THE PLANNING CENTER DC&E

March 19, 2013

Town of Danville
Sustainability Action Plan

DANVILLE

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Sustainability Action Plan

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EXECUTIVE SUMMARY

Since 2005, the State of California has passed significant new requirements intended to reduce greenhouse gas (GHG) emissions over the next several decades. The purpose of this Sustainability Action Plan is to encourage more environmentally sustainable practices in Danville, to help reach emission reduction targets that were adopted through Assembly Bill 32 in 2006. Unless otherwise required by State law, compliance is intended to be achieved through a combination of voluntary measures, and public education and outreach.

The SAP was prepared in 2011 and 2012 through a public process including four study sessions with the Danville Town Council and Planning Commission. The Plan was adopted concurrently with the Danville 2030 General Plan and an accompanying Environmental Impact Report (EIR), on March 19, 2013.

PLAN ORGANIZATION

The Sustainability Action Plan is composed of five chapters and two appendices, as follows:

- **Chapter 1 (Introduction)** describes the intent of the plan. It provides an overview of greenhouse gases, and the State and federal regulations which influence local GHG reduction strategies. This chapter also discusses the challenges to reducing GHG emissions and the categories used to classify emission reduction strategies. The Introduction also discusses the public outreach process used in the Sustainability Action Plan.
- **Chapter 2 (Existing Greenhouse Gas Emissions Inventory)** presents a summary of GHG emissions in Danville as of 2008 (the baseline year for the analysis). It quantifies transportation emissions, residential emissions, commercial/industrial emissions, water/wastewater emissions, solid waste disposal emissions, and other off-road emissions.
- **Chapter 3 (2020 Business as Usual and Adjusted Greenhouse Gas Emissions Inventory)** includes forecasts of GHG levels for the Year 2020 based on two different scenarios. The first scenario is referred to as "Business as Usual" and assumes no new proactive measures to reduce emissions. The second ("Adjusted") scenario factors in reductions that will result by 2020 from State and federal mandates.
- **Chapter 4 (Greenhouse Gas Emissions Reduction Target)** establishes a target of reducing GHG emissions by 15 percent between 2008 and 2020 (consistent with the California Air Resources Board directive), and compares this target against the forecasts in Chapter 3 to determine if there is a gap that needs to be filled by local measures.

- **Chapter 5 (GHG Reduction Measures, Implementation, and Monitoring)** presents strategies to contribute to efforts to reduce GHG emissions by 2020. The strategies are organized into six categories: (a) land use and transportation measures; (b) energy and green building measures; (c) recycling and waste reduction measures; (d) water and wastewater measures; (e) other/life-cycle measures; and (f) community outreach measures. For each measure, the text indicates the mechanism by which GHG emissions could be reduced, action items, responsible parties, and the estimated cost effectiveness of the measure (in other words, the level of benefit provided relative to the cost).

Appendix A provides a matrix summary of the measures and Appendix B provides technical data on the GHG analysis.

FINDINGS

BASELINE YEAR (2008) EMISSION LEVELS

In 2008, sources in Danville generated about 351,590 metric tons of CO_2 equivalent gases. The biggest source of greenhouse gas (GHGs) was transportation, which represented 45 percent of the Town's emissions. Residential energy use generated 34 percent of the Town's emissions, while non-residential energy use generated 7 percent. Other sources included solid waste disposal (7 percent), water and wastewater use (2 percent), and miscellaneous (5 percent).

PROJECTED EMISSION LEVELS FOR 2020: BUSINESS AS USUAL SCENARIO

Chapter 3 of the Sustainability Action Plan evaluates a "Business as Usual" Scenario—in other words, a continuation of current development patterns, energy consumption trends, construction practices, and travel behaviors. Under this scenario, GHG emissions would rise about 6 percent between 2008 and 2020, to 373,630 metric tons of CO_2 gases per year.

PROJECTED EMISSION LEVELS FOR 2020, WITH PROJECTED REDUCTIONS DUE TO STATE AND FEDERAL INTERVENTIONS

A second scenario considers the reductions that are likely to occur due to State and federal initiatives that are beyond the Town's control. For example, the second scenario considers State and federal requirements for more fuel-efficient cars and energy-efficient lighting. Taking these requirements into consideration, GHG emissions are projected to decrease in the near future rather than increase. The forecast indicates that emissions will drop to about 288,330 metric tons of CO_2 equivalent gases by 2020. This represents an 18 percent decrease from 2008 to 2020, which exceeds the 15 percent target recommended by the California Air Resources Board.

PROPOSED LOCAL GUIDELINES

Chapter 5 of the Sustainability Action Plan presents a list of proposed local guidelines and discusses potential benefits in terms of GHG reduction. A short overview of the strategies is presented below, in bullet form.

- **Land Use and Transportation Strategies:** Eleven strategies are listed. These are aimed at reducing driving by making it easier to work from home, carpool, walk, bicycle, or use public transportation. These strategies also cover traffic calming and shuttle buses, and many of these strategies are already in the Draft 2030 General Plan in some form. The effectiveness of these strategies would be measured based on their impact on the total number "vehicle miles traveled" (VMT) by persons living and working in Danville during a typical year.

- **Energy and Green Building Strategies:** Ten strategies are listed. Four of these have "sub-strategies" that are more detailed and specific. The energy and green building strategies include incentives for solar power, adoption of green building requirements, encouraging energy conservation, various partnerships with PG&E, and other programs to reduce non-renewable energy consumption. Most of the programs would be incentive-based.

- **Recycling and Waste Strategies:** Eight strategies are listed to reduce emissions associated with landfilled waste. For example, these measures require increasing the Town's construction and demolition material recycling requirements, requiring on-site recycling areas, and providing recycling receptacles Downtown.

- **Water and Wastewater Strategies:** Seven strategies are listed. These are intended to reduce water use, thereby reducing energy use related to water transport and wastewater treatment. Some of the measures in this section are already in effect.
- **Other/ Lifecycle Emission Source Strategies:** Six strategies are listed. These cover such topics as the use of gas powered machinery (leaf blowers, etc.), provision of outdoor electrical outlets, environmentally friendly purchasing programs, and so on.
- **Community Outreach Strategies:** Four potential strategies are listed to encourage climate change education and more sustainable behavior.

1 INTRODUCTION

Danville is a vibrant community with a family-friendly atmosphere and a high quality of life. Danville's convenient location, enviable climate, and civic pride make it an appealing location to live and work. Through thoughtful planning over the 30 years since incorporation in 1982, Danville has preserved its natural beauty, historic resources, and village character.

Under the leadership of the Town Council, the Planning Commission, and Town staff, and with input from the community, the Town is preparing an updated General Plan—concurrent with this Sustainability Action Plan—which is focused on maintaining a high quality of life and improving the environment . ***Sustainability*** is commonly defined as "using resources in the present in a manner that does not compromise the choices and quality of life of future generations." The updated General Plan recognizes a variety of ways sustainability goals can be met, including increasing alternative modes of transportation, maintaining a healthy local economy, and preserving open space.

This Sustainability Action Plan is one of the key implementation measures for the Danville 2030 General Plan. It is a detailed, long-range strategy to reduce greenhouse gas (GHG) emissions and achieve greater sustainability in transportation and land use, energy, water, solid waste, and other areas.

This Sustainability Action Plan addresses the major sources of GHG emissions in Danville and the strategies that the Town and community can encourage to attain and exceed the State GHG emissions reduction target. Implementation of this Sustainability Action Plan will guide Danville's efforts to meet ambitious emission reduction targets adopted by the State of California.

WHAT ARE GREENHOUSE GASES?

California State law identifies the following gases as GHGs:

- carbon dioxide (CO_2)
- methane (CH_4)
- nitrous oxide (N_2O)
- hydrofluorocarbons (HFCs)
- perfluorocarbons (PFCs)
- sulfur hexafluoride (SF_6).[1]

[1] California Health and Safety Code, Section 38505(g).

The most common GHG that results from human activity is carbon dioxide, followed by methane and nitrous oxide.

GHGs are measured in terms of their Global Warming Potential (GWP), using carbon dioxide as the benchmark. All GHGs have a GWP and this value is used to estimate the relative impact GHGs will have on global climate change. For instance, methane has a GWP of 21. This means a given amount of methane absorbs 21 times more heat than the same amount of carbon dioxide would absorb.

Based on the GWP, all GHGs can be converted into carbon dioxide equivalents, abbreviated as ***CO_2e***. The CO_2e is a quantity that describes the amount of carbon dioxide that would have the same global warming potential when measured over a specified period, generally 100 years. To calculate the CO_2e for a GHG, scientists multiply the mass (amount) of the gas emitted by the GWP of the gas. GHGs include, but are not limited to, the gases described below.

CARBON DIOXIDE (CO_2)

The primary source of carbon dioxide from human activity is burning fossil fuels such as petroleum, coal, and natural gas in factories, electrical power plants, cars, trucks, and similar sources. As explained above, the GWP for carbon dioxide is one.

METHANE (CH_4)

Methane is the primary component of natural gas, which is used for space and water heating, steam production, and power generation. The GWP of methane is 21, or 21 times that of carbon dioxide. Methane results from the process of organic decomposition. Modern landfills, agricultural operations, coal mines, and oil and natural gas operations are the primary sources of human-generated methane emissions.

NITROUS OXIDE (N_2O)

The majority of nitrous oxide produced by human activity is a result of agriculture, including nitrogen fertilizers and animal waste, which promote nitrous oxide production from naturally-occurring bacteria. Industrial processes and internal combustion engines also produce nitrous oxide. The GWP of nitrous oxide is 310, or 310 times that of carbon dioxide.

HYDROFLUOROCARBONS (HFCS)

Hydrofluorocarbons are typically used as foam-blown insulation and as refrigerants for both stationary refrigeration and mobile air conditioning. The GWP of hydrofluorocarbons ranges from 140 to 6,300. Hydroflourocarbons do not occur naturally; they are only produced from human-related sources.

PERFLUOROCARBONS (PFCS)

Perfluorocarbons are compounds consisting of carbon and fluorine, primarily created as by-products of aluminum production and semiconductor manufacturing. They are potent GHGs that range in GWP from 5,700 to 11,900. PFCs are a particular concern because it has been estimated that they remain in the atmosphere for up to 50,000 years after they are released. Perfluorocarbons do not occur naturally; they are only produced from human-related sources.

SULFUR HEXAFLUORIDE (SF_6)

This gas is most commonly used as an electrical insulator in high voltage equipment that transmits and distributes electricity. Sulfur hexafluoride, an extremely potent GHG, has a GWP of 23,900. However, its global climate change contribution is not as high as other GHGs because of its relatively small presence. Sulfur hexafluoride does not occur naturally; it is only produced from human-related activity.

OTHER COMPOUNDS

In addition to the six major GHGs discussed above, many other compounds have the potential to contribute to the greenhouse effect. Some of these substances have been identified as stratospheric[2] ozone depletors, and their gradual phase out is currently in effect. These compounds include ozone, 1,1,1—trichloroethane,[3] hydrochlorofluorocarbons, and chlorofluorocarbons.

REGULATORY ACTION

Many government agencies and organizations are working to develop and implement solutions to control GHG emissions and slow their effects on natural ecosystems. The major efforts are described in this section.

[2] The stratosphere is the layer of the earth's atmosphere above the troposphere.

[3] 1,1,1—trichloroethane was used as an industrial solvent before being banned under the Montreal Protocol in 1996.

FEDERAL LAWS AND REGULATIONS

The United States has relatively limited federal regulations and policies related to GHG emissions. However, in December 2009, the US Environmental Protection Agency (EPA) found that elevated concentrations of the six key GHGs in the atmosphere, which are discussed earlier in this chapter, endanger the public health and welfare of current and future generations. These findings were consistent and in compliance with the 2007 US Supreme Court decision in *Massachusetts vs. EPA*, which found that the EPA can regulate GHG pollution under the Clean Air Act. While the EPA's endangerment finding does not automatically impose any requirements, it allowed EPA to finalize GHG emission standards for light-duty vehicles in May 2010 and heavy-duty vehicles in August 2011. These GHG emissions standards were developed in collaboration with the National Highway Traffic Safety Administration. Additionally, on January 2, 2011, the EPA announced that it would regulate GHG emissions from major stationary sources, including oil refineries and fossil fuel burning power plants, through modifications to the existing Clean Air Act permitting programs.

STATE LAWS AND REGULATIONS

California has been a leader among states in passing legislation to reduce GHG emissions. Major laws and regulations are described below.

ENERGY EFFICIENCY STANDARDS (1978)

Title 24, Part 6 of the California Code of Regulations, Energy Efficiency Standards for Residential and Nonresidential Buildings, was established in 1978 to address a legislative mandate to reduce the State's energy consumption. The standards are updated roughly every three years to incorporate new energy efficiency goals, methods, and technologies. The 2008 standards went into effect on January 1, 2010, and require buildings to be approximately 15 percent more energy-efficient compared to the 2005 standards. These standards are also discussed in Chapter 3 of this Plan.

CLEAN CAR REGULATIONS (ASSEMBLY BILL 1493, 2002)

Assembly Bill (AB) 1493, Clean Car Regulations (commonly known as the "Pavley law"), directed the California Air Resources Board (CARB) to adopt regulations to decrease GHG emissions from new passenger vehicles and light duty trucks beginning with the 2009 model year. These standards are discussed further in Chapter 3 of this Plan.

EXECUTIVE ORDER S-3-05 (2005)

In 2005, the California Governor signed Executive Order S-3-05, which established the goals of reducing emissions to 2000 levels by 2010, to 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. The Executive Order identified the California Environmental Protection Agency (Cal/EPA) as the lead coordinating State agency for establishing global climate change emission reduction targets in California, and designated a "Climate Action Team," a multi-agency group of State agencies, to implement Executive Order S-3-05. GHG emission reduction strategies and measures to reduce global warming were identified by the California Climate Action Team in 2006.

GLOBAL WARMING SOLUTIONS ACT (AB 32, 2006)

In 2006, the California Governor signed AB 32, the Global Warming Solutions Act, into law. The Act requires that California cap its GHG emissions at 1990 levels by 2020. AB 32 also requires that CARB identify discrete early actions to reduce emissions that could be implemented immediately and develop a statewide scoping plan to identify how to meet the emissions reduction targets.

CARB identified a list of nine early actions, including landfill methane gas capture, the Low Carbon Fuel Standard (LCFS) that is discussed further below, and a tire pressure program. CARB's Climate Change Scoping Plan, adopted in December 2008, outlines regulations, market mechanisms, and other actions to achieve the maximum technologically-feasible and cost-effective reductions in GHG emissions by 2020. The Scoping Plan recommends achieving a statewide energy mix with 33 percent from renewable energy sources, developing a California cap-and-trade program that will be part of a regional carbon market through the Western Climate Initiative, and expanding and strengthening existing energy efficiency programs and building and appliance standards.

EXECUTIVE ORDER S-01-07 (2007)

Executive Order S-01-07, signed by the California Governor in 2007, establishes a LCFS for transportation fuels sold in California. This standard, which is also discussed in Chapter 3, will reduce the carbon content of passenger vehicle fuels in California by at least 10 percent by 2020.[4]

[4] On December 29, 2011, the US District Court for the Eastern District of California issued several rulings in federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoins CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Ninth Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision.

SUSTAINABLE COMMUNITIES (SB 375, 2008)

In 2008, California enacted Senate Bill (SB) 375 to augment AB 32. SB 375 establishes emissions reduction goals that regions must plan to meet. Under SB 375, the 18 MPOs in California must prepare a "sustainable communities strategy" to reduce the vehicle miles traveled (VMT) in their regions and demonstrate their ability to reach the CARB targets for 2020 and 2035. SB 375 also includes incentives to create walkable and attractive communities and to revitalize existing communities. The legislation also allows developers to streamline environmental reviews under CEQA if they build projects consistent with the new sustainable communities strategies.

HEAVY DUTY VEHICLE GHG EMISSIONS REDUCTION MEASURE (2008)

In December 2008, CARB adopted the Heavy Duty Vehicle GHG Emission Reduction Measure, which requires long-haul truckers to retrofit their trailers with fuel efficient tires and aerodynamic devices. This requirement will improve the fuel economy of heavy duty vehicles, reducing GHG emissions.

SULFUR HEXAFLUORIDE EMISSIONS REDUCTIONS MEASURES

In February 2010, CARB adopted regulations to reduce sulfur hexafluoride emissions from semiconductor applications, and in January 2011, CARB began implementation of measures to reduce emissions of sulfur hexafluoride from non-semiconductor applications. These measures include reporting and reduction requirements for semiconductor operations as well as new restrictions on the use and sale of sulfur hexafluoride.

REGIONAL POLICIES AND MEASURES

Danville is situated within the Bay Area Air Quality Management District (BAAQMD), and thus is subject to the policies and measures of this agency. BAAQMD initiated the regional Climate Protection Program in 2005. The Program includes a variety of measures, including outreach, data collection, and technical assistance, among others, in an effort to move toward GHG reductions. In May of 2008, BAAQMD adopted a first-of-its-kind program to charge large stationary sources for their GHG emissions. All pollution sources for which an air quality permit is required are now also required to estimate their GHG emissions and pay a fee of $0.042 per metric ton of carbon dioxide equivalent ($MTCO_2e$).

The Metropolitan Transportation Commission (MTC) has committed the Bay Area region, including Danville, to a 15 percent reduction in GHGs by 2035. While these efforts set planning goals and include policies to promote more efficient land use, neither the Association of Bay Area Governments (ABAG) nor MTC have direct jurisdiction over local land use policies.

SUSTAINABILITY CHALLENGES

This section describes sustainability challenges related to the sectors covered in this Sustainability Action Plan.

TRANSPORTATION AND LAND USE

During the second half of the 20th century, transportation and driving patterns in the US shifted dramatically. Vehicle miles traveled (VMT) per person increased by around 140 percent between 1956 and 1998.[5] This growth in VMT is the result of increasing car trips and increasing average trip length. These increases are due to a variety of factors, including changes in demographics, land use, urban design, and public transportation systems. It means that the number of miles driven in America has increased much more dramatically than population has increased.

As the proportion of two-income households grew and as jobs shifted to areas further from the traditional urban core, lengthy car commutes became increasingly common. This has been true of Danville, as many residents work outside of Danville in places like San Ramon, Walnut Creek, San Francisco, and Silicon Valley. In addition, changes in land use and in building and streetscape design likewise contributed to increased car trips. Emphasis on the separation of uses and driver convenience often came at the disadvantage of pedestrians and other non-automotive users. As commercial areas became more disconnected from residential neighborhoods, it became less convenient to reach these destinations by means other than a car. Auto-oriented designs, which can be unpleasant, intimidating, or even dangerous for non-drivers, have made non-automotive transportation modes more difficult and less appealing to use. Additionally, public transit systems have seen their coverage decreased and their services cut as funding has declined, and in some cases they have been removed completely.

[5] Puentes, Robert and Adie Tomer, 2008, *The Road…Less Traveled: An Analysis of Vehicle Miles Traveled Trends in the US,* Brookings Institution, Washington D.C.

Because of the impediments created by development and design, driving is often the only viable mode of transportation. Consequently, residents have fewer opportunities for physical activity, and those who cannot drive, including children, the frail elderly, and disabled people, can have trouble accessing services.

