the other ~~63~~46 percent of targeted GHG reductions.

Monterey Bay Community Power

The primary driver of GHG emissions reduction efforts between 2012 and 2018 was the formation of, and ultimately membership in, Monterey Bay Community Power (MBCP). As such, implementation of this *Gonzales 2018 Climate Action Plan* update relies on partnership with this new Community Choice Aggregation (CCA) agency in the Monterey Bay Region. When it opened its doors for service in March 2018, MBCP provided 100 percent renewable or carbon-free electrical power to customers at prices achieving parity with Pacific Gas and Electric (PG&E). As the MBCP program is designed as an “opt-out” for customers in the region, agency planners anticipated 85 percent participation levels (although recently established CCAs in Marin and Sonoma Counties are experiencing significantly higher rates participation). The City of Gonzales, in preparing this Climate Action Plan update, assumed the same participation levels in Gonzales. Implementation of this program is expected to account for approximately 65 percent of GHG emission reductions between 2018 and 2030.

While most of the GHG emission reduction connected to MBCP membership would be the result of providing electrical power to customers in Gonzales, further reductions are expected as MBCP rolls out ancillary programs starting in 2020 and 2021. One GHG emission reduction measure contained in this 2018 update of the Climate Action Plan involves electric vehicles. The City of Gonzales, through its G³ Initiative, intends to work with MBCP to establish an

electric vehicle program to promote electric vehicle ownership in the new residential neighborhoods planned for the city in the coming decade. Such a program would complement MBCP's 100 percent renewable/carbon-free product offering by reducing GHG emission reductions in the transportation sector, which accounts for as much as 25 percent of local GHG emissions by 2030.

Gonzales Renewables Program

Gonzales suffers from the lack of electrical grid capacity. PG&E maintains 115 kilovolt (kV) transmission lines from San Luis Obispo north to Soledad; it also maintains 115 kV transmission lines from Moss Landing south to Salinas. Between Salinas and King City, however, service is limited by 60 kV transmission lines. According to a preliminary engineering study plan prepared by PG&E and published in 2017²⁶, PG&E would need up to three years to provide service to the newest planned tenants at the Business Park. The PG&E study reports that:

- Σ Serving an additional 2.5 megawatts of load in the business park would require six to 12 months of effort (beginning when an application, deposit, and load schedule have been submitted to PG&E) and cost up to \$200,000.
- Σ Serving an additional 4.5 megawatts of load would require 12 to 18 months and cost up to \$3.0 million.
- Σ Serving an additional 10.0 megawatts of load would require 18 to 24 months and cost up to \$6.2 million.
- Σ Serving an additional 18.0 megawatts would require 24 to 36 months and cost up to \$25.4 million.
- Σ Service beyond 18.0 megawatts would require replacement of both transformers at the Soledad substation. No cost for these upgrades was provided in the PG&E report.

To overcome this constraint, the City of Gonzales intends to explore, as another new program in this *Gonzales 2018 Climate Action Plan*, the development of one or more electrical power microgrids to serve new industrial users in the Gonzales Agricultural Industrial Business Park that are affected by the PG&E grid capacity issue. Such a program would reduce the demand for conventional electrical power grid expansion and, over time, integrate into a next-generation regional electrical power grid. On the power generation side, the City of Gonzales

²⁶ PG&E, March 3, 2017. "Preliminary Engineering Study Plan: Load Interconnection, City of Gonzales."

would work with MBCP to establish a local renewables program allowing the City to develop renewables for direct sale to business park newcomers. In the short term, however, during the two to three-year period in which MBCP establishes itself financially, the City of Gonzales intends to independently explore the potential for both local distribution and generation of electrical power to serve the business park.

~~IMPLEMENTING PROGRAMS FOR NEW DEVELOPMENT~~

GENERAL PLAN AND MUNICIPAL CODE ADDITIONS

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 also to be facilitated by the application of a simple metric of GHG emission reductions savings to be achieved—MT CO₂e saved per unit of development. This metric is described below achieved through new General Plan Implementing Actions, Municipal Code regulations, or other actions as follows:

- 1) New development in the city (i.e., residential, commercial, industrial, institutional, or other, buildings occupied after June 30, 2018) shall be required to purchase its electrical power from:
 - a. Monterey Bay Community Power; and/or
 - b. PG&E, provided the new user directly installs, or enters into a power purchase agreement for, renewable or carbon-free energy generation capacity sufficient to offset any portion of the utility's power portfolio that is not derived from renewable or carbon-free sources; and/or
 - c. A locally developed power microgrid that meets the State mandated Renewable Energy Portfolio; and/or
 - d. Other sources located in the three-county Monterey Bay Region, provided the source meets the State mandated Renewable Energy Portfolio
- 2) Notwithstanding the provision above, if PG&E is unable to deliver electrical service in a timely fashion to the new development, then the new development may obtain power from a locally developed power microgrid that generates less than 100 percent of its power from renewable or carbon-free sources, provided the microgrid system nonetheless complies with California's Renewable Portfolio Standard. Once a customer enters into a contract to obtain power from a local microgrid, then it may continue to obtain power from this source without any time limit.

- 3) Also, notwithstanding the provisions above, new development may install and operate natural-gas-powered co-generation equipment, including combined heat and power (CHP) equipment, to reduce electricity load demands, provide firming electrical power capacity for microgrid operations primarily powered by renewables sources, and/or to provide emergency back-up power generation capacity;
- 4) New residential subdivisions approved, or Specific Plans adopted, after June 30, 2018 shall be required to participate in any residential electrification program offered through Monterey Bay Community Power and/or the City of Gonzales. At a minimum, new homes shall be equipped with high-efficiency electric furnaces and water heaters;
- 5) New residential subdivisions approved, or Specific Plans adopted, after June 30, 2018 shall also be required to participate in any electric vehicle program offered through Monterey Bay Community Power and/or the City of Gonzales;
- 6) The City of Gonzales shall consider, in collaboration with AMBAG and/or Monterey Bay Community Power, the development of a program to provide assistance and/or incentives to existing homeowners to install high-efficiency furnaces and water heaters. This program shall target electrification of 500 existing homes by 2030; and
- 7) The City shall consider the adoption of a wind energy conversion system ordinance to facilitate the development of wind turbine energy within city limits.

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 CO₂e annually. This amount deliberately exceeds the amount needed to meet the target for new development established in Chapter IV (i.e., 2,358 MT CO₂e) 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 CO₂e) 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 CO₂e); measures aimed at new

commercial and industrial development account for 38 percent of potential savings (896 MT CO₂e). 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 CO₂e 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 CO₂e 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 CO ₂ e)	GHG Reduction Metric (MT CO ₂ e 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 CO₂e to be saved through measures aimed at solid waste emissions and government operations emissions. These programs will be folded into the G³ 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~~five 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 G³ 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 E-1.1: Weatherization Program		54 Metric Tons CO₂e
Program Description		
<p>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:</p> <ul style="list-style-type: none"> • 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.		

Measure E-1.2: Residential Solar		275 Metric Tons CO₂e
Program Description		
Between 2009 and 2017, PG&E approved 177 applications for the installation of roof-top solar on residential properties in Gonzales. Taken together, these systems amounted to 549 kW DC of installed solar capacity.		
Program Implementation		
Actions	Responsibility	
No further action required.	Residential property owners and PG&E	
Progress Indicator		
This program is complete. While there may be additional installation of roof-top solar in the city limits, these new sources renewable power will not result in further GHG reductions. This is because most or all residential properties are expected to be served by MBCP starting in June 2018, and MBCP will provide 100% renewable and/or carbon-free power to all participating residential customers.	Short Term	n/a
	Med Term	n/a
	Long Term	n/a
Monitoring		
The G ³ Program staff will not provide any further updates on this completed program.		

COMMERCIAL AND INDUSTRIAL REDUCTION MEASURES

Measure E-2.1: RightLights CO₂ Diversion Program		23 Metric Tons CO₂e
Program Description		
<p>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 23 metric tons are attributable to “Healthy Soil Phase I, which has a savings of 11,547 pounds of CO₂e.</p>		
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		
<p>The G³ Program staff will report on program success during CAP update (approximately three (3) years) based on information provided by Ecology Action.</p>		

Measure E-2.2: Constellation Wines, U.S. Solar Project		525 Metric Tons CO₂e
Program Description		
<p>In 2008, the City of Gonzales, through its G³ Initiative worked with Constellation Wines, U.S. to install a 1.049-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.</p>		
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 not provide any further updates on this completed program.		