ENERGY

Energy production is a major economic, security, and environmental challenge at the local, national, and global levels. Although Danville receives its energy from Pacific Gas & Electric Company (PG&E), which provides an energy mix that is much cleaner than what many other US utilities provide, it still relies on fossil fuels – coal, oil, and natural gas – for about half of its energy.[6]

The US imports much of its petroleum from foreign countries, a dependence that makes our economy and security vulnerable to political and resource instability in other parts of the world. Efforts are underway at the state and national levels to reduce foreign oil dependence. In 2011, the country imported just 45 percent of the liquid fuels it used, down from a record high of 60 percent in 2005.[7]

The combustion of fossil fuels to produce heat or electricity, or to power internal combustion engines, is a main contributor to GHG emissions and other environmental problems. Because fossil fuels are found deep in the ground, they must be extracted and transported to provide energy. Surface and groundwater pollution can occur during extraction, storage, and transportation. Land subsidence can result when oil and gas are removed from below ground with nothing left to support the land above. There is also the potential for storage tank leakage and oil spills during transportation, causing widespread pollution and requiring costly cleanup efforts.

WATER

Water conservation is important both to protect water resources and to reduce the GHG emissions that occur when water is treated and transported.

Though the 2010–2011 water year brought some relief to drought conditions in California, the winter of 2011-2012 marked the fourth year of dry conditions within the past five. The

[6] Pacific Gas and Electric website, http://www.pge.com/myhome/environment/pge/cleanenergy/, accessed on May 1, 2012.

[7] New York Times. March 22, 2012. *US Inches Toward Goal of Energy Independence.*

year 2009 featured the driest spring and summer on record, low water content in the Sierra snowpack, and a historic low in the State's reservoir levels. In 2008, the Sacramento and San Joaquin River systems that provide a large portion of the State's reservoir inflow were classified as Critically Dry. As of early 2009, the drought had damaged crops and prevented farmers from planting or replanting 100,000 acres of agricultural land, causing agricultural revenue losses of more than $300 million.[8] Such drought conditions also threaten aquatic ecosystems, increase the risk of wildfires, increase food prices, and harm livelihoods dependent on agriculture, natural resources, and tourism. Responding to these wide-ranging impacts, the California Governor proclaimed a State of Emergency in February 2009, calling for an immediate 20 percent reduction in water use by urban water users and the use of efficient water management practices by agricultural users.[9] Although the State of Emergency was declared over in March 2011, future shortages are likely and conservation remains an imperative throughout California.

Solid Waste

The production and transport of consumer products creates large amounts of GHGs. A large percentage of these products are disposed of after only one use, requiring more raw materials to be extracted to replace these products. Making new products or buildings from raw materials generally requires more energy, uses more water, and creates more air and water pollution than reusing materials or making the same product from recycled materials, thereby increasing GHG emissions.

Once in the landfill, solid waste continues to emit GHGs, most notably methane, which is approximately 21 times more potent than carbon dioxide in terms of its global warming impacts.[10] Landfills also release harmful contaminants such as vinyl chloride and benzene. In addition, the combination of rainwater and other liquids with layers of solid waste at landfills produces leachate, a harmful substance that contains contaminants such as benzene and volatile halocarbons.[11] Leachate causes soil, surface water, and groundwater contamination.

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[8] Office of the Governor, State of California, February 27, 2009, Press Release, *Gov. Schwarzenegger Takes Action to Address California's Water Shortage.*

[9] Office of the Governor, State of California, February 27, 2009, Press Release, *Gov. Schwarzenegger Takes Action to Address California's Water Shortage.*

[10] US Environmental Protection Agency website, http://www.epa.gov/outreach/scientific.html, accessed on May 1, 2012.

[11] US Environmental Protection Agency website, http://www.epa.gov/waste/nonhaz/municipal/landfill/bioreactors.htm, accessed on March 1, 2010.

The GHG emissions and other environmental problems associated with solid waste can be reduced through increased diversion from landfills by reducing consumption, reusing, and recycling.

TREE COVER

Within its Planning Area, Danville has approximately 4,900 acres of open space and 1,400 acres of agricultural land. In addition, many Danville's neighborhoods include a dense canopy of trees and shrubs, which store (or "sequester") carbon. Trees in open space and urbanized areas provide the double benefit of removing carbon dioxide from the atmosphere and reducing cooling costs through shading.

PUBLIC OUTREACH AND PARTICIPATION FOR THE SUSTAINABILITY ACTION PLAN

The Sustainability Action Plan was considered at four joint study sessions of the Danville Town Council and Planning Commission prior to being presented for adoption. An initial study session was held in April 2011 prior to starting the Plan to inform the community about the principles of sustainability planning and the tasks to be performed. A second study session was held on February 28, 2012 to review the types of measures that might be considered in the Plan. Based on feedback from that meeting, and a review of successful measures in other California and Bay Area communities, a preliminary list of GHG reduction measures was prepared for discussion. On July 17, 2012, the Town Council and the Planning Commission held a Joint Study Session to discuss these measures. The meeting included a formal presentation, including the results of local greenhouse gas modeling and forecasts.

Participants were given the opportunity to view and comment upon comprehensive lists of potential GHG reduction measures, as well as to suggest other potential measures. These comments served to influence which measures were emphasized and included in the Sustainability Action Plan.

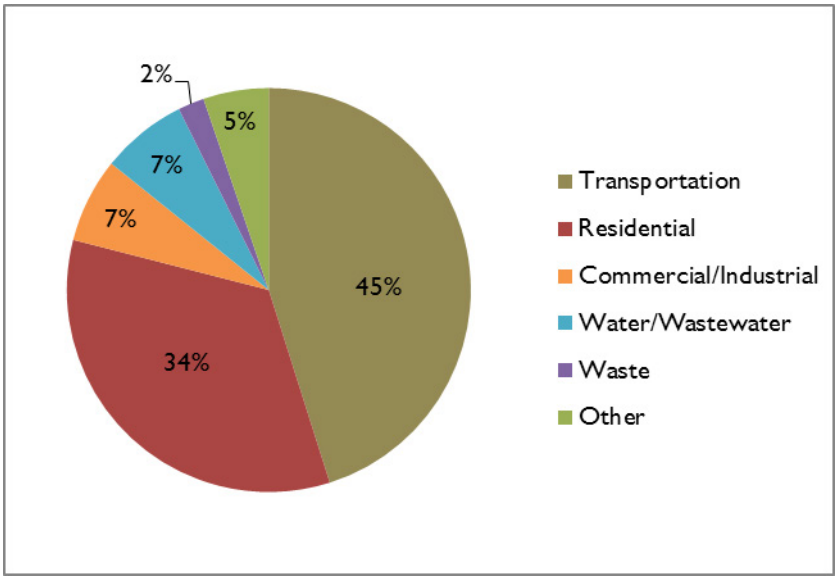
These preliminary measures were then reviewed by Town staff from multiple departments. A fourth study session was held on September 18, 2012 to review the Draft Plan with the Planning Commission and Town Council. Additional revisions were made to incorporate comments provided at that meeting.

2 EXISTING GREENHOUSE GAS EMISSIONS INVENTORY

This chapter summarizes existing greenhouse gas (GHG) emissions in the Town of Danville (Danville) resulting from the following sectors: transportation, residential and commercial/industrial energy use, water and wastewater, solid waste disposal, and other sources.

Danville's baseline GHG inventory was compiled for the year 2008. While 2008 is being used as the baseline year for the inventory, it is noted that, consistent with accepted GHG emission analysis protocol, the three-year average from 2006 and 2008 for GHG emissions was incorporated into the baseline calculations for emissions associated with energy use, waste disposal and water use. This was done to acknowledge that these components fluctuate based on year-specific meteorological conditions (e.g., precipitation and temperatures). Danville's average annual communitywide GHG emissions in 2008 was 351,590 metric tons of carbon dioxide equivalent ($MTCO_2e$). (See Chapter 1 for an explanation of carbon dioxide equivalent.) The results of the inventory are shown in Figure 2-1. Appendix B provides the technical documentation for this inventory.

FIGURE 2-1 **GREENHOUSE GAS INVENTORY - 2008**



TRANSPORTATION EMISSIONS

Transportation sources of GHG emissions are a result of fuel combustion from the burning of fossil fuels, including gasoline and diesel, and from on-road mobile sources (e.g. passenger vehicles and trucks). Transportation emissions are based on trips generated by land uses within Danville. Transportation emissions include 100 percent of trips that both begin and end within Danville. For trips from Danville to somewhere else (internal-external trips) and trips from somewhere else to Danville (external-internal trips), only 50 percent of the trip length is included as part of the inventory. This is the standard protocol for the calculation of emissions related to transportation. For pass-through trips that neither begin nor end in Danville, such as cars driving from Walnut Creek to San Ramon on Interstate 680, none of the trip length is included as part of inventory.

Vehicle miles traveled (VMT) generated by land uses within Danville was compiled by Fehr and Peers for 2010 and normalized to the year 2008 using the change in service population from 2008 to 2010.[1] The appendices to this Plan may be consulted for further detail on how VMT was calculated. GHG emissions from those VMT were then compiled by The Planning Center | DC&E using the California Air Resources Board's (CARB) Emissions Factors 2011 (EMFAC2011) program and are shown in Table 2-1.

RESIDENTIAL EMISSIONS

Residential land uses generate GHG emissions primarily from purchased electricity and natural gas used for heating and cooking.[2] Pacific Gas and Electric Company (PG&E) provided residential purchased energy use and natural gas use for years 2006 to 2008. This data is shown in Table 2-2.

[1] Service Population refers to the sum of persons living in the Danville Planning Area and persons working in the Danville Planning Area but living somewhere else.

[2] Burning wood is considered a biogenic source of carbon dioxide because the carbon is associated with recently living organic material. Biogenic sources of GHG emissions are not included as part of the GHG inventory.

TABLE 2-1 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM TRANSPORTATION SOURCES**

Vehicle Miles Traveled		GHG Emissions $MTCO_2e$ /Year
Daily	Annual	
936,783	325,063,750[a]	158,620[b]

Notes:
a. Daily VMT is multiplied by 347 days/year to calculate Annual VMT to account for reduced traffic on weekends and holidays, consistent with the CARB methodology within the Climate Change Scoping Plan Measure Documentation Supplement.
b. Emissions are rounded to the nearest tens place.
Source: California Air Resources Board's Emissions Factors 2011 (EMFAC2011) program.

TABLE 2-2 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM RESIDENTIAL LAND USES[a]**

Source	Energy Usage	GHG Emissions $MTCO_2e$ /Year
Residential Building Purchased Energy	167,972,519 kWh[b][c]	44,239
Residential Building Natural Gas	11,230,720 therms[b]	74,876
Total		**119,114**

Notes:
c. Excludes properties owned by another governmental entity that are outside the land use authority of the Danville (i.e. County or State jurisdiction).
d. Based on the three-year average energy use from 2006 to 2008, and based on PG&E's third-party verified emission factors.
e. "kWh" = kilowatt hours.
Source: Pacific Gas and Electric Company.

COMMERCIAL/INDUSTRIAL EMISSIONS

This category includes GHG emissions associated with commercial, office, and industrial land uses. These land uses generate GHG emissions primarily from purchased electricity and natural gas used for heating and cooking (e.g., restaurants). PG&E provided data on non-residential purchased energy and natural gas use for years 2006 to 2008, as shown in Table 2-3.

TABLE 2-3 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM COMMERCIAL/INDUSTRIAL LAND USES**[a]

Source	Energy Usage	GHG Emissions $MTCO_2e$ /Year
Non-Residential Building Purchased Energy	58,056,674 kWh [b][c]	15,290
Non-Residential Building Natural Gas	1,277,747 therms [b]	8,519
Total		**23,809**

Notes:
a. Excludes properties owned by another government entity that are outside the land use authority of the Danville (i.e., County or State jurisdiction).
b. Based on the three-year average energy use 2006–2008 and based on PG&E's third-party verified GHG emission factors.
c. "kWh" = kilowatt hours.
Source: Pacific Gas and Electric.

WATER/WASTEWATER EMISSIONS

Water demand and wastewater generation in Danville result in indirect GHG emissions from the energy required to convey, treat, and distribute potable water and from emissions of methane and nitrous oxide from wastewater treatment that are not captured within the wastewater treatment system. Table 2-4 shows GHG emissions from Danville's water use and wastewater generation.

Wastewater treatment processes produce "fugitive" GHG emissions. Under anaerobic conditions, microorganisms biodegrade soluble organic material in wastewater during both nitrification and de-nitrification and generate emissions of nitrous oxide, a GHG. These are shown in Table 2-4 as Fugitive Emissions. For the purposes of comparison to other emissions sources, these emissions are converted to CO_2e. The vast majority of households and businesses in Danville are connected to the Town's sanitary sewer system.

TABLE 2-4 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM WATER USE AND WASTEWATER TREATMENT**

	Energy (Megawatt Hours/Year)[a]	Energy Emissions ($MTCO_2e$/ Year)[b]	Fugitive Emissions ($MTCO_2e$/ Year)	Total GHG Emissions ($MTCO_2e$/ Year)
Water Use	67,486	17,804	--	17,804
Wastewater Treatment	16,581	4,375	2,036	6,411
Total	**84,068**	**22,179**	**2,036**	**24,215**

Notes:
a. Energy associated with water conveyance, treatment, and distribution, and wastewater treatment.
b. Based on GHG emission factors provided by the California Energy Commission (2006) and PG&E.
Source: Pacific Gas and Electric.

Wastewater from Danville is treated at the Central Contra Costa Sanitary District Treatment Plant near Martinez, California. Treated water is discharged as fresh water into Suisun Bay.

SOLID WASTE DISPOSAL EMISSIONS

Treatment and disposal of solid waste produces a significant amount of methane, a GHG. Most operating landfills in California also implement a landfill gas recovery system as a common way to reduce methane emissions from solid waste disposal. Although solid waste disposal sites produce biogenic carbon dioxide, biogenic sources of GHG emissions are not included as part of a communitywide GHG inventory.

The California Department of Resources Recycling and Recovery (CalRecycle) maintains a disposal reporting system (DRS) to document waste disposal by jurisdiction and facility. This system was used to access the data needed to identify GHG emissions from solid waste generated in Danville. The system tracks solid waste disposal and alternative daily cover (ADC) that is used as a temporary overlay on an exposed landfill face to reduce insects and vermin. Typical ADC materials include green materials, sludge, ash and kiln residue, compost, construction and demolition debris, and special foams and fabric; these materials contribute to the total solid waste disposal documented for Danville.

TABLE 2-5 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM WASTE DISPOSAL**

CO_2e Generated (Metric Tons/Year)[a][b]	Fugitive CO_2e Not Captured (Metric Tons/Year)[c]
29,534	7,383

Notes:
a. Biogenic carbon dioxide is not included.
b. An aggregated three years of emissions was used to account for cumulative disposal (waste-in-place).
c. Assumes a landfill gas control efficiency of 75 percent based on the LGOP.
Source: US EPA, February 2012, Waste Reduction Model (WARM), Version 12.

The US Environmental Protection Agency's Waste Reduction Model (WARM), Version 12, was used to calculate average annual GHG emissions from communitywide waste disposed in a given year. Pursuant to the Bay Area Air Quality Management District's (BAAQMD) methodology, a three-year average (2006 to 2008) was compiled. According to the CalRecycle DRS, between 2006 and 2008, Danville disposed of an average of 37,208 tons of solid waste and 12,452 tons of ADC, for a total disposal of 49,660 tons of solid waste. The vast majority of solid waste generated by Danville is disposed of by the Central Contra Costa Solid Waste Authority, which uses two landfills: the Keller Canyon Landfill in Pittsburg, CA and the Acme Landfill in Martinez, CA.[3] A landfill gas control efficiency of 75 percent was assumed based on the default value recommended by the Local Governments Operations Protocol (LGOP). However, most large landfills have clay or geomembrane covers, which have gas collection efficiencies of 85 to 90 percent, respectively.[4] Therefore, GHG emissions estimates for Danville from waste disposal are conservative. Table 2-5 shows total GHG emissions from waste disposal for Danville.

OTHER OFF-ROAD EMISSIONS

Other sources of GHG emissions include the combustion of fossil fuels for off-road stationary equipment, such as landscaping, agricultural, and construction equipment; these sources are summarized in Table 2-6. This category represents GHG emissions from off-road equipment for the following types of equipment used within Danville:

[3] CIWMB website, http://www.calrecycle.ca.gov/profiles/Facility/Landfill/LFProfile1.asp?COID=7&FACID=07-AA-0032, accessed August 16, 2011.

[4] BAAQMD, 2008, *Greenhouse Gas Mitigation Landfill Gas and Industrial, Institutional, and Commercial Boilers, Steam Generators and Process Heaters*, prepared by URS Corporation.

TABLE 2-6 **BASELINE COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM OTHER OFF-ROAD EMISSIONS**

Source	GHG Emissions ($MTCO_2e$/Year)
Agricultural Equipment	105
Construction Equipment	16,393
Lawn & Garden Equipment	869
Light Commercial Equipment	1,070
TOTAL	**18,437**

Sources: (1) OFFROAD Model, based on information from County of Contra Costa, Department of Agriculture (2011). (2) 2010 Contra Costa County Crop Report. (3) Draft Danville 2030 General Plan Land Use Map. (4) Association of Bay Area Governments, 2009.

- Agricultural equipment such as tractors and combines.
- Off-road construction equipment, such as bulldozers, cranes, backhoes, and trucks.
- Landscaping equipment, including blowers, mowers, and other landscaping tools.
- Light commercial and industrial equipment, including generators, pressure washers, welders, and pumps.

SECTORS NOT INCLUDED

INDUSTRIAL GHG EMISSIONS

Industrial sources of GHGs typically include emergency diesel engines, soil vapor extraction remediation projects, utility energy generation, and various manufacturing operations that use heating boilers and operate metal coating facilities.[5] Danville has very few industrial stationary point sources of GHG emissions, and those that do exist are very small. Industrial sources are regulated by BAAQMD. Because BAAQMD regulates these sources and applies its own fees to their emissions, such emissions are not under the jurisdiction of Danville and are not included in the Danville GHG inventory or forecasts. In 2008 BAAQMD issued six

[5] Soil vapor extraction is an in place soil remediation process where contamination is removed from soil by carrying it out through a medium such as air or steam. For suburban settings, this process would typically involve soil remediation for contamination resulting from leakage of underground tanks.

permits for GHG emitting facilities in the Danville area, and together these accounted for approximately 100 $MTCO_2e$ in emissions.[6] To provide context for this data, had these emissions been included, they would have accounted for just under 0.03 percent of Danville's total GHG emissions. Relative to other communities of Danville's size, the number of BAAQMD permits and related emissions is low.

CARBON STOCK/CARBON SEQUESTRATION

The carbon stock/carbon sequestration sector is traditionally included as "other emissions" for forests and agricultural land. As described in Chapter 1, Danville has 1,400 acres of agricultural land. Development of agricultural land can result in the release of nitrous oxide emissions from soil oxidation and carbon dioxide emissions from removal of plant materials that store carbon. The amount of biomass stored in agricultural areas within Danville's boundary does not constitute a substantial portion of its GHG emissions. Therefore, carbon stock from agricultural biomass is not included in this GHG emissions inventory.

If future projects result in the removal of a significant amount of biomass that is not planned for in the General Plan, then the net loss of such materials should be accounted for or described in the project's GHG emissions inventory. However, future projects that are consistent with the General Plan and Sustainability Action Plan would not be required to account for removal of biomass in the project's inventory. Only projects that are not consistent with the General Plan (e.g. development in an area that the General Plan designates as open space) would be required to account for biomass removal.

MUNICIPAL EMISSIONS

Emissions from Danville government operations are a very small percentage of the overall emissions within Danville's town limits. Therefore, the focus of this Sustainability Action Plan is on communitywide GHG emissions and on measures to reduce those emissions. While the measures in the Sustainability Action Plan will apply to the Town of Danville and will serve to reduce the emissions from its municipal operations, such reductions will not significantly affect the overall amount of GHGs emitted. The GHG emissions reductions from changes to municipal operations are too small to quantify accurately. Because the reductions from municipal measures were not quantified, the baseline municipal GHG emissions were not quantified as part of this inventory.

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[6] Young, Abby. Principle Environmental Planner, Bay Area Air Quality Management District (BAAQMD). Personal email communication with Eric Panzer, The Planning Center | DC&E, April 4, 2012. (Email included spreadsheet of data from BAAQMD records.)

3 2020 BUSINESS AS USUAL AND ADJUSTED GREENHOUSE GAS EMISSIONS INVENTORY

This chapter summarizes forecasted greenhouse gas (GHG) emissions in the year 2020 in the Town of Danville (Danville) generated by the GHG sectors included in the baseline emissions inventory. This chapter discusses two forecast year scenarios:

A. Business as usual (BAU) conditions; and

B. Conditions after adjusting for known State and federal regulations and standards that will be in effect by the year 2020.

BUSINESS AS USUAL FORECAST

In its Scoping Plan, the California Air Resources Board (CARB) defines BAU as emissions levels that would occur if California continued to grow and add new GHG emissions, but did not adopt any measures to reduce emissions.

For Danville's BAU forecast, projections for each emission-generating sector were compiled and used to estimate emissions for 2020. Under CARB's definition of BAU, new growth in Danville is assumed to have the same carbon intensities as 2008. Table 3-1 shows Danville's projected population, housing, non-residential building square footage, and employment in 2020, which were identified based on California Department of Finance estimates, the Association of Bay Area Government's (ABAG) growth projections, census data, and past permit history. Table 3-1 totals the number of residents and number of employees working in Danville to arrive at the "service population." Since both residents and workers in a community contribute to that community's GHG emissions, GHG analyses frequently refer to "service population" rather than the standard population, which captures only residents. The table includes population and employment within the unincorporated Planning Area (including developed subdivisions east of Danville such as Alamo Creek and Bettencourt Ranch) as well as population and employment within the town boundaries.

Table 3-2 identifies the baseline communitywide GHG emissions inventory and 2020 BAU emissions projection for Danville based on the assumptions for the individual GHG emissions sectors described in Section C.

Appendix B provides technical documentation for the BAU and adjusted forecasts.

TABLE 3-1 **BASELINE (2008) AND 2020 POPULATION, EMPLOYMENT, AND HOUSING PROJECTIONS**[a]

	Baseline (2008)[b]	2020 Forecast[c]	Percent Change from Existing
Population	46,536	49,846	7.1%
Employment	15,162	15,838[d]	4.5%
Service Population[e]	61,698	65,684	6.5%

Notes:
a. Baseline and forecast population and employment are based on estimates and projections provided by the Town of Danville and Barry Miller, subsequent to the development of the 2030 General Plan and EIR. Figures include Town of Danville plus unincorporated Planning Area.
b. Population and employment data for the year 2008 were interpolated from 2000 and 2010 estimates.
c. 2020 forecasts were interpolated from 2000, 2010, and 2030/35 projections, with 2020 forecasts accounting for anticipated growth from planned developments and from the Housing Opportunity Sites identified in the Draft EIR.
d. Projections of employment accounted for both gains from new commercial uses and losses from the replacement of existing commercial uses.
e. Population plus employment.
Source: Town of Danville - Development Services Department, 2012.

ADJUSTED FORECAST

State and federal regulations have been adopted that will require reductions in GHG emissions from a wide range of activities, including how energy is generated and how vehicle fuels are formulated. These GHG reductions will occur regardless of any measures that Danville implements upon the adoption of this Sustainability Action Plan. Therefore, the BAU forecast can be adjusted to reflect these reductions, which helps to demonstrate the extent of additional GHG emissions reduction actions required by Danville to achieve the Town's target, as discussed further in Chapter 4. However, it should be noted that these reductions are only applied for measures which will be implemented at the State or federal level. State regulations like AB 341, which requires municipalities to achieve 75 percent solid waste diversion by 2020, will be implemented by Danville and not by the State. Therefore, these reductions are not included in the adjusted forecast. Instead, they are attributable to Danville and are included with the measures and reductions described in Chapter 5 of this Sustainability Action Plan

TABLE 3-2 **BASELINE AND FORECAST YEAR 2020 BUSINESS AS USUAL COMMUNITYWIDE GREENHOUSE GAS EMISSIONS SUMMARY** [a]

	2008 Baseline GHG Emissions ($MTCO_2e$/Year)	2020 BAU GHG Emissions ($MTCO_2e$/Year)	Increase from Baseline ($MTCO_2e$/Year)
Transportation[b]	158,620	169,290	10,670 (6.9%)
Residential[c]	119,120	127,360	8,240 (6.9%)
Commercial-Industrial[c]	23,810	24,890	1,080 (4.5%)
Water/Wastewater[d]	24,220	25,750	1,530 (6.3%)
Solid Waste Disposal[e]	7,380	7,850	470 (6.4%)
Other Off-Road Emissions[f]	18,440	18,490	50 (<0.1%)
Total	**351,590**	**373,630**	**22,040 (6.3%)**

Notes:
a. Emissions are rounded to the nearest tens place.
b. EMFAC2011 based on VMT provided by Fehr and Peers.
c. Natural gas and purchased energy provided by PG&E.
d. LGOP Version 1.1 based on water/wastewater use in Danville.
e. US EPA WARM model based on waste disposal obtained from CalRecycle.
f. Estimate of stationary equipment use for landscaping, light commercial and industrial, and construction equipment, based on OFFROAD model (See Other Emissions section, below).

Sources: (1) The Planning Center | DC&E; Fehr and Peers, 2012. (2) Pacific Gas and Electric, 2012. (3) East Bay Municipal Utilities District, 2012. (4) County of Contra Costa, Department of Agriculture, 2011. (5) 2010 Contra Costa County Crop Report. (6) Draft Danville 2030 General Plan - Land Use Map. (7) Association of Bay Area Governments, 2009.

Table 3-3 identifies the adjusted forecast year 2020 GHG emissions inventory based on State and federal GHG regulations and programs currently in place. This adjusted forecast accounts for GHG reductions from the State and federal regulations described below.

TABLE 3-3 **BASELINE AND ADJUSTED FORECAST YEAR 2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS SUMMARY**[a]

	2008 Baseline GHG Emissions (MTC_2e/Year)	2020 Adjusted GHG Emissions ($MTCO_2e$/Year)	Decrease from Baseline ($MTCO_2e$/Year)
Transportation[b]	158,620	129,920	-28,700 (-18.1%)
Residential[c]	119,120	102,840	-16,280 (-13.7%)
Commercial-Industrial[c]	23,810	16,760	-7,050 (-29.6%)
Water/Wastewater[d]	24,220	14,220	-10,000 (-41.3%)
Solid Waste Disposal[e]	7,380	7,850	470 (6.6%)
Other Emissions[f]	18,440	16,640	-1,800 (-9.8%)
Total	**351,590**	**288,330**	**-63,360 (-18.0%)**

Notes:
a. Emissions are rounded to the nearest tens place.
b. EMFAC2011 based on VMT provided by Fehr and Peers.
c. Natural gas and purchased energy provided by PG&E.
d. LGOP Version 1.1 based on water/wastewater use in Danville.
e. US EPA WARM model based on waste disposal obtained from CalRecycle.
f. Estimate of stationary equipment use for landscaping, light commercial and industrial, and construction equipment, based on OFFROAD model (See Other Emissions section, below).

Sources: (1) The Planning Center | DC&E; Fehr and Peers, 2012. (2) Pacific Gas and Electric, 2012. (3) East Bay Municipal Utilities District, 2012. (4) County of Contra Costa, Department of Agriculture, 2011. (5) 2010 Contra Costa County Crop Report. (6) Draft Danville 2030 General Plan - Land Use Map. (7) Association of Bay Area Governments, 2009.

PAVLEY I – CLEAN CAR STANDARDS AND FEDERAL CORPORATE AVERAGE FUEL ECONOMY STANDARDS

CARB adopted amendments to the "Pavley" standards (Assembly Bill [AB] 1493) on September 24, 2009 to reduce GHG emissions from light duty vehicles and trucks. The Pavley amendments affect passenger vehicles from 2009 to 2016 and require manufacturers to achieve higher fuel efficiency standards. The Pavley regulation is anticipated to reduce GHG emissions from new passenger vehicles by 31.4 percent for the 2016 model year.[1]

[1] Based on a California fleet mix of 70 percent passenger cars and light duty trucks (LDT1) and 30 percent light duty trucks (LDT2) as stated in CARB's 2008 Comparison of Greenhouse Gas Reductions under CAFE Standards and CARB Regulations Adopted Pursuant to AB 1493.

On April 1, 2010, the US Environmental Protection Agency (EPA), in line with the Pavley regulation, adopted federal Corporate Average Fuel Economy (CAFE) standards for model years 2012 through 2016. On January 24, 2011, the US EPA, the US Department of Transportation, and the State of California announced a single timeframe for proposing the fuel economy and GHG standards for model years 2017 to 2025 passenger vehicles. However, the adjusted forecast does not account for these additional reductions because they are not yet adopted by CARB or EPA.

Low Carbon Fuel Standard

CARB identified the Low Carbon Fuel Standard (LCFS) as an early action item in its Climate Change Scoping Plan, and adopted the LCFS regulation on April 23, 2009. It became law on January 12, 2010. The LCFS requires a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

Renewable Portfolio Standard

A major component of California's Renewable Energy Program is the Renewable Portfolio Standard (RPS) established under Public Utilities Code Article 16, Chapter 2.3, Part 1, Division 1 (Senate Bill [SB] 1078) and Public Utilities Code Article 9, Chapter 3, Part 1, Division 1 (SB 107). Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. CARB has now approved an even higher goal of 33 percent by 2020. Renewable sources of electricity include wind, small hydropower, solar, geothermal, biomass, and biogas. The increase in renewable sources for electricity production will decrease indirect GHG emissions from development projects because electricity production from renewable sources is generally considered carbon neutral. According to CARB, Pacific Gas and Electric Company (PG&E) served 15.9 percent of their electricity sales with renewable power in 2010.

Smart Grid

The California Public Utilities Commission (CPUC) has initiated a rulemaking (R.08-12-009) to require California investor-owned electric utilities to develop a smarter electric grid in the state. Pursuant to SB 17, the CPUC developed requirements for a Smart Grid deployment plan. In July 2011, California utilities, including PG&E, filed ten-year Smart Grid deployment plans with the CPUC. New Smart Meters provide real-time electricity use information to consumers.

CALIFORNIA BUILDING CODE

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission in June 1977, with the most recent revisions to the standards having been made in 2008 (Title 24, Part 6 of the California Code of Regulations [CCR]). Title 24 requires that the design of building shells and building components conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2008 Building and Energy Efficiency standards are approximately 15 percent more energy-efficient than the 2005 Building and Energy Efficiency standards, which were in place at the time of CARB's Scoping Plan.

In addition, in May 2012, the California Energy Commission adopted the 2013 Building and Energy Efficiency Standards. The 2013 Standards will become effective on January 1, 2013. These standards are approximately 24 percent more energy efficient for residential buildings and 30 percent more energy efficient for non-residential buildings compared to the 2008 Building and Energy Efficiency Standards. However, because the new standards are not yet in effect, the associated GHG emission reductions are not included in the adjusted 2020 forecast, but are instead included in Measure GB-1, which requires 30 percent efficiency above 2008 Title 24 standards.

The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608) were adopted by the California Energy Commission in October 2006, and approved by the California Office of Administrative Law in December 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances.

In July 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (proposed Part 11, Title 24) was adopted as part of the California Building Standards Code (Title 24, California Code of Regulations), known as CALGreen. The 2010 edition of the code established voluntary standards on planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The mandatory provisions of the code became effective January 1, 2011. CALGreen includes references to the mandatory Building and Energy Efficiency Standards and includes voluntary Tier 1 and Tier 2 programs for cities and counties that wish to adopt more stringent energy efficiency requirements that are 15 percent and 30 percent more energy efficient than the 2008 standards, respectively. In addition, CALGreen

includes mandatory increases in indoor and outdoor water efficiency for new building construction.

SECTOR EMISSIONS

This section describes the assumptions for the individual GHG emissions sectors. For all sectors, 2020 emissions are based on the 2020 population and employment in Danville shown in Table 3-1, above. As Table 3-1 shows, a 7.1 percent increase in residential units and a 4.5 percent increase in employment are anticipated by 2020, which would lead to an estimated service population increase of 6.5 percent. These numbers are based on the amount and type of development that is reasonably foreseen, based on the difference between 2008 conditions and the proposed land use changes and policies under the proposed Draft Danville 2030 General Plan.

TRANSPORTATION EMISSIONS

Vehicle miles traveled (VMT) projections were compiled by Fehr & Peers for Danville for 2010 and 2030/35. This data was used to interpolate projections for the year 2020. GHG emissions from VMT generated by land uses within Danville were compiled using CARB's EMFAC2011 program and are shown in Table 3-4. The adjusted scenario includes GHG emissions reductions from the Pavley fuel efficiency standards and the LCFS which, as noted earlier in this chapter, are fuel and vehicle efficiency standards required by the State.

TABLE 3-4 **2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM TRANSPORTATION SOURCES**

Vehicle Miles Traveled		2020 BAU GHG Emissions ($MTCO_2e$/Year)[b]	2020 Adjusted GHG Emissions ($MTCO_2e$/Year)[b]
Daily[a]	Annual		
936,783	325,063,701	169,290	129,920

Notes:
a. Daily VMT is multiplied by 347 days/year to account for reduced traffic on weekends and holidays, consistent with the CARB methodology within the Climate Change Scoping Plan Measure Documentation Supplement.
b. Emissions are rounded to the nearest tens place.
Source: California Air Resources Board's Emissions Factors 2011 EMFAC2011 program.

RESIDENTIAL AND COMMERCIAL-INDUSTRIAL EMISSIONS

The anticipated increase in residential and commercial-industrial natural gas and energy use within Danville is proportional to the anticipated increase in population (for residential use) and employment (for commercial-industrial use) by 2020. Table 3-5 shows anticipated BAU and adjusted GHG emissions for residential and non-residential uses in 2020. The adjusted scenario includes GHG emissions reductions from the Renewable Portfolio Standard (RPS), Smart Grid, and the Title 24 updates.

TABLE 3-5 **2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM RESIDENTIAL AND COMMERCIAL-INDUSTRIAL LAND USES** [a]

Source	2020 BAU GHG Emissions ($MTCO_2e$/Year)[b]	2020 Adjusted GHG Emissions ($MTCO_2e$/Year)[b][c][d]
Residential Buildings	127,360	102,840
Commercial and Industrial Buildings	24,890	16,760
Total	**152,250**	**119,600**

Notes:
a. Excludes properties owned by another governmental entity that are outside the land use authority of Danville (e.g., County or State jurisdiction).
b. Emissions are rounded to the nearest tens place.
c. Based on PG&E's third-party verified GHG emission factors.
d. Based on PG&E's forecasted GHG emission rates in 2020.
Sources: (1) Pacific Gas and Electric, April 2012. (2) Community Wide GHG Inventory Report for Danville 2003 to 2010.

WATER/WASTEWATER EMISSIONS

The increase in water demand and wastewater generation within Danville is based on current demand and generation rates applied to expected development in 2020. Table 3-6 shows anticipated BAU and adjusted water demand and wastewater generation and associated GHG emissions in 2020. The adjusted scenario includes GHG emissions reductions from the RPS. The RPS will reduce GHG emissions attributable to water demand and wastewater generation by reducing the GHG emissions from electricity used to treat and transport water and wastewater. The adjusted scenario does not include any reductions from State water efficiency requirements because Danville is ultimately responsible for implementing those requirements.

TABLE 3-6 **2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM WATER USE AND WASTEWATER GENERATION**

Land Use	2020 BAU			2020 Adjusted		
	Energy ($MTCO_2e$/Year)[a]	Fugitive ($MTCO_2e$/Year)[b]	Total GHG Emissions ($MTCO_2e$/Year)	Energy ($MTCO_2e$/Year)[a]	Fugitive ($MTCO_2e$/Year)[b]	Total GHG Emissions ($MTCO_2e$/Year)
Water Use[c, d]	18,931	--	18,931	9,674	--	9,674
Wastewater Generation[c, d]	4,651	2,165	6,816	2,377	2,165	4,542
Total	**23,582**	**2,165**	**25,747**	**12,051**	**2,165**	**14,216**

Notes:
a. Water and wastewater GHG emissions are generated from the energy associated with water conveyance, treatment, and distribution, and wastewater treatment.
b. Based on GHG emission factors provided by PG&E.
c. CARB, May 2010, Local Government Operations Protocol (LGOP), Version 1.1.
d. Based on data provided by EBMUD and percent forecast change in service population by 2020.
Source: East Bay Municipal Utilities District

SOLID WASTE DISPOSAL EMISSIONS

The increase in solid waste disposal in Danville is proportional to the anticipated increase in population and employment in 2020. The adjusted scenario does not include any reductions from State and federal solid waste diversion requirements because the community is ultimately responsible for the extent of waste reduction. Table 3-7 shows anticipated GHG emissions in 2020.

TABLE 3-7 **2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM WASTE DISPOSAL**

	2020 BAU Waste Disposal (Tons)[a]	2020 BAU GHG Emissions ($MTCO_2e$/Year)[a]
Total	52,803	31,403

Notes:
a. Assumes a landfill gas control efficiency of 75 percent based on the International Panel on Climate Change's Local Government Operations Protocol. Biogenic carbon dioxide is not included.
Source: US EPA, Feb 2012, Waste Reduction Model (WARM), Version 12.

OTHER OFF-ROAD EMISSIONS

Projections for other off-road emission sources in 2020 are based on increases proportional to projected population and employment growth, as well as projected changes in land area under agricultural uses.

AGRICULTURAL EQUIPMENT

Agricultural equipment use is assumed to be proportional to the area under agricultural land use.

CONSTRUCTION EQUIPMENT

The 2020 BAU forecast assumes similar use of construction equipment as baseline conditions.

LANDSCAPING EQUIPMENT

Landscaping equipment use is assumed to be proportional to population growth.

TABLE 3-8 **2020 COMMUNITYWIDE GREENHOUSE GAS EMISSIONS FROM OTHER OFF-ROAD EMISSIONS**

Source	2020 BAU GHG Emissions ($MTCO_2e$/Year)	2020 Adjusted GHG Emissions ($MTCO_2e$/Year)
Agricultural Equipment[a]	52	47
Construction Equipment	16,393	14,754
Landscaping Equipment	930	837
Light Commercial and Industrial Equipment	1,118	1,006
Total	**18,493**	**16,644**

Note:
a. OFFROAD Model, based on information from County of Contra Costa, Department of Agriculture.
Sources: (1) County of Contra Costa, Department of Agriculture, 2011. (2) Contra Costa County Crop Report, 2010. (3) Draft Danville 2030 General Plan - Land UseMap, 2012.(4) Association of Bay Area Governments (2009).

LIGHT COMMERCIAL AND INDUSTRIAL EQUIPMENT

Stationary equipment from non-residential land uses, including generators, pressure washers, welders, and pumps, is assumed to be proportional to employment growth.

The BAU and adjusted forecasts for other off-road emissions are summarized in Table 3-8. The adjusted forecast includes reductions from the LCFS.

4 GREENHOUSE GAS EMISSIONS REDUCTION TARGET

Pursuant to the greenhouse gas (GHG) emission reduction targets of Assembly Bill (AB) 32 and the Bay Area Air Quality Management District's (BAAQMD) recently adopted California Environmental Quality Act (CEQA) Guidelines, a GHG reduction strategy such as this Sustainability Action Plan must establish a communitywide GHG emissions target that meets one of the following options:

- Reduce GHG emissions to 1990 levels by 2020;
- Reduce GHG emissions by 15 percent below baseline (2008 or earlier) emissions by 2020; or
- Meet the plan efficiency threshold of 6.6 metric tons of GHG emissions per service population per year.