Measure E-2.3: AMBAG Energy Watch Retrofit Project		337 Metric Tons CO₂e
Program Description		
<p>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.</p>		
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		
<p>The G³ Program staff will report on project success during CAP update (approximately three (3) years) based on information provided by AMBAG.</p>		

Measure E-2.4 Taylor Farms Solar, Wind, CoGen		1,535 Metric Tons CO₂e
Program Description		
<p>In 2012, Taylor Farms began operations in the Gonzales Agricultural Industrial Business Park. As part of its facility development plan, Taylor Farms has aggressively pursued the development of renewables to offset its electricity load, including: a 1.85-megawatt wind turbine (temporarily throttled at 1,000 kw), approximately 400 kilowatts of roof-top solar power, and co-generation capacity. Altogether, Taylor Farms has reduced its GHG emissions by 1,535 MT CO₂e.</p>		
Program Implementation		
Actions	Responsibility	
Coordinate with City and County staff to install renewable energy equipment	Taylor Farms Sustainability Coordinator	
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 not provide any further updates on this completed program.		

Measure E-2.5: Commercial Solar		17 Metric Tons CO₂e
Program Description		
<p>In 2016, commercial uses in Gonzales installed approximately 34 kilowatts of roof-top solar to offset electricity load. These installations reduced its GHG emissions by 17 MT CO₂e.</p>		
Program Implementation		
Actions	Responsibility	
Coordinate with City staff to install renewable energy equipment	Commercial property owners	
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 not provide any further updates on this completed program.		

TRANSPORTATION REDUCTION MEASURES

Measure E-3.1: Gonzales Biodiesel Program		272 Metric Tons CO₂e
Program Description		
<p>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.</p>		
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		
<p>The G³ Program staff report that the biofuels program has not grown appreciably since 2012. Given the arrival of electric vehicles into the automobile market, it is likely that biofuels will continue without growth for the foreseeable future.</p>		

SOLID WASTE REDUCTION MEASURES

Measure E-4.1: Gonzales Reuse/Recycle Program		2 Metric Tons CO₂e
Program Description		
<p>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.</p> <p>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.</p>		
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 reported that the City began a mandatory program to recycle commercial organics in 2017.		

Measure E-4.2: Solid Waste Reduction Program		992 Metric Tons CO₂e
Program Description		
<p>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.</p>		
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		
<p>The G³ Program staff reported in late 2017 that the City added seven (7) new trucks to its collection fleet. The City also added residential and commercial bulky collection item service and initiated a pilot program to use 32-gallon trash service.</p>		

GOVERNMENT OPERATIONS REDUCTION MEASURES

Measure E-5.1: City-Owned Vehicle CNG Conversion		2 Metric Tons CO₂e
Program Description		
<p>The City of Gonzales has converted one city vehicle to compressed natural gas (CNG) since 2005. This program accounts for 2 MT CO₂e each year.</p>		
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		
<p>The G³ Program staff reports that the City has not added any further CNG vehicles to its fleet.</p>		

Measure E-5.2: Government Operations Solar	65 Metric Tons CO₂e
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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
Coordinate with Chevron to Implement its Municipal Solar Powered Facilities 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 G³ 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: GHG 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 G³ 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 P-1.1: MBCP 100% Carbon-Free Power (Residential)		3,723 Metric Tons CO₂e
Program Description		
<p>In early 2017, the City of Gonzales joined Monterey Bay Community Power (MBCP), a three-county joint powers authority establishing a community choice aggregation agency. MBCP expects to start service for residential customers in June 2018, and its power portfolio would be 100 percent carbon-free and/or renewable at startup. It is expected that 90 percent of existing residential customers will choose to participate in MBCP, and this level of participation is expected to save 1,698 MT CO₂e in GHG emissions in the existing housing stock by 2020 and 3,723 MT CO₂e in GHG emissions in new housing stock by 2030.</p>		
Program Implementation		
Actions	Responsibility	
Continued membership in MBCP; continued public outreach	Gonzales City Council; MBCP Marketing Department	
Progress Indicator		
Percent of existing households participating in MBCP	Short Term	90%
	Med Term	90%
	Long Term	90%
Monitoring		
<p>MBCP staff will report on participation levels in each member jurisdiction in its annual report. G³ staff will incorporate this information into its annual report.</p>		