DANVILLE TARGET

This Sustainability Action Plan uses the second option presented by the BAAQMD CEQA Guidelines, which is to reduce GHG emissions by 15 percent below baseline (2008 or earlier) emissions by 2020. The first target option is not recommended because accurate data on emissions in 1990 are not available. The third target option, which establishes a per capita threshold, would be acceptable but other documents and agencies make the second option most viable. The California Air Resources Board's (CARB) Scoping Plan cites the target to reduce GHG emissions by 15 percent from baseline conditions as a recommended target. In addition, the California Attorney General and other agencies and environmental groups have stated that a GHG emissions reduction goal should be measured in absolute magnitude of reductions, rather than with a per capita efficiency metric.

TARGET ACHIEVEMENT ANALYSIS

For communities utilizing the target to reduce emissions by 15 percent from baseline conditions, BAAQMD recommends that the baseline year be 2008 or earlier in order to coincide with the targets of AB 32. In Danville, this target means that the Sustainability Plan should include measures that will reduce GHG emissions by 52,740 metric tons of carbon dioxide

emissions ($MTCO_2e$)[1] from baseline 2008 conditions by 2020, resulting in 298,850 $MTCO_2e$ or less in total emissions in 2020.

As described in the adjusted forecast in Chapter 3, State and federal regulations will result in measurable GHG emissions reductions, regardless of actions by the Town of Danville (Danville). The adjusted forecast includes reductions associated with the Pavley Clean Fuel Standards, Low Carbon Fuel Standard, Renewable Portfolio Standard, Smart Grid, California Building Code, and the Danville's waste diversion and reduction programs. These existing GHG reduction programs and regulations reduce GHG emissions from business as usual (BAU).

As shown in Table 4-1, Danville will meet its State and BAAQMD targets by virtue of State and federal actions and programs alone. Although no GHG emissions reductions from local measures are necessary to meet the 2020 goal, Danville should still adopt local measures to enhance its attainment of GHG emissions reduction goals.

TABLE 4-1 **TARGET AND GAP ANALYSIS**

	2008 Baseline GHG Emissions ($MTCO_2e$/Year)	2020 Adjusted GHG Emissions ($MTCO_2e$/Year)
Target (15% Below 2008 Baseline)		298,850
Total GHG Emissions	351,590	288,230
Gap	52,740	<0

Source: The Planning Center | DC&E, 2012.

[1] This number was calculated by multiplying the baseline emissions described in Chapter 2 (351,590 $MTCO_2e$) by 0.15.

5 GHG REDUCTION MEASURES, IMPLEMENTATION, AND MONITORING

This chapter presents the GHG emissions reduction measures to help achieve the emissions reduction target for the year 2020. These measures were developed with community involvement, including Joint Town Council and Planning Commission Study Sessions held on April 26, 2011, February 28, 2012, July 17, 2012, and September 18, 2012. Each measure is based on: the distribution of emissions revealed in the emissions inventory and forecasts; current priorities and resources; the potential costs and benefits of various possible emission reduction approaches; and careful consideration of Danville's greenhouse gas (GHG) reduction goals, existing policies, and unique characteristics.

Some of the reduction measures are programs already underway, and they have been included in this chapter so they may be considered alongside other measures. The measures that describe such existing programs are generally written as "continue to…," indicating that the particular measure is an existing program.

The measures are divided into the following six topics:

- Land Use and Transportation
- Energy and Green Building
- Recycling and Waste Reduction
- Water and Wastewater
- Other and Life-Cycle
- Community Outreach

This chapter presents the environmental benefits for each measure or group of measures and the mechanisms for potential GHG emissions reductions, as well as implementation information, including action items, responsible parties, and cost effectiveness. In cases where an individual measure also has a group of supportive measures, implementation information is provided for each component separately.

Implementation of the GHG reduction measures should begin immediately upon adoption of the Sustainability Action Plan and the Danville 2030 General Plan. For those measures which correspond to existing regulations or programs, no new action will be needed, and Danville will simply maintain current practices. Some measures only involve one-time actions or projects; however, overall maintenance of the measures will continue indefinitely. Some new or modified reduction strategies may be implemented at a later time if Danville does not meet its goals, or if there are changes to circumstances in regard to available data, technology, and/or funding.

The sectors that are discussed below include measures that could reduce GHG emissions from community-wide activities and, to some extent, from Town of Danville municipal operations. As discussed in Chapter 4, after adjusting for State and federal measures, Danville would already meet its GHG reduction target for 2020, even if no local measures were adopted. The technical documentation for the reduction measures modeling is provided in Appendix B.

TABLE 5-1 LIST OF GHG EMISSIONS REDUCTION MEASURES
Land Use and Transportation
LT-1 Telecommuting and home businesses
LT-2 Employer commute trip reduction
LT-3 TRAFFIX school rides program
LT-4 "Street Smarts" school safety program
LT-5 Explore creation of shuttle system
LT-6 Seek to improve/expand transit service
LT-7 Continue NTMP traffic calming
LT-8 Seek to offer car-sharing in Danville
LT-9 Expand and improve bicycle network
LT-10 Improve Downtown streetscape
LT-11 Pursue innovative workplace setups
Energy and Green Building
EG-1 New solar homes partnership
EG-1a Green building technical assistance
EG-1b Develop local alternative energy
EG-1c Low-cost permitting fees
EG-1d Inform public of CEC requirements
EG-2 Quick implementation of State codes
EG-2a Green project priority processing
EG-2b Remove regulatory/procedural barriers
EG-2c Staff training in green building
EG-2d Intergovernmental coordination
EG-3 Outdoor lighting efficiency
EG-4 Energy conservation programs
EG-5 GreenPoint building guidelines
EG-6 Solar water heater incentives
EG-7 Remove barriers to renewable energy
EG-7a Utilize available rebates and incentives
EG-7b Parking lot solar arrays
EG-8 Title 20 and Title 24 energy efficiency
EG-9 Weatherization and heat gain prevention
EG-9a CaliforniaFIRST program
EG-9b Funding for energy audits

TABLE 5-1 LIST OF GHG EMISSIONS REDUCTION MEASURES
EG-9c Low income weatherization programs
EG-9d Public education partnerships
EG-10 Downtown shading measures
Recycling and Waste Reduction
RW-1 Construction Waste Management Plans
RW-2 Multi-family recycling services
RW-3 Salvaged and recycled materials usage
RW-4 Diversion of food scraps/green waste
RW-5 Public education for waste diversion
RW-6 Reduction of landfill methane emissions
RW-7 Downtown recycling containers pilot
RW-8 Holiday tree disposal services
Water and Wastewater
WW-1 CA Green Code water standards
WW-2 Drought-resistant landscaping
WW-3 Dual piping for select projects
WW-4 Partnership for free water audits
WW-5 Promote use of reclaimed water
WW-6 EBMUD increases to reclaimed water
WW-7 Water conservation public education
Other and Life-Cycle Emissions
OL-1 Yard equipment exchange program
OL-2 Outdoor electrical outlets on buildings
OL-3 Recycled and renewable materials in products
OL-4 Community gardens
OL-5 Small scale agriculture
OL-6 Danville Farmers Market
Community Outreach
CO-1 Green Business certification
CO-2 Public information on sustainability practices
CO-3 Sustainability information in electronic newsletter
CO-4 Youth education programs

LAND USE AND TRANSPORTATION

A summary of the cost effectiveness and responsible parties for each Land Use and Transportation measure is provided in Appendix A – Greenhouse Gas Reduction Measures Matrix.

Because the Land Use and Transportation measures are interrelated and support one another, independent GHG reduction effectiveness cannot be determined for a single individual measure. There are some measures for which a cost-effectiveness determination is not possible. Nevertheless, all Land Use and Transportation measures have been discussed in terms of their potential costs and savings. Where possible, this information is used to determine cost effectiveness.

Beyond reducing GHG emissions and VMT, the Land Use and Transportation measures in the Sustainability Action Plan would yield other sustainability benefits. Reduced driving would serve to reduce other pollutants alongside GHG; could improve public health as more residents walk or take alternative transportation; and/or could reduce wear and tear on streets. Additionally, by promoting more compact development, these measures would serve to limit the loss of natural and farmland areas, preserving wildlife habitat and nearby agriculture.

LAND USE AND TRANSPORTATION MEASURES

LT-1 TELECOMMUTING AND HOME BUSINESSES

Encourage and promote telecommuting and provide additional operational flexibility for home-based businesses in existing and future residential neighborhoods, provided that neighborhood impacts are minimized and the residential nature of structures and their surroundings is maintained.

GHG Reduction Mechanisms

A large proportion of VMT arises from commute-related driving. Telecommuting and home-based businesses allow workers and businesses owners to perform work without the regular need to commute. This serves to reduce their VMT and subsequent automotive GHG emissions. In 2000, about 6 percent of all Danville residents worked from home. By 2010, the Census reported that figure had increased to 10 percent. It is assumed that home-based employment and telecommuting will continue to grow.

Action Items and Responsible Parties

No implementation measures are required.

Cost Effectiveness: High

Since measure LT-1 would be voluntary, it would impose no mandatory costs on residents or business owners. Cost savings from this measure could stem from reduced vehicle use, greater economic productivity, and reduced traffic. (For a more detailed discussion of the cost and benefits of commute trip reduction, see the cost-effectiveness discussion for measure LT-2). Given its low costs and potential for economic benefits, this measure is deemed to be highly cost effective.

LT-2 EMPLOYER COMMUTE TRIP REDUCTION

Encourage Employer Commute Trip Reduction Programs, such as ride-share programs, provision of end-of-trip bicycle facilities (e.g., showers, lockers, etc.), guaranteed ride home programs, promotion of telecommuting, and preferential parking permit programs.

GHG Reduction Mechanisms

A large proportion of VMT arises from commute-related driving. Employer trip reduction programs seek to provide workers with opportunities to reduce their driving through transit use, bicycling, carpooling, vanpooling, and/or telecommuting. By employers providing incentives and benefits which make it easier to travel to and from the workplace or otherwise work without use of a car, employers enable their workers to drive less, and reduce their VMT and subsequent GHG emissions.

Action Items and Responsible Parties

Information on the array of programs available in Contra Costa County is provided by 511 Contra Costa. This includes the Contra Costa Employer Based Trip Reduction Program, the Guaranteed Ride Home Program (which offers emergency taxi and rental car vouchers to employees who commute by transit but must leave work for a family emergency), special events (such as Bike to Work Day), pre-tax benefits for transit passes, Spare the Air campaigns, and similar programs. The Town will also continue to support carpooling and vanpooling activities by local employers and by non-local businesses that employ Danville residents.

Danville staff should take advantage of contacts with developers and business owners, especially when permitting new business, to promote Commute Trip Reduction programs. Danville may also wish to consider granting fee reductions or waivers and/or permit processing priority, to businesses who commit to implementing Commute Trip Reduction Programs.

Reducing "Cold Starts"

One effective way to reduce greenhouse gas emissions is to reduce the number of automobile "cold starts." The Bay Area Air Quality Management District (BAAQMD) reports that a car that been sitting for an hour or more pollutes up to five time more than a warm car. This is because the engine's air pollution control device, the catalytic converter, takes several minutes to warm up and work efficiently. BAAQMD reports that if Bay Area residents cut their cold starts by 25 percent, we could remove up to 97 tons of pollutants from the air each day. Creating more walkable communities and allowing multiple trips be "linked" in a single trip is an important strategy to reduce cold starts.

Cost Effectiveness: High

Encouraging Employer Trip Reduction programs under measure LT-2 would require low staff-time costs. It is not anticipated that Danville would incur any other direct costs from this measure. The costs of programs themselves would be borne by employers and would vary depending on the specific provisions of the adopted program. A 2001 study found that Commute Trip Reduction Programs had an average gross cost of $156 per employee per year. However, the study found that the majority of businesses spent less than this average gross cost, spending at a range of $33 to $89 per employee per year.[1,2] Adjusted for inflation between 2001 and 2012, the average annual per-employee cost of a trip reduction program is now anticipated to be approximately $200. This cost would be offset by substantial cost savings for both employers and workers.[3] Direct cost-savings come mainly from the reduced need for parking or parking subsidies. Additionally, telecommuting has enabled some companies to reduce their need for office space. Indirect savings have been realized through improved worker productivity, morale, and health. For employees, savings arise primarily from reduced needs for vehicle maintenance and fuel. Indirect municipal and community benefits are realized through decreased congestion, air pollution, and infrastructure costs.

[1] Pollution Probe, 2001, *North American Workplace-based Trip Reduction Programmes.*

[2] Costs in 2001 dollars.

[3] Pollution Probe, 2001, *North American Workplace-based Trip Reduction Programmes.*

Since Commute Trip Reduction Programs typically recoup their costs quickly and have a substantial potential to reduce GHG emissions when coupled with other strategies, measure LT-2 is deemed to be highly cost-effective.

LT-3 TRAFFIX SCHOOL RIDES PROGRAM

Continue—and expand as feasible—the TRAFFIX program to reduce peak hour congestion around school campuses. The TRAFFIX program reduces traffic caused by parents driving their children to and from school. TRAFFIX is administered through a joint-powers agreement with other participating jurisdictions, and uses Measure J funds to provide low-cost school bus service as a means of avoiding congestion around school campuses.[4]

GHG Reduction Mechanisms

Parents driving their children to school account for a significant portion of total VMT.[5] By deploying buses which transport multiple children to school in a single vehicle, this measure reduces the number of parents individually driving their children. The subsequent decreases in VMT serve to reduce automotive GHG emissions.

Action Items and Responsible Parties

To implement this measure, Danville will continue to support the TRAFFIX program and continue working with other parties to the joint-powers agreement to offer various transportation options for schoolchildren.

Cost Effectiveness: High

Staff-time costs from measure LT-3 are anticipated to be low and would stem from the need to continue various forms or support for the TRAFFIX program, including coordination with other parties to the joint-powers agreement. Additional costs will depend on the level of ongoing financial or administrative support offered by Danville, but these costs are expected to be very low, as funds from Measure J are the primary source of financial support for this program. The measure is not anticipated to result in any direct or indirect costs for residents or businesses beyond the sales tax already approved under Measure J. Residents could potentially benefit from the measure through decreased need to individually transport

[4] Measure J is the county-wide sales tax and Transportation Expenditure Plan program originally passed by Contra Costa County voters in 1988 and renewed by voters in 2004. Through sales-tax receipts, Measure J funds various transit programs.

[5] Carlson, Daniel, Deric Gruen, and Jennifer Thacker, 2009, Transportation Demand Strategies for Schools Phase II Report: Reducing Auto Congestion Around Schools, Seattle Washington: Washington State Transportation Center (TRAC).

their children to and from school, thereby saving time, fuel, and other vehicle-related costs. The measure could offer additional indirect savings by reducing congestion and air pollution. The magnitude of such benefits cannot be precisely calculated. In conjunction with measures LT-1, LT-2, and LT-4, this measure could contribute to substantial GHG emission reductions. Therefore, given its low cost, potential for net savings, and significant contribution to GHG reductions, this measure is deemed to be highly cost-effective.

LT-4 "STREET SMARTS" SCHOOL SAFETY PROGRAM

Seek grant funding for continuation of the "Street Smarts" program, a collaborative effort by the Town of Danville, the City of San Ramon, the San Ramon Valley Unified School District, and Contra Costa County. Through implementation of the program, or an equivalent successor program, increase traffic safety education through community events, school activities, neighborhood initiatives, and other public outreach measures. Continue to implement other pedestrian and bicycle safety improvements, access-ways, and connections which make it safer and easier to walk or bike to school.

Action Items and Responsible Parties

To implement this measure, Danville will continue to support the "Street Smarts" program, working with program partners to maintain existing safety services and infrastructure, as well as to expand those programs and provide new safety features. Safety enhancements which have already been undertaken and which could be further expanded under this program include improved pedestrian trails and connections (such as those along Blemer Road and Matadera Way); flashing crossing beacons; protective roadside berms; bicycle lanes; and speed bumps and other traffic-calming measures.

GHG Reduction Mechanisms

Parents driving their children to school account for a significant portion of total VMT. By making it safer and more convenient for children to walk or bicycle, this measure reduces the number of parents who must drive their children to school. The subsequent decreases in VMT serve to reduce automotive GHG emissions.

Cost Effectiveness: High

Staff-time costs from measure LT-4 are anticipated to be low to moderate and would stem from the need to continue providing administrative support for the "Street Smarts" program, including seeking new grant funding and continuing to coordinate with other program supporters. Additional costs will depend on the level of ongoing financial or administrative support offered by Danville, and what level of grant funding is available. The measure is not

anticipated to result in any direct or indirect costs for residents or businesses. Residents could potentially benefit from the measure through decreased need to drive their children to and from school, thereby saving time, fuel, and other vehicle-related costs. The measure could offer additional indirect savings to Danville and residents by reducing congestion and air pollution, and by improving the health and safety of school-aged children. The magnitude of such benefits cannot be precisely calculated. In conjunction with measures LT-1, LT-2, and LT-3, this measure could contribute to substantial GHG emission reductions. Therefore, given its low cost and potential for net savings, this measure is deemed to be highly cost-effective.

LT-5 EXPLORE CREATION OF LOCAL SHUTTLE SYSTEM

Work with the Central Contra Costa Transit Authority (CCCTA) to study the feasibility of a fixed-route shuttle system from the Sycamore Valley Park and Ride Lot to Downtown, major employment centers, and/or to major retail centers.

Action Items and Responsible Parties

To implement this measure, Town staff will coordinate with CCCTA to explore the feasibility of creating the described fixed-route shuttle system. Town staff will provide CCCTA with any data or other information that could contribute to such a study. The study could also consider alternatives to a daily shuttle, such as shuttles for special events with high parking demand. Should Danville and CCCTA decide to implement a shuttle system, Danville should consider offering administrative and financial support, as appropriate.

GHG Reduction Mechanism

By providing drivers with an alternative means of transportation to key destinations within Danville and to transit connections to areas outside Danville, a shuttle system would serve to decrease VMT and thus reduce associated automotive GHG emissions.

Cost Effectiveness: Unknown

Because this measure would result in undetermined staff-time costs and may or may not result in the actual provision of a shuttle system, eventual costs cannot be reasonably estimated. However, should this measure be implemented, it could yield a substantial GHG reduction in conjunction with measure LT-6. Therefore, measure LT-5 could have anywhere from a low to high degree of cost effectiveness, depending on the cost of any potential shuttle system.

LT-6 SEEK TO IMPROVE/EXPAND TRANSIT SERVICE

Work with regional transit agencies to increase the frequency and coverage of buses connecting Danville to other cities, such as Walnut Creek and San Ramon, as well as to the BART stations in Walnut Creek and Dublin/Pleasanton.

Action Items and Responsible Parties

To implement this measure, Town staff will coordinate with CCCTA and other regional transit agencies to explore possibilities for expanding, improving, and increasing the frequency of transit service. Such efforts could include new or extended routes; shorter vehicle headways; continued and enhanced ADA accessibility for transit stops and vehicles; and improved timing and locations for transit connections. Potential avenues for support from Danville could include provision of appropriate data and information, conducting of studies and outreach, and/or provision of funding, as appropriate. The Town will also work with CCCTA to increase awareness of transit service in Danville, including express bus service from the Sycamore Valley Park and Ride Lot to the Walnut Creek BART station.

GHG Reduction Mechanism

By providing drivers with an alternative means of transportation to key destinations within Danville and to transit connections to areas outside Danville, improved transit service would serve to decrease VMT and thus reduce associated automotive GHG emissions.

Cost Effectiveness: Unknown

Because this measure would result in undetermined staff-time costs and because specific transit enhancements have not yet been identified, eventual costs cannot be reasonably estimated. However, if significant transportation improvements occur, this measure could yield a substantial GHG reduction in conjunction with measure LT-5. Therefore, measure LT-6 could have anywhere from a low to a high degree of cost effectiveness, depending on the costs and efficacy of any potential transportation system enhancements.

LT-7 CONTINUE NTMP TRAFFIC CALMING

Promote the safety and livability of Danville neighborhoods through continued use of the Neighborhood Traffic Management Program (NTMP), a citizen-based approach to traffic calming. Where appropriate, install NTMP-traffic calming measures to dissuade cut-through traffic, reduce vehicle speeds and volumes, and stimulate enhanced pedestrian and bicycle circulation. NTMP-traffic calming measures may include, but are not limited to, the following: speed humps, curb bulb-outs, textured pavement, bike lanes, and medians.

Action Items and Responsible Parties

Danville will continue to administer and provide financial/logistical support for the NTMP program, and will seek to expand the program to neighborhoods which are not currently participating.

GHG Reduction Mechanism

Sharp vehicle acceleration and deceleration are associated with decreased fuel-efficiency and therefore increased emission of GHGs. By encouraging drivers to move at lower, but more constant speeds, traffic calming improves fuel efficiency, reduces GHG emissions, and even serves to prevent wear and tear on vehicles. Additionally, traffic calming serves to make streets more comfortable for pedestrians and cyclists, thereby encouraging walking and bicycling as alternatives to driving, and thus reducing VMT and associated automotive GHG emissions.

Cost Effectiveness: Low

Measure LT-7 could result in relatively high staff-time costs for ongoing program administration, as well as considerable continued costs from construction and maintenance of traffic-calming infrastructure. In its 2012 Climate Action Plan, the City of Walnut Creek estimated the costs of traffic calming measures at approximately $83,000 per 10 miles of roadway. [6] Total costs for Danville will depend on the traffic calming methods used and the extent of their future implementation. Significant direct cost-savings for Danville are not anticipated. However, Danville could potentially experience indirect benefits or savings from reduced air pollution and increased pedestrian comfort and safety. Given the measure's high anticipated cost it is deemed to have low cost-effectiveness for GHG reduction.

LT-8 SEEK TO OFFER CAR-SHARING IN DANVILLE

Work with established car-share businesses and non-profits to accommodate car-sharing in the Danville area.

Action Items and Responsible Parties

Danville Town staff will work with nonprofit car-sharing enterprises (e.g., City Carshare) and for-profit enterprises (e.g., Zipcar), to determine the feasibility of and provide administrative support for the creation of car-sharing pods within Danville. As feasible, the Town will also explore the feasibility of bike-sharing.

[6] Town of Walnut Creek, 2012. *Town of Walnut Creek Climate Action Plan,* Page A3-15.

GHG Reduction Mechanism

Car sharing offers residents the use of a vehicle when they have a specific need to drive. This allows and encourages residents with low automobile use to forgo car ownership, making it less likely they will make discretionary vehicle trips. Additionally, by prompting drivers to consider costs on a per-trip or even per-mile basis, car sharing encourages more conservative and conscientious transportation decisions. Together, these effects serve to decrease VMT and subsequent automotive GHG emissions. Car sharing programs can benefit both residents and employees.

Cost Effectiveness: Unknown

Staff costs from measure LT-8 are anticipated to be very low and would stem from the need to communicate with appropriate car-sharing agencies to explore the viability and logistics of their expansion into Danville. Other direct costs or savings to Danville are not anticipated. In the event car-sharing services are made available, Danville could experience indirect cost savings through decreased congestion, improved air quality, and decreased wear and tear on streets. However, these benefits are expected to be minor and their value cannot reasonably be quantified. Therefore, despite the potential for GHG emissions reduction in conjunction with measure LT-7, the cost effectiveness of measure LT-8 cannot reasonably be determined.

LT-9 EXPAND AND IMPROVE BICYCLE NETWORK

Implement General Plan policies to create a safer, more connected, and enhanced bicycle network in Danville, making it more feasible to travel without a motor vehicle.

Action Items and Responsible Parties

To implement this measure, the Town will implement provisions of the Danville 2030 General Plan and the adopted Parks, Recreation, and Arts Strategic Plan, relating to the enhancement of bicycle connections, including bike trails, bike lanes, and shared streets. Additionally, Danville will implement components of countywide plans which relate to bicycle infrastructure, amenities, and safety. This could include the development of bicycle parking racks, bike-sharing programs, and other provisions which make bicycling more convenient.

GHG Reduction Mechanism

Improved and expanded bike paths and bike racks would make bicycling safer and more convenient, thus encouraging residents to more often use cycling as an alternative to driving. Decreased automobile use would serve to reduce associated automotive GHG emissions.

Cost Effectiveness: Unknown

The development and implementation of bikeway improvements under measure LT-9 would carry uncertain costs for Danville that would depend on the type and extent of facilities created. The costs of such facilities would include construction and maintenance expenses. For its Bicycle Master Plan, the City of Santa Rosa made cost estimates for various classes of bikeway. Class I bicycle routes, consisting of trails exclusively for bicycles and/or pedestrians, carried estimated construction costs of $550,000 per mile and annual maintenance costs of $10,000 per mile. Class II bicycle routes, comprised of dedicated bike lanes along existing roadways, carried estimated construction costs of $30,000 per mile and annual maintenance costs of $2,000 per mile. Class III bicycle routes, characterized by shared roadways with bicycle route signage and sometimes pavement stencils, carried estimated construction costs of $2,500 per mile and annual maintenance costs of $1,000 per mile. These costs do not include additional infrastructure such as bike signals, crossings, loop detectors, etc., and vary considerably by specific location. It is anticipated Danville would experience similar costs as those determined to be present in Santa Rosa

Though Danville is not expected to experience direct cost-savings from this measure, reduced traffic, congestion and air pollution, as well as potentially improved community health could potentially provide indirect benefits for Danville. Any estimate of the value of such benefits, however, would be speculative. Although it is not possible to estimate direct GHG emissions reductions from this measure, the measure greatly increases the appeal and convenience of cycling, thus encouraging alternative forms of transportation. Despite benefits that would likely be observable, the costs of this measure are currently unknown, thus the cost-effectiveness of this measure cannot currently be reasonably determined.

LT-10 IMPROVE DOWNTOWN STREETSCAPE

Continue investment in Downtown streetscape improvements which make it safer, more convenient, and more attractive to walk to, and within, Downtown Danville.

Action Items and Responsible Parties

Town staff will work to identify opportunities to improve the safety, convenience, and comfort of the Downtown Danville streetscape. Such efforts could include soliciting the public for enhancement suggestions and making a systematic review of "gaps" and/or deficiencies through the annual Capital Improvement Program review. Financing for such improvements would come primarily from Capital Improvement Program project funding, which is derived from a variety of sources including local taxes, federal funds, and various develop-

ment fees.[7] Town staff should seek additional funding opportunities, including grants, to undertake identified improvements.

GHG Reduction Mechanism

Improved downtown streetscapes increase convenience and comfort of pedestrians by improving safety, and by creating a visually engaging and pleasant pedestrian experience. All of this serves to encourage walking as a means of transport, which serves to decrease VMT and subsequent automotive GHG emissions.

Cost Effectiveness: Unknown

Staff time costs from the implementation of measure LT-10 could range from moderate to high depending on the level of effort undertaken to identify and implement downtown streetscape improvements. Since the type and extent of such improvements have not yet been identified, and since the GHG reductions from this measure cannot be reliably estimated, the cost-effectiveness of this measure cannot be reasonably determined.

Reducing Greenhouse Gases through Transportation Operations

In addition to the land use and transportation measures listed in this Sustainability Action Plan, the Town is continuously working to improve its transportation system to reduce vehicle idling. Eliminating unnecessary idling is an important way to reduce GHG emissions. It also reduces fuel consumption and potentially harmful health effects related to air pollution close to major intersections.

As of 2012, there were approximately 57 signalized intersections in the Town of Danville, including 50 owned and maintained by the Town and 7 owned and maintained by Caltrans. Fifteen of the signals are located on Sycamore Valley Road/ Camino Tassajara between Interstate 680 and Crow Canyon Road. The Town recently completed a synchronization project to reduce idling time at these intersections and achieve a smoother flow of east-west traffic.

Nearly 30,000 vehicles a day use Sycamore Valley Road/Camino Tassajara. The signal timing improvements substantially reduce emissions along this corridor, while improving the functionality of the road for buses, cars, and bicycles.

[7] Town of Danville, Capital Improvement Program Report, 2012

LT-11 Pursue Innovative Workplace Setups

Create opportunities for innovative workplaces within Danville which respond to the needs of the growing number of residents who telecommute, or who are self-employed and/or operate small businesses. This could include shared workplaces or "co-working" environments with shared administrative and support services. Accommodating such workplaces in Danville would reduce commuting to offices located in more distant communities, thereby reducing vehicle miles traveled.

Action Items and Responsible Parties

Town staff will review and, as necessary, amend the Planning and Land Use Chapter of the Municipal Code to encourage the creation of alternative and/or shared workspaces, whether in offices or in retail spaces, such as cafes or restaurants. Town staff could also pursue and apply economic development funds toward the creation of such workspaces.

GHG Reduction Mechanism

Innovative workplaces allow workers an alternative to commuting to an urban central business district or office park environment in another community. Such workplaces also allow self-employed or home-based workers to share administrative services and facilities, and to work collaboratively as opportunities arise. Together, these effects serve to reduce long-distance commuting, thereby reducing VMT and associated automotive GHG emissions.

Cost Effectiveness: High

Staff-time costs for measure LT-11 would be low and would stem from the need for staff to draft, adopt, and implement code changes which would allow and encourage the creation of such innovative workspaces. Danville is not anticipated to experience any other direct costs or savings from this measure. Residents could potentially experience direct cost savings through reduced commuting needs or through reduced need to maintain home offices. Additionally, Danville could experience indirect cost savings through reduced congestion, air pollution, and wear and tear on streets; however, these benefits would be small and any estimation of their value would be highly speculative. Although the GHG reductions from this measure cannot be reliably estimated, given its low costs and potential benefits, measure LT-11 is deemed to be highly cost effective.

ENERGY AND GREEN BUILDING

A summary of the cost effectiveness and responsible parties for each Energy and Green Building measure is provided in Appendix A – Greenhouse Gas Reduction Measures Matrix.

The Energy and Green Building measures incorporate a variety of GHG emissions reduction strategies related to energy conservation, renewable energy sources, and building techniques which promote efficiency. The text below discusses the mechanisms by which these strategies serve to reduce GHG emissions, as well as the other sustainability benefits that these strategies offer.

Measures relating to renewable energy and low carbon fuels are directed at reducing the reliance on fossil fuels as energy sources. Though reduced GHG emissions are a key benefit of measures related to renewable energy and low-carbon fuels, these measures offer additional sustainability benefits as well. Reduced energy use and alternative fuels serve to reduce other pollutants alongside GHGs. The extraction and refinement of conventional fossil fuels such as oil, coal, and natural gas also have impacts on the environment, including pollution and habitat disruption, which can be lessened through the increased use of renewable energy. Additionally, and perhaps most importantly, fossil fuels are a finite resource, subject to long-term shortages and short-term price volatility. Renewable energy, while not unlimited, will be continually replenished very long into the future. Using renewable energy can thus insulate communities from volatile energy costs. Finally, by providing employment opportunities and allowing energy needs to be met on a more local level, renewable energy and low-carbon fuels add to the resilience and economic vitality of communities.

Green Building measures are directed at decreasing the energy and water use of buildings. The effects represent the primary mechanisms by which Green Building measures would serve to reduce GHG emissions. Lessened energy use from buildings would result in lower demand for both electricity and natural gas. Similarly, the storage, transport, and treatment of the water used in buildings requires energy for both construction and operation of water-system infrastructure. (For additional discussion of water-related energy use, see the introduction to the section on the Water and Wastewater sector.) Because much of our energy—whether for construction, electricity, heating, water, or vehicle use—currently comes from GHG-producing fossil fuels, direct and indirect decreases in energy use lead to reduced GHG emissions.

Green building employs diverse practices offering multiple avenues toward GHG emissions reduction. This variety of approaches offers other sustainability benefits as well. The reduced energy and water use associated with green building practices not only serves to decrease GHG emissions, but also lessens other environmental impacts from resource use and improves the ability of utility providers to meet future demand. Additionally, certain green building practices serve to alleviate both urban heat island effects and stormwater runoff, making communities more livable and resilient in the face of both typical and extreme weather. Green building practices can also contribute directly to human health and well-being by reducing indoor air pollution and increasing access to natural light. Certain green building practices such as green roofs, bioswales, and living walls, can even provide habitat and foraging opportunities for urban wildlife. Finally, through this array of benefits, green building provides an opportunity to forge positive connections between the natural and built environments, and residents.

ENERGY AND GREEN BUILDING MEASURES

EG-1 NEW SOLAR HOMES PARTNERSHIP

Encourage residential projects to participate in the California Energy Commission's New Solar Homes Partnership (and its successor program, as applicable).

The New Solar Homes Partnership provides rebates to developers of six units or more who offer solar power in 50 percent of new units, and is a component of the California Solar Initiative, which is administered by the California Energy Commission and the California Public Utilities Commission.

Action Items and Responsible Parties

To implement this measure, Town staff will apprise local developers of the New Solar Homes Partnership when they apply for building or subdivision permits. Encouragement for this program could take the form of advisory comments, included in project conditions of approval, which provide early notification to applicants of the program and its benefits. Danville may also wish to consider incentives, such as expedited plan processing and/or fee waivers, for projects which choose to participate in the Partnership.

Cost Effectiveness: High

Since this measure would not require any enforcement action by staff, staff-time costs are anticipated to be low, and would stem primarily from time taken to inform permit applicants of the program and/or from the time needed for implementation of potential participation incentives. Under this measure, any costs would be voluntary and would be borne by devel-

opers and by PG&E, who would provide rebates for solar installations. Solar installation costs borne by developers could be passed on to residents through rents or home prices. However, it is anticipated that the energy cost savings of solar systems would offset any such costs relatively quickly. The cost of recent photovoltaic solar installation in the Danville area is estimated to be approximately $6.00 per watt of system capacity.[8] Total materials and labor costs would vary by site, and by system characteristics and size. Vendor websites indicate that the cost of installing solar panels on a 2,500 square foot home in the San Ramon Valley is in the range of $25,000-$28,000, although rebates and tax credits bring the effective cost down to $15,000-$18,000.

It is estimated that energy savings from photovoltaic systems in Danville allow system cost recovery after approximately 15 years of operation.[9] Anticipated system lifetimes of 20 years or more and low maintenance costs enhance the long-term savings from photovoltaic systems.[10] Though the projected GHG emissions reduction from this measure are modest, given the potential long-term cost savings of photovoltaic installations, this measure is deemed highly cost-effective.

EG-1A GREEN BUILDING TECHNICAL ASSISTANCE

Provide technical assistance in conjunction with the plan review process, and continue to disseminate available information regarding green building, energy-efficient practices, and available rebates. Target these efforts to residents, property owners, development professionals, schools, and special districts.

Action Items and Responsible Parties

To implement this measure, Danville will conduct marketing and outreach to provide green building information and technical assistance to property owners, development professionals, schools, and special districts.

The dissemination of relevant information will occur at the building permit counter and on the Town of Danville website, as well as through other outreach methods. Additionally, Danville will continue to co-sponsor public forums on green building and energy-efficiency

[8] The National Renewable Energy Laboratory, The Open PV Project, http://openpv.nrel.gov/, accessed on August 27, 2012.

[9] FindSolar Solar Calculator, http://www.findsolar.com/index.php?page=rightforme, accessed on August 27, 2012.

[10] Barbose, Galen, et al., 2011. Report: *Tracking the Sun IV: An Historical Summary of the Installed Cost of Photovoltaics in the United States from 1998 to 2010*, Lawrence Berkeley National Laboratory.

practices, as opportunities arise. This could include programs to inform Danville residents and businesses about opportunities to install electric vehicle charging equipment in residential garages and at workplaces. The Town will also continue to partner with Sustainable Danville to conduct outreach for various educational programs and green-building/energy-efficiency fairs.

Cost Effectiveness: Unknown

Staff-time costs for measure EG-1a will largely depend in the extent of educational and outreach efforts and the degree to which individuals and organizations utilize these resources. Providing green building information and conducting marketing could carry low to moderate staff costs. However, technical training has the potential to place greater demands on Town resources. Other direct costs to the Town or to residents or businesses are not anticipated. Instead, residents and businesses could experience various cost savings through the expertise and information offered by the Town. Additionally, broader and more efficient implementation of green practices could provide long-term savings for Danville residents and businesses. Since this measure would merely be supportive of measure EG-1, its individual benefits and emissions impacts cannot be precisely estimated. Furthermore, precise estimates of the costs and savings of this measure would be highly speculative at present. Given that the costs, savings, and individual emissions reduction from this measure are highly uncertain, its cost-effectiveness cannot be reasonably determined.

EG-1B LOCAL ALTERNATIVE ENERGY SOURCES DEVELOPMENT

In partnership with Pacific Gas and Electric (PG&E) and local alternative energy companies, facilitate the development and installation of alternative energy facilities within Danville, such as solar photovoltaic (PV) panels on urban residential and commercial roofs.

Such efforts would include the identification of optimal locations for such facilities and the implementation of best practices to avoid noise, aesthetic, and other potential land-use compatibility conflicts.

Action Items and Responsible Parties

To implement this measure, Danville will coordinate with PG&E to explore and take advantage of opportunities to locally produce alternative or renewable energy. As part of this process, Danville will identify where and which types of alternative energy facilities are appropriate, identify means to address potential land use compatibility conflicts, and establish a development review process for new alternative energy projects. Town staff will also review and update existing Town policies and ordinances, as needed, to facilitate alternative energy production.

Cost Effectiveness: Unknown

Costs for measure EG-1b would stem mainly from staff-time needed to coordinate with PG&E, investigate potential alternative energy opportunities, and adopt appropriate changes to Town policies and codes. Given uncertainties surrounding the amount of staff effort that would be devoted to implementation of this measure, it is not currently possible to provide a quantified cost estimate. Additionally, since this measure would merely be supportive of measure EG-1, its individual benefits and emissions impacts cannot be precisely estimated. Therefore, given the uncertainties regarding the measure's costs and individual GHG reductions, its cost effectiveness cannot reasonably be determined.

EG-1C LOW-COST PERMIT FEES FOR SOLAR SYSTEMS

Maintain low permitting fees for energy efficiency improvements and alternative energy system installation as a means to continue to incentivize such upgrades for Danville residences.

Action Items and Responsible Parties

Town staff will continue to maintain and collect only nominal fees for the review and permitting of photovoltaic solar systems.

Cost Effectiveness: Unknown

Costs for measure EG-1c stem primarily from lost revenue the Town might otherwise be able to collect through imposition of higher solar system permitting fees. Nevertheless, the fees collected by Danville are currently deemed sufficient to cover basic administrative costs. Given that is not feasible to determine the precise value of staff time spent on solar permitting or the amount of fee revenue that might otherwise be generated, it is not possible to precisely quantify measure costs.

EG-1D PUBLIC EDUCATION ON CA ENERGY COMMISSION REQUIREMENTS

Disseminate information on applicable California Energy Commission (CEC) energy efficiency requirements for the replacement of heating, ventilation, and air conditioning (HVAC) systems at the time of permit application, and ensure that these standards are fully enforced by the Building Division's plan examiners and building inspectors, and by Danville's consultant plan examiners.

Action Items and Responsible Parties

To implement this measure, Danville will conduct marketing and outreach to provide information and technical assistance regarding CEC HVAC efficiency requirements to property

owners, development professionals, and residents. Additionally, Town staff will review development and project proposals and inspect structures for compliance with these standards.