Measure P-1.2: Residential Electrification Program (Exist. Res.)		1,154 MT CO₂e
Program Description		
<p>California set a goal calling for all new residential buildings to be Zero Net Energy by 2020; that is, they have the potential to produce enough energy on-site to offset their projected annual energy use. Though the 2019 standards do not require full Zero Net Energy, they do require buildings to be efficient enough that their annual electricity use can be offset by a modestly sized solar array. That requirement does not include natural gas use, which is responsible for over 40 percent of building-sector-related GHG emissions.</p> <p>The goal of the Residential Electrification Program for existing residential development would be to install high-efficiency electric space and water heating in 500 existing housing units, thereby eliminating the 40 percent of GHG emissions resulting from natural gas use. The program is expected to save 1,154 MT CO₂e per year.</p>		
Program Implementation		
Actions	Responsibility	
Develop City program to assist 500 existing homeowners to install electric space and water heating	Gonzales City Council; Community Development Director	
Progress Indicator		
Number of homes equipped with high efficiency electric space and water heaters	Short Term	0
	Med Term	250
	Long Term	500
Monitoring		
The G ³ Program staff will report on program success during CAP update based on information collected by the Community Development Department.		

Measure P-1.3: Residential Electrification Program (New Res.)	6,042 MT CO₂e
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Program Description

California set a goal calling for all new residential buildings to be Zero Net Energy by 2020; that is, they have the potential to produce enough energy on-site to offset their projected annual energy use. Though the 2019 standards do not require full Zero Net Energy, they do require buildings to be efficient enough that their annual electricity use can be offset by a modestly sized solar array. That requirement does not include natural gas use, which is responsible for over 40 percent of building-sector-related GHG emissions.

The Residential Electrification Program requires all new residential construction to employ high-efficiency electric space and water heating, thereby eliminating the 40 percent of GHG emissions resulting from natural gas use. The program is expected to save 6,042 MT CO₂e per year.

Program Implementation

Actions	Responsibility
Revise Gonzales Municipal Code to require electric space and water heating in all new home construction	Gonzales City Council; Community Development Director

Progress Indicator

Percent of new homes equipped with high efficiency electric space and water heaters	Short Term	100%
	Med Term	100%
	Long Term	100%

Monitoring

The G³ Program staff will report on program success during CAP update based on information collected by the Community Development Department.

Measure P-1.4: Urban Forest		555 Metric Tons CO2e
Program Description		
<p>According to AMBAG, the City of Gonzales will add approximately 2,617 new housing units by 2030. Of these, 85 percent, or 2,224 units, would be single family housing. Under the Gonzales Urban Forest Program, neighborhood developers would plant about three trees for every single-family house built, resulting in approximately 2,200 new trees being planted in the community by 2030. This program is expected to save 555 MT CO2e in GHG emissions by 2030.</p>		
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	0 trees
	Med Term	500 trees
	Long Term	1,000 trees
Monitoring		
<p>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.</p>		

NEW COMMERCIAL/ INDUSTRIAL REDUCTION MEASURES

Measure P-2.1: MBCP 100% Carbon-Free Power (Existing C&I)

9,339 Metric Tons CO₂e

Program Description

In early 2017, the City of Gonzales joined Monterey Bay Community Power (MBCP), a three-county joint powers authority establishing a community choice aggregation agency. MBCP expects to start service for commercial and industrial customers in March 2018, and its power portfolio would be 100 percent carbon-free and/or renewable at startup. It is expected that 100 percent of existing commercial and industrial customers will choose to participate in MBCP, and this level of participation is expected to save 9,339 MT CO₂e in new commercial and industrial development by 2020.

Program Implementation

Actions	Responsibility
Continued membership in MBCP; continued public outreach	Gonzales City Council; MBCP Marketing Department

Progress Indicator

	Short Term	100%
Percent of existing C&I participating in MBCP	Med Term	100%
	Long Term	100%

Monitoring

MBCP staff will report on participation levels in each member jurisdiction in its annual report. G³ staff will incorporate this information into its annual report.

Measure P-2.2: MBCP 100% Carbon-Free Power (New C&I)		819 Metric Tons CO₂e
Program Description		
<p>In early 2017, the City of Gonzales joined Monterey Bay Community Power (MBCP), a three-county joint powers authority establishing a community choice aggregation agency. MBCP expects to start service for commercial and industrial customers in March 2018, and its power portfolio would be 100 percent carbon-free and/or renewable at startup. It is expected that 100 percent of new commercial and industrial customers will choose to participate in MBCP between 2021 and 2030, and this level of participation is expected to save 819 MT CO₂e in new commercial and industrial development by 2030. No savings are expected in the short for new development, due to PG&E inability to serve new C&I customers in the short term.</p>		
Program Implementation		
Actions	Responsibility	
Continued membership in MBCP; continued public outreach	Gonzales City Council; MBCP Marketing Department	
Progress Indicator		
Percent of new C&I participating in MBCP	Short Term	0%
	Med Term	100%
	Long Term	100%
Monitoring		
<p>MBCP staff will report on participation levels in each member jurisdiction in its annual report. G³ staff will incorporate this information into its annual report.</p>		

Measure P-2.3: Gonzales Renewables Program (New C&I)		274 Metric Tons CO₂e
Program Description		
<p>Due to short-term constraints in the PG&E electric power grid, the City of Gonzales is developing the capacity to deliver utility service, including carbon-free and/or renewable power, reliably to selected users in the Gonzales Agricultural Industrial Business Park. The system would be designed to operate as a stand-alone microgrid, with future connections possible to facilitate interaction with future participants (generators/loads) and/or the sale of excess power to one or more remote off-takers. It is expected that between 2018 and 2020, all new commercial and industrial customers will choose to participate in the Gonzales Renewables Program, and this level of participation is expected to save 274 MT CO₂e in new commercial and industrial development by 2020.</p>		
Program Implementation		
Actions	Responsibility	
Finance and construct microgrid power project	Gonzales City Council; Public Works Department	
Progress Indicator		
Percent of new C&I participating in Gonzales Renewables Program	Short Term	100%
	Med Term	0%
	Long Term	0%
Monitoring		
<p>MBCP staff will report on participation levels in each member jurisdiction in its annual report. G³ staff will incorporate this information into its annual report.</p>		

NEW TRANSPORTATION REDUCTION MEASURES

Measure P-3.1: Gonzales/MBCP Electric Vehicle Program		3,452 Metric Tons CO₂e
Program Description		
<p>The Transportation Sector is expected to generate more than 20 percent of all GHG emissions in Gonzales by 2030. Programs designed to deliver carbon-free electric power (MBCP) can reduce these emissions only to the degree that electric vehicles are integrated into the fleet. MBCP is expected to develop an electric vehicle program to incentivize the purchase of electric vehicle, and the City of Gonzales intends to work closely with MBCP to develop a program aimed to introduce 600 new electric vehicles into the Gonzales market. This program is expected to save 3,452 MT CO₂e in transportation-related emissions by 2030.</p>		
Program Implementation		
Actions	Responsibility	
Coordinate with MBCP to develop electric vehicle program	G ³ Program Staff	
Progress Indicator		
Number of electric vehicles sold to residents in the city	Short Term	0 vehicles
	Med Term	300 vehicles
	Long Term	600 vehicles
Monitoring		
The G ³ Program staff will report on program success during CAP update.		

NEW SOLID WASTE REDUCTION MEASURES

Measure P-4.1: Solid Waste Reduction Program		1,029 Metric Tons CO₂e
Program Description		
<p>In 2011, the California Legislature passed AB 341 to address solid waste reduction in the state. AB 341 required a state-wide 75% waste diversion goal and mandatory commercial recycling by certain businesses and public entities. CalRecycle is the State agency charged with the responsibility of implementing AB 341 to meet the statewide 75 percent source reduction, recycling, and composting goal by 2020. CalRecycle must also meet even more ambitious organics disposal reduction goals by 2020 and 2025 and recover 20 percent of edible food for human consumption by 2025. This program is expected to save 1,071 MT CO₂e in GHG emissions in the existing housing stock by 2020 and 1,029 MT CO₂e by 2030.</p>		
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		
<p>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.</p>		

Measure P-5.1: MBCP 100% Carbon-Free Power (Gov. Ops)		463 Metric Tons CO₂e
Program Description		
<p>In early 2017, the City of Gonzales joined Monterey Bay Community Power (MBCP), a three-county joint powers authority establishing a community choice aggregation agency. MBCP expects to start service for commercial and industrial customers (including City Operations) in March 2018, and its power portfolio would be 100 percent carbon-free and/or renewable at startup. It is expected that 100 percent of City operations use MBCP power, and this level of participation is expected to save 440 MT CO₂e in GHG emissions in the existing housing stock by 2020 and 463 MT CO₂e by 2030.</p>		
Program Implementation		
Actions	Responsibility	
Continued membership in MBCP; continued public outreach	Gonzales City Council; MBCP Marketing Department	
Progress Indicator		
Percent of existing government operations participating in MBCP	Short Term	100% complete
	Med Term	100% complete
	Long Term	100% complete
Monitoring		
<p>MBCP staff will report on participation levels in each member jurisdiction in its annual report. G³ staff will incorporate this information into its annual report.</p>		

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APPENDIX ~~D~~C: 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 E-1.1: Weatherization Program

Community

54	Homes Weatherized
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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 ▼

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

Measure E-1.2: Residential Solar

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP will assist you in estimating emissions and cost impacts and developing a local climate action plan on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. Changes made 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
\$2,000	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)
801,540	Annual Energy Production (kWh)
\$87,688	Annual Cost Savings
58	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 Climate Protection software.