Cost Effectiveness: Unknown

Staff-time costs for measure EG-1d will largely depend on the extent of educational and outreach efforts, the degree to which individuals and organizations utilize these resources provided by the Town, and the plan review and inspection workloads of the Building Division. Other direct costs or savings to Danville are not anticipated. The measure could result in direct costs to home- or business-owners if their existing or proposed HVAC systems are found to be deficient. However, since improvements to HVAC systems could result in energy and cost savings, the costs of any HVAC upgrades could be partially or entirely defrayed. Since this measure would merely be supportive of measure EG-1, its individual benefits and emissions impacts cannot be precisely estimated. Furthermore, precise estimates of the costs and savings of this measure would be highly speculative at present. Given that the costs, savings, and individual emissions reductions of this measure are highly uncertain, the cost-effectiveness of this measure cannot be reasonably determined.

EG-2 TIMELY ADOPTION OF STATE BUILDING CODES

Within one year of any update to the State Building Code which increases energy efficiency requirements, amend the Danville Building Code to align with the new requirements and use available means to announce and summarize the changes to the public.

Action Items and Responsible Parties

The Town Council and Town staff will review updates to the State Building Code, incorporate these updates into the Planning and Land Use Chapter of the Municipal Code in a timely manner, and work to ensure that all proposed developments are in compliance with the most up-to-date building standards. Town staff will also create summaries of any substantive changes and publicize these changes, as appropriate.

Cost Effectiveness: Unknown

Staff time costs from measure EG-2 are expected to be low and would stem from the need to incorporate State building code updates into the Municipal Code, as necessary. Additional staff time would be needed to announce and publicize summarized changes to the public. Danville is not anticipated to experience any other direct costs or savings as a result of this measure. In addition to the uncertainty of the resulting GHG reduction, it is not possible to reliably quantify the anticipated costs or savings of this measure. Therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-2A PRIORITY PROCESSING FOR GREEN PROJECTS

Provide incentives for green building projects, such as by offering priority processing and field inspection services.

Green building projects would be projects that secure LEED-Silver certification or equivalent GreenPoint rating.

Action Items and Responsible Parties

The Danville Planning Division will review development project applications to consider whether projects meet the incentives' certification/rating requirements, and will then follow through with the incentives (e.g., by prioritizing the project above others that do not meet the incentive's requirements). In order to utilize the incentives, development project applications would demonstrate the LEED Silver certification or equivalent GreenPoint rating. As part of this measure Danville will continue to perform C.3 plan review and inspections for all regulated projects.

Cost Effectiveness: High

Although priority permit processing may impose staff-time or other administrative resource costs upon the Town, these costs are anticipated to be low and may be offset through the eventual benefits of increased green building. Alternatively, streamlined regulations or procedures could result in reduced staff costs over time by promoting greater review efficiency. At present, precise estimates of the costs, benefits, and emissions impacts of this measure would be highly speculative. However, given the measure's anticipated low costs and likely cost and time savings for developers of green projects, it is deemed to be a highly cost-effective GHG emissions reduction strategy.

EG-2B REGULATORY/PROCEDURAL BARRIER REMOVAL FOR GREEN PROJECTS

Identify and consider the merits of removing regulatory or procedural barriers to implementing green building practices, such as the use of outdated codes or zoning regulations which discourage green construction.

Action Items and Responsible Parties

To implement this measure, Danville will review existing codes, guidelines, and zoning to identify regulatory or procedural barriers to green building practices. Based on the results of this review, Danville will seek to update any codes, guidelines, and zoning documents to remove such barriers.

Cost Effectiveness: Unknown

Measure EG-2b is anticipated to have moderate staff-time costs for analysis and streamlining of regulations and procedures. If removal of barriers involves streamlined permitting, reduced fees, or other ministerial changes, this measure may impose additional staff-time or other administrative resource costs upon the Town. These costs, however, are expected to be low and may be offset through the eventual benefits of increased green building. Alternatively, streamlined regulations or procedures could result in reduced staff costs over time through greater review efficiency. At present, the costs, savings potential, and GHG emissions reduction benefits of this measure are highly uncertain and not readily quantifiable. Therefore, the cost effectiveness of this measure cannot reasonably be determined.

EG-2C GREEN BUILDING TRAINING FOR TOWN STAFF

Train all Town plan examiners and building inspection staff in green building materials, techniques, and practices.

Action Items and Responsible Parties

To implement this measure, Danville will provide training for its plan review and building inspection staff and/or will send such staff to training programs held by outside agencies.

Cost Effectiveness: Unknown

Staff time costs of this measure are anticipated to be moderate to high and would stem from time and materials necessary to conduct training, or from the cost of sending staff to trainings elsewhere. Danville is not anticipated to experience any other direct costs from this measure. .However, the Town could experience cost savings if increased expertise among Town staff improves the efficiency or effectiveness of Town services, or allows the Town to avoid the cost of seeking outside expertise. Nevertheless, it is not possible to reliably quantify the full costs, savings, or GHG reductions resulting specifically from this measure, therefore the cost effectiveness of this measure cannot reasonably be determined.

EG-2D INTERGOVERNMENTAL SUSTAINABILITY COORDINATION

Coordinate with other local governments, special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and/or to develop green building policies and programs.

Action Items and Responsible Parties

To implement this measure, Danville will coordinate, as applicable, with other agencies for green building initiatives. For example, Danville will continue to partner with the Central

Contra Costa Solid Waste Authority with its educational forums (see Recycling and Sold Waste section for additional information).

Cost Effectiveness: High

Costs of measure EG-2d would stem from additional staff-time for coordination activities and could range from high to low, depending on the approach taken. Successful achievement of policies could offer significant cost-savings to Danville residents and businesses who must navigate multiple public processes. However, any estimate of cost savings or of GHG emissions reduction from this measure would be highly speculative, and it may not be feasible to precisely quantify measure impacts. Nevertheless, such coordination would typically be considered a best planning practice. Despite its inherent uncertainties, the potential for long-term efficiencies and GHG emissions reduction make this measure a highly cost-effective strategy.

EG-3 OUTDOOR LIGHTING EFFICIENCY

Maintain existing code requirements which require outdoor lighting fixtures to be energy-efficient, and expand these requirements as State codes are revised. Consider additional measures to reduce energy consumption from lighting fixtures, such as limitations on all-night outdoor lighting in construction sites, and encouraging the use of variable output lighting fixtures, timers, motion sensors and photocell-controlled fixtures.

Action Items and Responsible Parties

To implement this measure, Danville will amend the Planning and Land Use Chapter of the Municipal Code as necessary to incorporate the lighting efficiency requirements and meet State of California requirements in this regard. New development will be subject to the requirements, which could be incorporated either into the project design or as mitigation in the applicable environmental document pursuant to CEQA. In addition, the Danville Planning Division and the Parks and Facilities Department will review lighting plans for consistency with this measure, as necessary.

Cost Effectiveness: Unknown

Staff-time costs of measure EG-3 are expected to be low and would stem from continued implementation of relevant code requirements. Energy-efficient lighting often uses light-emitting diode (LED) technology, and costs for LED technology continue to fall. Currently LED streetlights are available at $200 per unit and life-cycle costs are now less than those of

conventional lighting technology.[11,12] Despite offering only modest projected GHG emissions reduction, given its anticipated net cost savings, this measure is deemed to be highly cost-effective.

EG-4 ENERGY CONSERVATION PROGRAMS

Partner with PG&E and other appropriate energy providers to promote energy conservation, including the following:

1) Promote the purchase of ENERGY STAR appliances, the use of compact fluorescent light (CFL) or light-emitting diode (LED) bulbs, and the replacement of halogen lamps with more energy-efficient lamps;

2) Promote energy efficiency audits of existing buildings to check, repair, and readjust heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization;

3) Encourage energy audits when residential and commercial buildings are sold, so that information regarding the opportunities for energy efficiency improvements is presented to the buyer;

4) Promote individualized energy management planning and related services for large energy users; and

5) Schedule periodic energy retrofits or "tune ups" of existing municipal buildings.

Action Items and Responsible Parties

To implement this measure, the Town will coordinate with PG&E to promote various existing PG&E programs that conserve energy, as well as to develop new PG&E programs. The Town will also continue to provide links to these and other similar PG&E conservation programs on its website.

Cost Effectiveness: Unknown

Costs to Danville from measure EG-4 are anticipated to be low and would stem primarily from staff time to coordinate with PG&E and publicize the various programs under the measure. The Town could incur additional costs from conducting its own energy retrofits and tune ups. These costs would vary depending on what corrective actions were taken. In

[11] Science Daily, March 8 2010, *LED Streetlights Best Buy for Cities, Researchers Report,* http://www.sciencedaily.com/releases/2010/03/100308132136.htm, accessed April 19, 2012.

[12] Linbaugh, Kate, April 9 2012, *LED Streetlight's Price Cut in Half,* Wall Street Journal.

some cases it is possible that long-term energy savings would outweigh retrofit costs. For residents and businesses, this measure would result in similarly variable costs and potential savings, depending on participation and actions taken; for this reason, it is not practical to precisely estimate such potential costs or savings. In addition to the minuteness of the GHG emissions reduction, it is not readily possible to quantify anticipated costs or savings. Therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-5 GREENPOINT BUILDING GUIDELINES

Encourage the use of GreenPoint Rated Building Guidelines by providing the GreenPoint "checklist" to building permit applicants.

The use of GreenPoint guidelines should be particularly encouraged for new or replacement residences and projects that include remodels of at least 50 percent or more of a residence's square footage. Danville will publicize the link to the website maintained by the Build It Green organization to provide applicant access to the GreenPoint checklist. Build It Green is a membership supported non-profit organization whose mission is to promote healthy, energy- and resource-efficient homes in California.

Action Items and Responsible Parties

Town staff will encourage developers, residents, and business owners to adopt GreenPoint Rated Building Guidelines and use the GreenPoint "checklist" when they undertake construction or remodeling projects. Town staff will offer information on GreenPoint when developers, residents, or businesses seek permits for construction and remodeling projects.

Cost Effectiveness: Unknown

Costs to the Town from measure EG-5 are anticipated to be very low and would stem from staff time to promote use of GreenPoint guidelines. No other direct municipal costs or savings are anticipated from this measure. Residents, developers, and businesses would experience variable, voluntary costs based on whether they adopt GreenPoint Building Guidelines. Since it is not possible to predict how many projects will adopt the guidelines or how strictly they will be adhered to, it is not possible to precisely estimate these costs. It is not possible to reliably quantify the anticipated costs or savings of this measure, therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-6 SOLAR WATER HEATING INCENTIVES

Support efforts by Pacific Gas and Electric and other appropriate energy providers to provide incentives for solar water heater installation, pursuant to AB 1470 (Section 902 and Sections 2860-2867.3 of the California Public Utilities Code).

AB 1470, the Solar Hot Water Energy Efficiency Act of 2007, directs the California Energy Commission to establish a ten-year, statewide incentive program to encourage the installation of 200,000 solar water heating systems to offset natural gas usage for water and space heating. The incentives would be funded by energy providers (e.g., Pacific Gas and Electric) and typically include rebates to the customer. Funding for this program would be provided by a surcharge of up to $250 million over ten years on certain major natural gas customers.

Action Items and Responsible Parties

To implement this measure, the Town will work with utility providers to develop incentives for solar water heating systems. New residential and non-residential development could take advantage of these incentives. The Town will also continue to provide links to these and other similar Pacific Gas and Electric (PG&E) conservation programs on its website.

Cost Effectiveness: High

Costs to Danville from measure EG-6 are expected to be low and would stem mainly from staff-time needed to coordinate with PG&E to develop the incentive program. The incentives themselves would not impose any municipal costs. In fact, all costs beyond staff-time will be incurred by PG&E and by the select customers subject to program fees. While no direct cost savings are anticipated to accrue, individual PG&E customers may experience reduced energy costs by implementing solar hot water heating. Total system costs would range from $2,193 to $4,386 per household, with annual maintenance costs estimated between $37 and $44.[13,14] Initial system costs would largely be covered by incentives provided under the program. Household-level cost savings would depend on energy costs, climate, and hot water use. In their *Solar Water Heating* report, the National Renewable Energy Laboratory estimated that annual savings could total $421, for a simple payback of seven years.[15,16] Given low anticipated costs to the Town and the potential for long-term cost savings to residents, this measure is deemed highly cost-effective.

EG-7 ELIMINATION OF BARRIERS TO RENEWABLE ENERGY

Identify and remove regulatory and permit processing barriers that limit the ability to readily incorporate renewable energy generation improvements into mid- to large-size commercial or office projects undergoing rehabilitation and/or remodeling.

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[13] Original estimates in 1996 dollars have been adjusted for inflation.

[14] National Renewable Energy Laboratory, 1996, *Solar Water Heating.*

[15] Original estimates in 1996 dollars have been adjusted for inflation.

[16] National Renewable Energy Laboratory, 1996, *Solar Water Heating.*

Action Items and Responsible Parties

To implement this measure, the Town will review existing codes, guidelines, and zoning to identify regulatory or procedural barriers to local development of renewable energy. Based on the results of this review, the Town will update any codes, guidelines, and zoning documents to remove such barriers.

Cost Effectiveness: Unknown

Measure EG-7 is anticipated to have moderate staff-time costs for analysis and streamlining of regulations and procedures. If removal of barriers involves streamlined permitting, reduced fees, or other ministerial changes, this measure may impose additional staff-time or other administrative resource costs upon the Town. These costs, however, are expected to be low and may be offset through the eventual benefits of increased solar system installation. Alternatively, streamlined regulations or procedures could result in reduced staff costs over time through greater efficiency. At present, precise estimates of the costs, benefits, and emissions impacts of this measure would be highly speculative. It is not possible to reliably quantify the anticipated costs or savings of this measure, therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-7A REBATE AND INCENTIVE UTILIZATIONS

Utilize available rebates and incentives for energy efficiency and distributed generation installations.

Such rebates and incentives could receive support from State or regional programs, which are typically funded by a public good surcharge on monthly utility bills.

Action Items and Responsible Parties

To implement this measure, Danville will take advantage of available rebate programs and promote these programs to the public. Danville residents and businesses, and potentially developers may take advantage of these programs.

Cost Effectiveness: High

Costs to Danville from measure EG-7a are anticipated to be low and would stem from staff time to investigate, publicize, and potentially take advantage of available rebates. No other direct costs are anticipated for the Town. Residents, businesses, and developers in Danville could experience substantial direct cost savings through the receipt of available rebates. Since this support measure would not create any statutes, requirements, or programs and would itself only serve to facilitate other measures, it is not possible to quantify individual

GHG reductions for this measure. Nevertheless, given its low costs and strong potential for savings in excess of those costs, this measure is deemed to be highly cost effective.

EG-7B PARKING LOT SOLAR ARRAYS

Facilitate the installation of parking lot solar arrays in commercial or office projects.

The 1978 California Solar Rights Act establishes the legal right to a solar easement, defines which solar energy systems are covered by its provisions, and limits local governments from adopting ordinances that would unreasonably restrict the use of solar energy systems. It does not bar restrictions on solar installations entirely, provided they are "reasonable."

Action Items and Responsible Parties

The Danville Planning Division will review development plans for consistency with this measure.

Cost Effectiveness: High

Danville businesses and developers could incur direct costs if they elect to create such solar installations. However, installing such systems and taking on the associated costs would be strictly voluntary. Since this measure would be voluntary and would merely be supportive of measure EG-7, its individual benefits and emissions impacts cannot be precisely estimated. However, given this measure's anticipated low costs, and the likely financial returns and GHG emissions reduction associated with solar power in general, this measure is deemed to be a highly cost-effective GHG reduction strategy.

EG-8 TITLE 20 AND TITLE 24 ENERGY EFFICIENCY

Encourage new development to comply with Title 20 standards for energy efficient appliances and to use energy efficient lighting technologies that meet or exceed Title 24 standards.

Title 20 is an existing California state appliance efficiency regulation that has broad-reaching implications aimed at the reduction of energy consumption, reduced dependence on oil, and strategies for addressing global climate change. A portion of this law mandates the efficiency of indoor and outdoor metal halide luminaires.

Title 24 represents California's existing development standards for building energy efficiency. Adopted in 2008, these standards address building insulation, HVAC systems, lighting, water heating, and other aspects of building construction and operations. These standards apply to all new buildings constructed within California.

Action Items and Responsible Parties

Danville will review updates to Title 24, incorporate these updates into Danville Planning and Land Use Chapter of the Municipal code in a timely manner, and work to ensure that all proposed developments are in compliance with the most up-to-date building and efficiency standards.

Cost Effectiveness: Moderate

Staff time costs from measure EG-8 are expected to be low and would stem from the need to incorporate State building and efficiency code updates into Danville's Municipal Code, as necessary. Additional staff time would be needed to summarize, announce, and publicize changes to the code. Danville is not anticipated to experience any other direct costs or savings as a result of this measure. It is not possible to reliably quantify the anticipated costs or savings of this measure, therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-9 WEATHERIZATION AND HEAT GAIN PREVENTION

Encourage architects, landscape architects, and design-build contractors for new development and major rehabilitation and/or remodeling projects to incorporate design measures which improve insulation and building energy efficiency.

Action Items and Responsible Parties

The Town will work to draft, adopt, and implement guidelines and requirements for improving building weatherization and reducing the heat-gain for structures in Danville. The Town should consider altering existing exceptions to cool-roof requirements to increase adherence to the requirements. Developers and contractors will be apprised of adopted guidelines and requirements, and proposals for development or significant remodels will be reviewed for consistency with adopted requirements. As a means to implement Regional Stormwater Pollution Control Section C.3 requirements, continue efforts to maximize permeable surface area in new developments, which serves to reduce both heat-gain and stormwater runoff.

Cost Effectiveness: Unknown

Costs to the Town from measure EG-9 are anticipated to be moderate and would stem primarily from the need to draft, adopt, and implement guidelines and requirements for weatherization. Other direct costs or savings for the Town are not anticipated. Residents, businesses, and developers could incur varying costs depending on the content of the adopted guidelines and requirements. However, these costs could potentially be offset by savings from reduced energy needs for building climate control. It is not currently possible to relia-

bly quantify the anticipated costs or savings of this measure, therefore, this measure's overall cost-effectiveness cannot reasonably be determined.

EG-9A CALIFORNIAFIRST PROGRAM

Consider participation in the CaliforniaFIRST program, which provides innovative, low-interest financing for energy efficiency projects for existing and new development.

The CaliforniaFIRST Program is a statewide Property Assessed Clean Energy (PACE) program authorized by the passage of AB 811 and AB 474. The CaliforniaFIRST Program provides financing for energy efficiency and renewable energy projects on residential and commercial properties. Under CaliforniaFIRST, the property owner repays the cost of the clean energy project through a line item on their property tax bill.

Action Items and Responsible Parties

To implement this measure, Danville will consider participation in the California-FIRST program.

Cost Effectiveness: Unknown

Town costs from measure EG-9a are expected to be low and would stem from staff-time costs to initiate and administer participation in the program. Since the sole purpose of this program is to offer alternative means to repay costs of various energy upgrades and systems, it is anticipated that there would be no other costs from this measure. While this measure has very low anticipated costs, the local GHG emissions reduction for the program cannot be precisely estimated. Therefore the measure's cost effectiveness for Danville cannot reasonably be determined.

EG-9B FUNDING FOR ENERGY AUDITS

Continue to maintain information on funding sources that local residents and businesses may access to fund energy audits so that homeowners and businesses may improve the energy-efficiency of their homes and buildings.

Action Items and Responsible Parties

Danville will maintain up to date information on available funding for energy audits and provide this information to residents, businesses, and developers through public outreach and in the course of providing permitting or other services.