Select Utility Region: WECC California (CMMX)



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)
275	495	426	454	51	401

Measure E-2.1

Gonzales Grows Green Program

Rightlights Multiple Property Summary Sheet



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 Vineyard Services (Office)	\$ 1,797.87	\$ 1,223.30	\$ 574.57	\$ 665.96 **	\$ 55.50	1,909.00
General Vineyard 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	50,993.67

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 E-2.2: Constellation Wines (Solar)

1,049 kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP 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 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
\$2,000	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)
1,531,540	Annual Energy Production (kWh)
\$167,550	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 Climate Protection software.

Select Utility Region: WCCC California (CMX)

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)
525	946	813	867	98	766

Measure E-2.3

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 ₂ e saved	337

Measure E-2.4: Taylor Farms (Solar)

400 kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP 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 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
\$2,000	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)
584,000	Annual Energy Production (kWh)
\$63,890	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 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)
200	361	310	331	37	292

Measure E-2.4: Taylor Farms (Wind)

1,000 Capacity Size (kW)

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the ICL CAPP. CAPP 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 need to be saved using the Save function from the Excel File Menu.

Government Operations

\$	0.0988	Price of Electricity (\$ per kWh)
\$	1,540.00	Cost of Turbine Installation (\$/kW capacity)
-		Potential Electricity Generation (kWh/yr)
\$	0	Annual Cost Savings
#DIV/0!		Simple Payback (years)

Community

\$	0.1094	Price of Electricity (\$ per kWh)
\$	1,540.00	Cost of Turbine Installation (\$/kW capacity)
	1,520,000	Potential Electricity Generation (kWh/yr)
\$	166,288	Annual Cost Savings
	9.3	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 (Protection software.

Select Utility Region: WHCC 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)
521	939	807	880	97	780

Measure E-2.4: Taylor Farms (CoGeneration)

mcarver@zero.city

From: Nicole Flewell <nflewell@taylorfarms.com>
Sent: Monday, December 18, 2017 11:07 AM
To: Martin Carver
Cc: 'Maury Treleven'; 'Thomas Truskowski'
Subject: RE: GHG Emission savings from Gonzales Wind Turbine

Hi Martin,

The solar is 1 MW in size. For the GHG savings, I am including an email from Brian Curtis, CEO of Concentric Power who installed the cogen system. It's a more complicated calculation than with renewables, so hopefully this explanation will help. Please let me know if you have any questions.

Marginal Heat Rate of CA Grid* = 11,505 btu/kWh

Net System Heat Rate for Cogen** = 8,820 btu/kWh

Improvement = $(11505 - 8820) / 11505 = 23.3\%$

Improvement in fuel efficiency is directly related to carbon emissions, so this translates to a carbon reduction of 23.3%.

* This is based on peak Western Day-Ahead Bilateral Indexes from Platts Energy Trader 10/1/15 (most recent data I could find quickly. This will vary year to year.

** This is based on our actual system simulation for the non-export case and takes into account station service (cogen plant fans, pumps, electronics, lights, etc) as well as heat recovery.

Another way to look at it is that our forecasted CO2 emissions for the plant are 2679 MT-CO2/year, which is 23.3% improvement = 814 MT-CO2/year reduction. Over 35 year life of system, that is 28,484 MT-CO2.

Thank you,

Nicole Flewell | Director of Sustainability
Taylor Fresh Foods, LLC.
Desk: (831) 676-9020
Cell: (831) 277-7054

From: Martin Carver [mailto:mcarver@zero.city]
Sent: Monday, December 18, 2017 11:02 AM
To: Nicole Flewell <nflewell@taylorfarms.com>
Cc: 'Maury Treleven' <mtr11@outlook.com>; 'Thomas Truskowski' <ttruskowski@ci.gonzales.ca.us>
Subject: RE: GHG Emission savings from Gonzales Wind Turbine

Dear Nicole:

I thought I had the details on Taylor Farm renewables but apparently not. Would you please let me know:

Measure E-2.5

34 kW of PV Installed

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP 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 these 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
\$2,000	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)
49,640	Annual Energy Production (kWh)
\$5,431	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 Climate Protection software.

Select Utility Region: WECO California (CMIX)



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)
17	31	26	28	3	25

Measure E-3.1

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. CAPP 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 E-4.1

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 E-4.2: Waste Reduction (69% Diversion)

2005 Population	8,391	Persons
2005 GHG Emissions (Solid Waste) ¹	1,988	MT CO ₂ e
2005 GHG Emissions per Person	0.237	MT CO ₂ e
2017 Population ²	8,549	Persons
2017 BaU GHG Emissions (Solid Waste)	2,025	MT CO ₂ e
2017 Diversion Rate Improvement (from 20% to 69%) ³	0.121	MT CO ₂ e
2017 Actual GHG Emissions	1,033	MT CO ₂ e
GHG Emission Reduction	992	MT CO ₂ e

Sources: ¹ AMBAG
 ² California Department of Finance
 ³ City of Gonzales. G3 Staff

Measure E-5.1

1	Number of CNG vehicles
---	------------------------

Community

-	Number of CNG vehicles
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Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP will assist you in estimating emissions and cost impacts and developing a local climate action plan using these values. Adjust as appropriate to your local circumstance by editing the blue cells below. Changes made to 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 Act Protection software.

Government Operations

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

Measure E-5.2: Government Operations Solar

Government Operations

129	kW of PV Installed
-----	--------------------

Community

	kW of PV Installed
--	--------------------

Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout the network. CAPP will assist you in estimating emissions and cost impacts and developing a local climate action plan on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. Changes made 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
\$2,000	Cost of PV installation (\$ per kW)
188,340	Annual Energy Production (kWh)
\$18,608	Annual Cost Savings
14	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)
0	Annual Energy Production (kWh)
\$0	Annual Cost Savings
#DIV/0!	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 Climate Protection software.

Select Utility Region:

Government Operations

(metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
65	116	100	107	12	94

Measure P-1.1: MBCP 100% Carbon-Free Power (Residential)

Year	GHG Emissions	Participation Rate	Net Emissions	Percent Scope 2 (Electricity)	GHG Reduction
2020	5,957	95%	5,659	30%	1,698
2030	13,062	95%	12,409	30%	3,723

Measure P-1.2: Residential Electrification Program (500 Existing Units)

Energy Source	MMBTU/ Year/ Dwelling Unit	Therms	GHG Emission Factor for Natural Gas (MT CO₂e/ Therm)¹	GHG Emission/ Year/ Dwelling Unit (MT CO₂e)	Dwelling Units Converted	GHG Emissions Saved (MT CO₂e)
Space Heater	21.4	214.05	0.00560219	1.20		
Water Heater	19.8	198.05	0.00560219	1.11		
Total	41.2	412.10	0.00560219	2.31	500	1,154

Notes: Assumes 1,500 square-foot home w/ four (4) occupants;
Source: ¹ CAPP

Measure P-1.3: Residential Electrification Program (New Residential)

2020

Energy Source	MMBTU/ Year/ Dwelling Unit	Therms	GHG Emission Factor for Natural Gas (MT CO ₂ e/ Therm) ¹	GHG Emission/ Year/ Dwelling Unit (MT CO ₂ e)	Dwelling Units Converted 2020	GHG Emissions Saved (MT CO ₂ e)
Space Heater	21.4	214.05	0.00560219	1.20		
Water Heater	19.8	198.05	0.00560219	1.11		
Total	41.2	412.1	0.00560219	2.31	149	344

Notes: Assumes 1,500 square-foot home w/ four (4) occupants;
Source: ¹ CAPP

2030

Energy Source	MMBTU/ Year/ Dwelling Unit	Therms	GHG Emission Factor for Natural Gas (MT CO ₂ e/ Therm) ¹	GHG Emission/ Year/ Dwelling Unit (MT CO ₂ e)	Dwelling Units Converted 2030	GHG Emissions Saved (MT CO ₂ e)
Space Heater	21.4	214.05	0.00560219	1.20		
Water Heater	19.8	198.05	0.00560219	1.11		
Total	41.2	412.1	0.00560219	2.31	2,617	6,042

Notes: Assumes 1,500 square-foot home w/ four (4) occupants;
Source: ¹ CAPP

Measure P-1.4: Urban Forest

2,200	Trees Planted
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Cost Impacts

The default values below are based on the reported collective experience of US local governments throughout network. CAPP will assist you in estimating emissions and cost impacts and developing a local climate action based on these values. Adjust as appropriate to your local circumstance by editing the blue cells below. **Char 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
15,400	Total Annual Energy Savings (kWh)
\$1,685	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 A Climate Protection software.