Cost Effectiveness: Unknown

Costs to the Town from measure EG-9b are anticipated to be low and would stem from the need to maintain and disseminate information in regard to funding for energy audits. No other direct costs or savings for the Town are anticipated. This measure is not anticipated to result in direct or indirect costs to Danville residents or businesses, but could result in direct savings if residents and businesses are able to secure funding to cover the costs of energy audits. Moreover, corrective actions identified by such audits could result in long term energy savings for residents and businesses. Nevertheless, it is not possible to reliably quantify the precise costs or savings resulting from this measure. Since it is merely supportive of measure EG-9 and would not itself create statutes or requirements, it is likewise not possible to reliably quantify GHG emissions reductions from this measure. Therefore, given the uncertainty in the measure's cost, savings, and GHG emissions reduction, the cost effectiveness of this measure cannot be reasonably determined.

EG-9C LOW INCOME WEATHERIZATION PROGRAM

Continue supporting low income weatherization programs sponsored and administered by Pacific Gas and Electric and Contra Costa County.

The Contra Costa County Weatherization Program is a federal and State funded program whose purpose is to assist low and/or fixed income residents throughout the County in making their homes more energy efficient. The program offers home improvements that will reduce monthly energy costs, including caulking, weather-stripping doors, repair or replacement of gas water heaters, stoves and/or refrigerators.

Action Items and Responsible Parties

To implement this measure, Danville will continue to support existing County-level weatherization programs and, as applicable, take advantage of additional funding opportunities to support and expand such programs.

Cost Effectiveness: High

Town costs from measure EG-9c are expected to be low and would stem from staff-time costs to continue program participation and seek relevant funding. Assuming Danville identifies and obtains full weatherization program funding from the County or other agencies, it is anticipated that staff-time would represent the primary cost to the Town from this measure. While this measure has very low anticipated costs, it is not possible to quantify its resulting GHG emissions reduction. Therefore the measure's cost effectiveness cannot reasonably be determined. It should be noted, however, that federally administered weatherization programs typically apply treatments which offer savings commensurate with or exceed-

ing their costs.[17] Provided local weatherization programs follow similar guidelines, these programs could be highly cost effective.

EG-9D PUBLIC EDUCATION PARTNERSHIPS

Partner with local design professionals to create a brochure or web page to educate citizens on how to save energy through effective building design.

Action Items and Responsible Parties

Danville will seek out and establish contact with local design professionals to solicit their input and support for the creation of promotional materials relating to energy conservation and building design.

Cost Effectiveness: Unknown

Costs to Danville from measure EG-9d are anticipated to be low to moderate, and would stem from staff-time and materials costs to establish professional connections and collaborate on the preparation of promotional materials. No other direct costs or savings are anticipated for the Town, or for residents or businesses. Since it would create no specific requirements or programs, and since it would serve only to encourage the practices outlined in other measures, it is not possible to quantify GHG emissions reductions for this measure. Given the uncertainties regarding the costs, savings, and GHG emissions reduction for this measure, its cost effectiveness cannot reasonably be determined.

EG-10 DOWNTOWN SIDEWALK SHADING

Implement planned landscaping and streetscape capital improvements projects in the North Hartz area, and elsewhere in the Downtown where deemed appropriate, to make the area more comfortable for pedestrians, increase shade, and potentially reduce cooling costs for adjoining structures.

Action Items and Responsible Parties

Town staff will work to identify opportunities to improve the Downtown Danville streetscape and offer shading for buildings, sidewalks, and parking areas. Financing for such improvements would come primarily from Capital Improvement Program funding, which is derived from a variety of sources including local taxes, federal funds, and various develop-

[17] Oak Ridge National Laboratory, National Retrospective Evaluation of the Weatherization Assistance Program (WAP), http://weatherization.ornl.gov/evaluation_nr.shtml, accessed on Apr 25, 2012.

ment fees.[18] Town staff should seek additional funding opportunities, including grants, to undertake identified and future improvements.

RECYCLING AND SOLID WASTE

A summary of the cost effectiveness and responsible parties for the Recycling and Solid Waste measures is provided in Appendix A - Greenhouse Gas Reduction Measures Matrix.

Recycling and Solid Waste measures serve to reduce GHG emissions primarily by the lessening the need for energy-using processes surrounding the fabrication and disposal of consumer products, as well as by limiting or recapturing the GHGs given off when such materials degrade in landfills. The production of consumer goods involves resource extraction, refinement, manufacturing, transportation, and other processes, all of which consume energy. As discussed above, current methods of energy generation tend to produce GHGs. By seeking to promote more limited purchasing and greater reuse and recycling of materials and goods, the Recycling and Solid Waste measures serve to decrease the need for energy-consuming production and disposal processes, and thereby reduce GHG emissions.

Discarded products that end up in landfills can release GHGs, especially methane, as they decompose. In fact, the U.S. EPA considers municipal landfills to be the second largest source of human-related methane emissions in the United States, accounting for nearly 23 percent of these emissions in 2006. Methane gas is estimated to have a proportional global warming potential (GWP) 21 times greater than a corresponding volume of CO_2. While an increasing number of landfills are implementing systems to capture methane (and use the captured methane to generate electricity), the Central Contra Costa Solid Waste Authority has also implemented programs that stress keeping compostable and other biodegradable materials out of landfills in the first place. Programs such as backyard composting, residential food scrap and yard waste recycling, and restaurant food waste composting, all help to reduce GHG emissions and improve the environment. In addition, composting creates a nutrient-rich soil amendment that not only replenishes depleted soil, but also helps it capture and hold more carbon—another climate benefit. By seeking to limit or recapture such gasses, the Recycling and Solid Waste measures serve to further reduce GHG emissions.

These measures offer other broad sustainability benefits as well. Solid waste reduction measures decrease demand for virgin materials and other inputs to production. This serves

[18] Town of Danville, Capital Improvement Program Report, 2012

to decrease resource extraction and the environmental impacts, such as habitat disruption, that are associated with it. Similarly, composting recycles nutrients within the waste stream, thus further conserving resources and supporting local agriculture. Other sustainability benefits come from reductions in demand for the processing and storage of solid waste. Some solid waste may contain toxic or harmful compounds, and nearly all waste requires certain handling techniques to ensure its safe disposal. Encouraging greater reuse and more conscientious disposal techniques thus reduces risks to people and the environment from hazardous materials. Finally, reduced solid waste disposal reduces the space needed for landfills, thereby conserving land and prolonging the life of existing facilities.

Since GHG emissions reduction for Recycling and Solid Waste measures are determined based on the total anticipated waste diversion, it is not possible to quantify the individual GHG emissions reduction resulting from each measure. However, the content of each individual measure may be viewed as a potentially necessary component of a broader strategy to reduce the waste stream. Given the constraints for projecting GHG reductions from individual solid waste measures, each measure has been discussed in general terms of its costs and benefits, even when a precise cost-effectiveness determination cannot be made.

RECYCLING AND SOLID WASTE MEASURES

RW-1 CONSTRUCTION WASTE MANAGEMENT PLANS

Require submittal of Waste Management Plans for mid- to large-scale construction and renovation projects. Continue to undertake measures which move toward 75 percent diversion of construction waste, consistent with the 2020 goals of AB 341.

Under current Municipal Code requirements, qualifying projects are required to divert 50 percent of non-hazardous construction materials and to use certified waste facilities. At the time of adoption of the Sustainability Action Plan, qualifying projects were construction and renovation projects with a value of over $50,000 and/or with an affected construction area of over 1,000 square feet.

Action Items and Responsible Parties

To implement this measure, Danville will maintain existing Planning and Land Use Chapter of the Municipal Code construction waste management and diversion requirements, and move toward more stringent requirements over time. Town staff will continue to impose through application of standard conditions of approval on discretionary development entitlements—requirements to develop and implement Waste Management Plans. Danville will also continue to work with the Central Contra Costa Solid Waste Authority to connect ap-

plicants for construction and renovation projects to Certified Construction and Demolition Waste Recovery Facilities.

Cost Effectiveness: High

Staff-time costs of measure RW-1 are expected to be moderate and would stem from the need to continue implementation and administration of Danville's existing construction waste management requirements. Additional staff time may be needed in the future as higher standards for waste diversion are set. No other direct or indirect costs or savings for the Town from measure implementation are anticipated. Construction costs or savings from this measure would depend, in large part, upon the specific circumstances and characteristics of any particular project. Despite this variability, CalRecycle offers generalized estimates for the cost of recycling various construction materials.[19] Additionally, Build It Green estimates that recycling or reuse of demolition and construction wastes can save between $0.10 and $1.00 per square foot in construction costs.[20] Since detailed sector-specific waste production and diversion data are not available, it is not practical to quantify projected GHG emissions reduction from this specific measure. Although it is not feasible to resulting GHG emissions reductions, since measure RW-1 is anticipated to result in net savings in itself, it is deemed to be highly cost-effective.

RW-2 RECYCLING AREAS IN MULTI-FAMILY HOUSING

Consistent with AB 341, require all newly constructed multifamily developments and existing multifamily developments undergoing significant remodels to install or upgrade recycling areas for their residents, and to do so in a manner that meets Town and Central Contra Costa Solid Waste Authority design standards.

Significant remodels are defined as those that add or alter 50 percent or more of the square footage or wall area. AB 341 requires the expansion of recycling facilities to every multi-family dwelling and business, and would charge CalRecycle with the responsibility for ensuring that the state is diverting at least 75% of its garbage by 2020.

[19] CalRecycle is the state's leading authority on recycling, waste reduction, and product reuse. Officially known as the Department of Resources Recycling and Recovery, CalRecycle plays an important role in the stewardship of California's vast resources and promotes innovation in technology to encourage economic and environmental sustainability. http://www.calrecycle.ca.gov/, August, 2012

[20] Built It Green, 2006, *Construction & Demolition Waste Diversion,* http://www.builditgreen.org/attachments/wysiwyg/3/CD-Waste-Diversion.pdf, downloaded Apr 12, 2012.

Action Items and Responsible Parties

To implement this measure, Danville will amend the Planning and Land Use Chapter of the Municipal Code to incorporate this requirement. New multifamily development and redevelopment will be subject to the requirement. In addition, the Danville Planning Division will review development applications for consistency with this measure.

Cost Effectiveness: High

Staff-time costs of measure RW-2 are expected to be low to moderate and would stem from the need to draft, adopt, and implement relevant Municipal Code requirements. No other direct or indirect costs to the Town are anticipated from this measure. Costs to developers or building-owners could arise from the need for increased space, management, or number of receptacles to accommodate recycling. These costs, however, are anticipated to be very low relative to overall construction or remodeling costs. Since detailed sector-specific waste production and diversion data are not available, it is not practical to quantify projected GHG emissions reduction from this specific measure. Although it is not feasible to determine resulting GHG emissions reduction, this measure is anticipated to result in very low costs and is essential to Danville meeting its waste diversion goals, especially for new multifamily housing and commercial development. Therefore, measure RW-2 is deemed to be highly cost-effective.

RW-3 SALVAGED AND RECYCLED MATERIALS USE

Encourage the use of salvaged materials, recycled-content materials, and/or other materials that have low production-energy costs, for building materials, hard surfaces, and non-plant landscaping.

Action Items and Responsible Parties

To implement this measure, Danville will develop informational materials and conduct outreach to encourage the use of salvaged and recycled materials. In the course of providing permitting and other service to residents, businesses, and developers, Town staff should provide information on how projects may best comply with this measure. In addition, Danville Planning Division staff may review development applications for consistency with this measure and offer suggestions for how developers and contractors may incorporate its provisions.

Additionally, Danville will continue to cosponsor multiple e-waste recycling events throughout the year, and will continue to support the Central Contra Costa Solid Waste Authority's efforts to educate the public on the benefits of buying products that contain recycled materi-

als. Finally, the Town will continue its own efforts to make use of reclaimed or recycled materials, such as with its recycling of aggregates for street repaving.

Cost Effectiveness: Unknown

Costs to the Town from measure RW-3 are expected to be low and would stem from materials and staff-time devoted to creating promotional materials and conducting public outreach regarding the use of salvaged, recycled, and locally-produced materials. Local sourcing of building materials might carry higher construction costs, but these cannot be reliably quantified and would be strictly voluntary. While it is not anticipated that this measure would necessarily result in direct cost savings, it could have the indirect effect of supporting local business and the tax base. Given that detailed sector-specific waste production and diversion data are not available, it is not feasible to determine resulting GHG emissions reductions. Since neither its precise costs nor its GHG emissions reduction can be reliably estimated, the cost-effectiveness of this measure cannot reasonably be determined.

RW-4 FOOD SCRAP/GREEN WASTE DIVERSION

Continue to work with public and private waste disposal entities to keep food and green waste out of landfills.

Action Items and Responsible Parties

Danville will work to continue and expand existing food scrap and green waste diversion programs, including the current "Food Recycling Project." This program entails an innovative partnership between the Central Contra Costa Solid Waste Authority, East Bay Municipal Utility District, and Allied Waste Services to divert commercial food waste from landfill disposal for conversion into renewable energy. Begun as a pilot program in November 2008, the program currently serves restaurants, grocery stores, and other large commercial or institutional food-waste generators in the Central Contra Costa County service area of the Solid Waste Authority. Danville should likewise work to continue and expand residential food scrap and green waste diversion programs, such as curbside compost and yard waste pickup. By 2010, Central Contra Costa residents had exceeded state regulations by recycling and composting 58% of their waste to make more efficient use of their landfill. Danville should seek to significantly exceed this level of diversion by 2020.

Cost Effectiveness: High

Costs to Danville are anticipated to be low and would stem primarily from staff time to coordinate with waste handlers to encourage or help administer ongoing diversion programs. Any increase to disposal costs resulting from implementation of these programs would be

borne by waste handlers and likely passed on to the residents and businesses that rely on their disposal services. Other municipalities have found composting to be a cost-effective approach to waste diversion, and any cost increases should be minimal.[21] Curbside and other composting programs allow waste handlers to save on costs by reducing the need for landfilling and thus extending the lifetimes of existing landfills, as well as by creating nutrient-rich soils which can then be sold to farmers, landscapers, or consumers. Although it is not feasible to determine resulting GHG emissions reductions, since measure RW-4 has a strong potential to result in net or long-term savings, it is deemed to be highly cost-effective.

RW-5 PUBLIC EDUCATION FOR WASTE DIVERSION

Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs.

Action Items and Responsible Parties

To implement this measure, Danville will expand educational and outreach programs about waste reduction. Danville will also continue to support the Central Contra Costa Solid Waste Authority's free composting workshops, as well as the Solid Waste Authority's efforts to educate the public on the benefits of buying products that contain recycled materials.

Cost Effectiveness: Unknown

Costs of measure RW-5 to the Town are anticipated to be low and would stem from time and materials costs for staff to conduct outreach and produce promotional materials for public education regarding waste diversion. No other direct costs or savings for the Town or for residents and businesses are anticipated as a result of the measure. Given that detailed sector-specific waste production and diversion data are not available, it is not practical to quantify projected GHG emissions reductions from this measure. Since neither its precise costs nor its GHG emissions reductions can be reliably estimated, the cost-effectiveness of the measure cannot reasonably be determined.

[21] Slovic, Beth, Portland gets ready to adopt curbside composting in all neighborhoods, The Oregonian, August 16, 2011, http://www.oregonlive.com/portland/index.ssf/2011/08/portland_gets_ready_to_roll_ou.html, Accessed on August 27, 2012

RW-6 LANDFILL METHANE EMISSION REDUCTION

Support efforts by public and private waste disposal entities to reduce methane emissions released from waste disposal, and promote methane recovery at the landfill to use for energy production.

Action Items and Responsible Parties

The Town will coordinate with local and regional waste handlers to encourage methane recovery operations at landfills which serve Danville.

Cost Effectiveness: Unknown

Costs to Danville from measure RW-6 are anticipated to be very low and would stem from staff time for coordination activities with waste handlers. No other direct or indirect costs are anticipated for the Town. It is possible that funding costs for methane recovery programs could be passed on to customers. Alternatively, methane recovery operations could enable waste handlers to operate facilities using power generated onsite, or even allow facilities to sell excess power, thus potentially recouping a portion of program costs. Nevertheless, any estimate of costs, potential savings, or the degree to which these would impact Danville residents would be speculative. Given that detailed sector-specific waste production and diversion data are not available, it is not practical to quantify projected GHG emissions reductions from this measure. Since neither its precise costs and savings, nor its individual GHG emissions reduction can be reliably estimated, the cost-effectiveness of the measure cannot reasonably be determined.

RW-7 DOWNTOWN RECYCLING CONTAINERS PILOT PROGRAM

Implement a pilot program for recycling containers in the Downtown area, and expand the program if the pilot containers experience adequate usage.

Action Items and Responsible Parties

To implement this measure, Danville will install recycling containers in the Downtown and nearby parks, as needed. This action will initially be undertaken as part of Capital Improvement Program Project A-563, which will replace 70 trash receptacles in the Downtown area with 85 trash receptacles and 25 recycling receptacles

Cost Effectiveness: Unknown

Costs to the Town from measure RW-7 are expected to moderate to high and would stem from waste collection from public receptacles, as well as from the provision and ongoing

maintenance of those receptacles. The most inexpensive recycling containers may cost as little as $30 to $40 apiece, but larger, metal containers that are more standard in a well-used public space typically cost between $400 and $500.[22] Larger, solar-power trash compactors may cost as much as $3,700, but do offer potential savings from reduced collection frequencies.[23] This measure could offer savings if it results in lower needs for landfilling and thereby increases landfill lifetime; however, it is not presently feasible to quantify such savings for Danville. Since detailed sector-specific waste production and diversion data are not available, it is also not practical to quantify projected GHG emissions reductions from this measure. Therefore, the cost-effectiveness of this measure cannot reasonably be determined.

RW-8 HOLIDAY TREE DISPOSAL SERVICES

Continue to partner with the Central Contra Costa Solid Waste Authority to promote and encourage Danville residents to make use of the Authority's curbside pickup service for discarded holiday trees.

Action Items and Responsible Parties

Danville will continue to publicize the availability of holiday tree pickup services and the Solid Waste Authority will continue to provide those services at seasonally appropriate times.

Cost Effectiveness: Unknown

Costs to Danville from measure RW-8 are anticipated to be very low and would stem from staff time and materials devoted to outreach and publicity for holiday tree pickup services. No other direct or indirect costs or savings are anticipated and no new costs or savings are anticipated for residents or businesses. Since detailed sector-specific waste production and diversion data are not available, it is not practical to quantify projected GHG emissions reduction from this measure. Therefore, despite its anticipated low cost, the cost-effectiveness of this measure cannot reasonably be determined.

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[22] Cooley, Alec, et al., 2004, *Integrated campus recycling and waste management guide*, UC Davis.

[23] Rundle, Elaine, January 7, 2010, *Solar-Powered Self-Compacting Trash Bins Save Town Labor, Fuel,* Government Technology, http://www.govtech.com/technology/Solar-Powered-Self-Compacting-Trash-Bins-Save-Town.html, accessed April 12, 2012.

WATER AND WASTEWATER

A summary of the cost effectiveness and responsible parties for the Water and Wastewater measures is provided in Appendix A - Greenhouse Gas Reduction Measures Matrix.

For many of the Water and Wastewater measures, the cost effectiveness cannot be reasonably determined. It should be noted however, that the content of these various measures may be viewed as a potentially necessary individual components of a broader strategy for water-use reduction.