Select Utility Region

Community

CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
555	10	8	9	1	8

Measure P-2.1: MBCP 100% Carbon-Free Power (Existing C&I)

Year	GHG Emissions (MT CO₂e)	Participation Rate	Net Emissions (MT CO₂e)	Percent Scope 2 (Electricity)	2020 GHG Reduction (MT CO₂e)
2020	11,045	95%	10,493	89%	9,339

Measures P-2.2 and 2.3: MBCP 100% Carbon-Free Power (New C&I)
Gonzales Renewables Program (GRP)

	GHG Emissions (MT CO₂e)	Participation Rate	Net Emissions (MT CO₂e)	Percent Scope 2 (Electricity)²	2020 GHG Reduction (MT CO₂e)	2030 GHG Reduction (MT CO₂e)
GRP ¹	324	95%	308	89%	274	
MBCP	969	95%	920	89%		819
Total	1,937	95%	1,228	89%	274	819

Notes: ¹ Gonzales Renewable Program is expected to deliver 33.5% Renewable Power by 2021
Source: ² AMBAG

Measure P-3.1: Electric Vehicle Program

Community

800	Number of Electric Vehicles
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Cost Impacts

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

Government Operations

\$2.64	Price of Gasoline (\$ per gallon)
\$ 0.0988	Price of Electricity (\$ per kWh)
19.7	Miles per Gallon of Vehicle Replaced
12,042	Average Annual Miles per Vehicle
\$10,000	Incremental Cost of Electric Vehicle
0	Annual Gasoline Savings (gallons)
0	Annual Electricity Use (kWh)
\$0	Annual Cost Savings
#DIV/0!	Simple Payback (years)

Community

\$3.00	Price of Gasoline (\$ per gallon)
\$ 0.1094	Price of Electricity (\$ per kWh)
19.7	Miles per Gallon of Vehicle Replaced
12,042	Average Annual Miles per Vehicle
\$10,000	Incremental Cost of Electric Vehicle
386,761	Annual Gasoline Savings (gallons)
2,804	Annual Electricity Use (kWh)
\$1,099,999	Annual Cost Savings
5.5	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 Climate and Climate Protection software.

Select utility region

Utility Specific



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)
3,452	1,096	71	247,939	26,002	533

Measure P-4.1: Waste Reduction (75% Diversion)

Year 2020

2005 Population	8,391	Persons
2005 GHG Emissions (Solid Waste) ¹	1,988	MT CO ₂ e
2005 GHG Emissions per Person	0.237	MT CO ₂ e
2020 Population ²	8,605	Persons
2020 BaU GHG Emissions (Solid Waste)	2,142	MT CO ₂ e
2020 Diversion Rate Improvement (from 20% to 75%) ³	0.107	MT CO ₂ e
2020 Actual GHG Emissions	917	MT CO ₂ e
GHG Emission Reduction since 2005	1,071	MT CO ₂ e

Sources: ¹ AMBAG
² California Department of Finance
³ City of Gonzales, G3 Staff

Year 2030

2005 Population	8,391	Persons
2005 GHG Emissions (Solid Waste) ¹	1,988	MT CO ₂ e
2005 GHG Emissions per Person	0.237	MT CO ₂ e
2030 Population ²	16,194	Persons
2030 BaU GHG Emissions (Solid Waste)	4,698	MT CO ₂ e
2030 Diversion Rate Improvement (from 20% to 75%) ³	0.059	MT CO ₂ e
2030 Actual GHG Emissions	959	MT CO ₂ e
GHG Emission Reduction since 2005	1,029	MT CO ₂ e

Sources: ¹ AMBAG
² California Department of Finance
³ City of Gonzales, G3 Staff

Measure P-5.1: MBCP 100% Carbon-Free Power (Government Operations)

Year	GHG Emissions (MT CO₂e)	Participation Rate	Net Emissions (MT CO₂e)	Percent Scope 2 (Electricity)	GHG Reduction
2020	800	100%	800	55%	440
2030	841	100%	841	55%	463