Water and Wastewater measures serve to reduce GHG emissions primarily through reduced energy needs for water storage, pumping, and treatment, as well as through reduced fugitive GHG emissions from wastewater and sewage. The provision of water through a municipal supply requires elaborate and extensive infrastructure. Beyond the energy needed for the everyday operations of this infrastructure, its construction and ongoing maintenance generates energy demand. Thus, by reducing water usage, these measures decrease both these routine demands for energy and the long-term demand for energy related to the upkeep, replacement, and expansion of water-system infrastructure. As discussed above, most energy is currently derived from carbon-intense fossil fuel sources. Therefore, lessening the water use which currently relies on carbon-intense energy sources is the main mechanism by which these measures would serve to reduce GHG emissions. Additionally, decreased water use means subsequent decreases in quantities of wastewater. Since treating wastewater requires additional energy and can itself release GHGs through natural degradation processes, decreased generation of wastewater also serves to reduce GHG emissions.

Beyond the energy savings discussed above, these measures yield other sustainability benefits as well. Though fresh water is a renewable resource, the amount available at a particular time and place is finite and likely to decrease over time. Wiser use of water makes communities more resilient in the face of drought or other water shortages, and can reduce or delay the need for infrastructure improvements or expansions. Reduced urban water use also allows more water to be left in natural waterways, offering benefits for wildlife, agriculture, and recreation. Finally, some of the measures which help to reduce water use and wastewater generation, such as green roofs, xeriscaping, and bioswales, also serve to provide habitat to native urban wildlife.

WATER AND WASTEWATER MEASURES

WW-1 CALIFORNIA GREEN CODE WATER-USE STANDARDS

For new development, require all water use and efficiency measures identified as mandatory in the California Green Building Standards Code, and consider more stringent targets based on the Code's voluntary requirements. As feasible and appropriate, partner with local water conservation entities on the development and implementation of supportive efforts to reduce outdoor use of potable water.

California Green Building Standards Code requirements include: 1) reduce indoor potable water use by 20 percent after meeting the Energy Policy Act of 1992 fixture performance requirements, and 2) reduce outdoor potable water use by 50 percent from a calibrated mid-summer baseline case, for example through irrigation efficiency, plant species, recycled wastewater, and captured rainwater, or new development.

Action Items and Responsible Parties

To implement this measure, the Danville Planning Division will review development project applications for consistency with this measure. New development will be subject to these requirements. Town staff should work with local agencies such as East Bay Municipal Utility District to develop other programs and policies to reduce outdoor potable water use. Danville will also continue its own efforts to reduce water use in municipal facilities; such efforts include low-flow fixtures and motion-activated faucets.

Cost Effectiveness: High

Costs to Danville are expected to be moderate and would stem primarily from staff time devoted to: ensuring compliance with the standards, coordination with water purveyors, and possible future revisions to water efficiency standards. Other direct costs to the Town could include those for brining municipal facilities into compliance with revised standards. However, the Town could realize cost savings in the event that compliance with these measures reduces water use at municipal facilities. Residents, businesses, and developers could similarly face higher construction and renovation costs, but would likely accrue savings as a result of reduced water use. In institutional settings, water-conserving fixtures have been shown to result in substantial cost savings, which can offer simple payback in just over two years.[24] Although the direct GHG emissions reduction from this measure cannot be quantified, its strong potential for savings makes this measure highly cost effective.

[24] Federal Energy Management Program, 2012. http://www1.eere.energy.gov/femp/program/waterefficiency_portland.html.

WW-2 DROUGHT-RESISTANT LANDSCAPING

Continue to require new development to use native plants or other appropriate non-invasive plants that are drought-tolerant.

Action Items and Responsible Parties

To implement this measure, the Danville Planning Division will review landscaping and irrigation plans for consistency with this measure as part of the standard project conditions of approval. New development will be subject to the requirement.

Cost Effectiveness: High

Costs to Danville from measure WW-2 are anticipated to be moderate to high and would stem from the need to draft, adopt, and implement ordinances to enact measure requirements. This would generally be accomplished through an updated Water Efficient Landscape Ordinance. Other costs from this measure could affect residents, developers, and businesses, and would stem from the additional expense of selecting and planting appropriate plants, or performing comprehensive xeriscaping. Costs for water-efficient landscaping vary, with multiple estimates, including: $3.50 to $10 per square foot; $1.37 to $1.93 per square foot; or $1,500 to $15,000 for an entire project.[25,26,27] Installation costs could be lower for yards which substitute in native plants, but are otherwise conventionally landscaped. Maintenance costs of xeriscaping vary and may be either higher or lower than those of conventional lawns. Studies of xeriscaping have indicated that simple payback times for conversion projects range from two to six years.[28] Since this measure would only apply to new developments, costs would be lower than for retrofits, potentially improving payback times. However, since overall water savings from implementation of this measure cannot be reliably predicted, its specific GHG emissions reduction cannot be precisely quantified. Because installation of low-water and drought-tolerant landscaping would likely lead to net cost savings, this measure is deemed to be highly cost-effective.

WW-3 DUAL PIPING FOR RECYCLED WATER USE

To the extent mandated by law, require new multifamily and mixed use projects, and other mid- to large-size development projects as deemed appropriate, to install dual piping for reclaimed water use, in anticipation of the eventual availability of a reclaimed water supply for non-potable water use.

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[25] Wardell, Sean, February 6, 2012, *Xeriscape business blooming,* Killeen Daily Herald.

[26] Caldwell, Elizabeth, July 17 2007, *With xeriscaping, grass needn't always be greener*, USAToday.

[27] Southern Nevada Water Authority, 2005, *Xeriscape Conversion Study Final Report.*

[28] Southern Nevada Water Authority, 2005, *Xeriscape Conversion Study Final Report.*

Action Items and Responsible Parties

The Town will draft, review, and adopt changes to its Planning and Land Use Chapter of the Municipal Code requiring appropriately sized and located new multifamily and mixed-use projects to include dual piping for future connections to reclaimed water systems. Projects may incorporate these features either into the project design or as mitigation in the applicable environmental document pursuant to CEQA. The Danville Planning Division will review project plans for consistency with this measure.

Cost Effectiveness: Unknown

Costs to the Town from this measure are anticipated to be moderate and would stem from the staff time needed to draft, review, and adopt relevant requirements in the Municipal Code. No other direct or indirect costs or savings for the Town are anticipated as a result of this measure. Other costs of this measure would primarily impact developers, who would bear the cost of including dual piping in new multifamily projects. It is possible that some portion of these costs may be passed on to residents. However, the early inclusion of dual piping systems has the potential to result in significant savings by preventing the need for expensive retrofits once shared reclaimed water systems become available. Once implemented, such systems would offer additional savings potential by reducing the need for the use of potable water. Estimates of these costs and benefits would be speculative and will vary from project to project. Given that the potential reductions in water use from this measure are uncertain and would occur at an unspecified point in the future, it is not possible to quantify 2020 GHG emissions reduction for this measure. Given its uncertain costs, savings, and GHG emissions reduction benefits, the cost effectiveness of this measure cannot reasonably be determined.

WW-4 Free Water Audits

In collaboration with East Bay Municipal Utility District's, promote water audit programs that offer free water audits to single family, multifamily, large landscape accounts, and commercial customers. Collaborate with purveyors to enact conservation programs for commercial, industrial, and institutional accounts, as well as programs to install ultra-low-flush toilets in public facilities.

Action Items and Responsible Parties

To implement this measure, Danville will coordinate with East Bay Municipal Utility District's (EBMUD) and conduct outreach to promote water audit and other programs. As part of this effort, Danville will continue to participate in EBMUD's IRIS roadside irrigation monitoring program, as well as the EBMUD "waterSMARt" water audit program, which

includes ongoing upgrades to irrigation water meters.[29] These upgrades allow the Town to receive regular reports documenting information such as the water usage and water budget for each irrigation site. The Town will also seek to create new water conservation programs encouraging the installation of water efficient fixtures for particular users.

Cost Effectiveness: Unknown

Staff-time costs of measure WW-6 are expected to be low to moderate and would stem from material and staff-time costs to promote water audit programs and work with water purveyors. Costs and savings for homeowners will vary depending on the results of individual audits and what actions are subsequently taken. The effects of this measure also overlap considerably with those of statewide water conservation initiatives, complicating any quantification of direct costs or benefits. Since it is not practical to quantify the costs, benefits, or GHG emissions reduction resulting directly from this measure, its specific cost-effectiveness cannot reasonably be determined.

WW-5 USE OF RECLAIMED WATER

Promote the use of reclaimed water (i.e., treated wastewater) and gray water (i.e., shower water) for irrigation purposes consistent with the appropriate provisions of Title 22 and approval of the State Health Department. As part of this measure, support East Bay Municipal Utility District efforts to inventory potential non-potable uses of water for potential substitution by recycled and/or gray water.

Action Items and Responsible Parties

To implement this measure, Danville will amend the Planning and Land Use Chapter of the Municipal Code to encourage the use of non-potable water and recovered residential rainwater for irrigation. Existing and new development may implement this measure on a voluntary basis. In the course of contact with project and permit applicants, Danville staff will promote the use of reclaimed water and offer information about the installation and benefits of such systems.

Cost Effectiveness: Unknown

Costs to the Town from measure WW-5 are expected to be low and would stem from materials and staff-time devoted to promoting the use of recycled water for irrigation. Costs and

[29] The IRIS Program is EBMUD's Irrigation Reduction Information System Program which provides water budgets to inform its customers how much water is required by the landscape to replace evaporation during each billing period, based on actual landscape area and weather data for the area.

savings for home and business owners would vary greatly and would depend on the specifics of water recovery systems. Any effects of this measure would overlap considerably with those of statewide water conservation initiatives, complicating any quantification of direct costs or benefits. Since it is not practical to precisely quantify the costs, benefits, or GHG emissions reduction resulting directly from this measure, its specific cost-effectiveness cannot reasonably be determined.

WW-6 EBMUD RECLAIMED WATER PROGRAMS

Support East Bay Municipal Utility District efforts to develop cost-effective strategies for increasing the supply of reclaimed water available to Danville for non-potable use. This should include the extension of reclaimed water infrastructure to Danville neighborhoods, and the development of new laterals and localized infrastructure which deliver this water supply to existing customers.

Action Items and Responsible Parties

Danville will communicate and coordinate with East Bay Municipal Utility District to develop cost-effective approaches and plans to bring reclaimed water service to more areas within Danville.

Cost Effectiveness: Unknown

Costs to Danville from measure WW-6 could range from low to high depending on the degree of Town involvement in the creation of plans for reclaimed water infrastructure. These costs would stem primarily from staff time devoted to coordination or planning activities. Costs and savings for residents, businesses, and developers could also vary considerably depending on the type and extent of systems installed, and how construction of the necessary infrastructure is funded. Any estimate of such costs and savings would be highly speculative. Given that the potential reductions in water use from this measure are uncertain and would occur at an unspecified point in the future, it is not possible to quantify 2020 GHG emissions reduction for this measure. Since it is not practical to precisely quantify the costs, benefits, or GHG emissions reduction resulting directly from this measure, its specific cost-effectiveness cannot reasonably be determined.

WW-7 PUBLIC EDUCATION FOR WATER CONSERVATION

Continue public information and school education programs to promote the benefits of water conservation, particularly those programs being implemented by East Bay Municipal Utility District.

Action Items and Responsible Parties

To implement this measure, Danville will continue and consider expanding educational and outreach programs about water conservation. One such program is Danville's ongoing C.3 – Stormwater Pollution school education program. Danville will also coordinate with and support East Bay Municipal Utility District in their public education efforts regarding water conservation.

Cost Effectiveness: Unknown

Costs to the Town of measure WW-7 are anticipated to be low and would stem from time and materials costs for staff to conduct outreach and produce promotional materials for public education regarding water conservation. No other direct costs or savings for the Town, or for residents and businesses, are anticipated as a result of the measure. Given that the potential reductions in water use from this measure are uncertain and would occur at an unspecified point in the future, it is not possible to quantify 2020 GHG emissions reduction for this measure. Since it is not practical to precisely quantify the costs, benefits, or GHG emissions reduction resulting directly from this measure, its specific cost-effectiveness cannot reasonably be determined.

OTHER AND LIFE CYCLE EMISSIONS

The measures listed on the following pages would not result in quantifiable reductions in greenhouse gas emissions in Danville. A summary of the implementation items for each of the measures in these sectors is provided in Appendix A – Greenhouse Gas Reduction Measures Matrix.

Measures in this section address issues including but not limited to consumer behavior and the consumption of goods and products. These measures rely on a variety of broad GHG reduction mechanisms. However, due to the complex nature of these mechanisms, it is impractical to attempt to model the costs, savings, or GHG emissions reduction impacts of these measures. For instance, lifecycle emissions are the emissions generated by the activities and processes associated with materials extraction and manufacturing for consumer, construction, or industrial products. Such emissions are extremely difficult to quantify due to the complexity of the systems which produce these goods. Similar difficulties apply to the production and transportation of food. Since neither quantified GHG emissions reduction nor precise cost estimates can be prepared for these measures, it is not practical to provide

estimates of cost-effectiveness for measures in this section. However, the GHG reduction mechanisms for each measure are discussed.

Due to the diverse nature of these measures, they offer a variety of other sustainability benefits beyond GHG emissions reduction. Measures pertaining to electric yard equipment also serve to reduce air and noise pollution. Measures concerning durable products and the use of recycled materials help to conserve resources and reduce both material and financial waste. Lastly, measures pertaining to local and community agriculture serve to reduce the distance food must travel, while also providing habitat and foraging areas for wildlife, and serving to improve community cohesion and health.

OL-1 YARD EQUIPMENT EXCHANGE PROGRAM

In conjunction with the Bay Area Air Quality Management District, encourage yard equipment exchange programs which allow residents to trade in gas-powered machines for electric models.

Action Items and Responsible Parties

Town Staff will coordinate with Bay Area Air Quality Management District to promote yard equipment exchange programs.

GHG Reduction Mechanism

Gas-powered yard equipment is less energy efficient than electrically powered equipment, and is associated with the direct emission not only of CO_2 but of other air pollutants and GHGs. Switching to electric yard equipment eliminates these direct emissions and serves to reduce the overall GHG emissions associated with yard equipment use. In a similar fashion, the Town has already undertaken efforts to replace gas-powered utility vehicles used for maintenance with smaller, golf-cart style, plug-in electric vehicles.

OL-2 OUTDOOR ELECTRICAL OUTLETS ON BUILDINGS

Require new developments to have outdoor electrical outlets to support use of electrical yard equipment, consistent with the current California Building and Energy Efficiency standards.

Action Items and Responsible Parties

The Town will integrate State requirements for outdoor electrical outlets into Danville's Municipal Code. Staff at the Danville Planning Division will review development applications and project plans for consistency with this measure.

GHG Reduction Mechanism

This measure helps support the implementation of measure OL-1 by enabling the use of electric yard equipment. For an explanation of the GHG emissions reduction mechanism associated with electric yard equipment, see measure OL-1.

OL-3 RECYCLED AND RENEWABLE MATERIALS IN PRODUCTS

Develop incentives that encourage the public and private purchase and use of durable and nondurable items, including building materials, made from recycled materials or renewable resources.

Action Items and Responsible Parties

The Town will draft, review, and adopt policies and programs incentivizing and encouraging the use of recycled and renewable materials. Such policies and programs could include fee waivers or expedited planning review for projects which incorporate such materials.

GHG Reduction Mechanism

The GHG emissions reduction mechanism of measure OL-3 is similar to, and in some ways, an extension of that of the Recycling and Solid Waste measures above. Careful purchasing decisions can help ensure that the acquired products are less likely to become (and/or generate) waste; and are produced using fewer virgin resources, more efficient processes, and thus less energy. As discussed above, actions which limit energy use—most notably that derived from fossil fuels— serve to reduce GHG emissions. The production of consumer goods has far reaching impacts with regard to energy, resources, and the natural environment. In this way, measures related to purchasing touch on all of these issues. By promoting reduced or more conscientious purchasing of consumer products, they are thus able to broadly increase sustainability.

OL-4 COMMUNITY GARDENS

Encourage locally initiated efforts to develop community gardens on public easements, Pacific Gas and Electric easements, rights of way, schoolyards, and other sites where gardens would be compatible with existing and planned land uses.

Action Items and Responsible Parties

The Town will offer support to efforts to develop community gardens. Such support could be through expedited permitting, waived fees, direct funding, or through the creation of a Townwide community gardens program.

GHG Reduction Mechanism

Community gardens serve to reduce GHG emissions mainly through two mechanisms. Community gardens offer a local source of food which can serve as a replacement for food which otherwise may have required long-distance transport and thus resulted in the heightened emission of GHGs. Community gardens also serve to build soil and thus help sequester (store) CO_2 for long periods of time.

OL-5 SMALL SCALE AGRICULTURE

Continue to allow small scale urban agriculture through the zoning regulations. Encourage pesticide free growing.

Action Items and Responsible Parties

Danville will maintain provisions of the Planning and Land Use Chapter of the Municipal Code which allow small-scale, pesticide-free local agriculture.

GHG Reduction Mechanism

See GHG reduction mechanism discussion for measure OL-5.

OL-6 DANVILLE FARMERS MARKET

Continue to support the Danville Farmers' Market as a source for locally grown food.

Action Items and Responsible Parties

The Town will continue to offer logistical, administrative, or financial support, as appropriate, for the Danville Farmers Market. Such support could include waived fees or expedited service for any necessary permits, or in-kind promotion in Town communications, at Town facilities, or on the Town of Danville website.

GHG Reduction Mechanism

The GHG reduction mechanism for OL-6 is similar to that of OL-4: by replacing foods grown in more distant locations with foods grown closer to Danville, the Danville Farmers Market helps to reduce the GHG emissions associated with the transport of food products.

COMMUNITY OUTREACH

The Community Outreach measures would not in themselves result in quantifiable reductions in GHG emissions in Danville. However, they are important in helping to reach Danville's overall goal of reducing GHG emissions. A summary of the implementation items for each community action measure is provided in Appendix A – Greenhouse Gas Reduction Measures Matrix.
Since projected GHG emissions reductions from individual Community Outreach measures are not available, it is not practical to provide estimates of cost-effectiveness for those measures. Since all of these measures are relatively self-explanatory in regard to the action required, the Action Items and Responsible Parties sections have likewise been omitted.

The infeasibility of quantifying the emissions reductions from Community Outreach measures stems directly from the broad ways in which they support sustainability efforts. While Community Outreach measures in and of themselves would not directly contribute to decreased GHG emissions or improved sustainability, these measures would serve to facilitate the other measures in the Sustainability Action Plan by informing the public about actions they can take to improve sustainability, and by encouraging residents and businesses to take those actions.

CO-1 GREEN BUSINESS CERTIFICATION

Continue and expand Danville's Green Business Certification program and support the efforts of the Sustainable Business Program and other efforts which encourage local businesses to incorporate green and sustainable business practices. Continue the certification of Danville's Maintenance Center as a Green Business.

CO-2 PUBLIC INFORMATION ON SUSTAINABILITY PRACTICES

Provide information on green building, low impact development, and energy efficiency, recycling, air pollution reduction (e.g., Spare the Air, Don't Light Tonight, etc.) and other sustainability initiatives on the Town of Danville's website.

CO-3 SUSTAINABILITY INFORMATION IN ELECTRONIC NEWSLETTER

Use the Danville Today electronic newsletter as a means of disseminating information on energy efficiency and conservation programs to Danville residents and businesses.

CO-4 YOUTH EDUCATION PROGRAMS

Work with the Bay Area Air Quality Management District (BAAQMD), the Metropolitan Transportation Commission (MTC), and other agencies to develop youth-oriented education and awareness programs relating to air quality and the imperative of greenhouse gas reduction. This should include a youth-oriented "spare the air" program.

MONITORING

The Town's Community Development Department will be responsible for monitoring the Town's progress towards meeting the GHG emissions reduction target.

As part of the monitoring evaluation, the Town should consider re-inventorying their GHG emissions. The process of conducting a re-inventory would allow the Town to monitor progress and report results toward local emissions reduction targets and identify opportunities to integrate new or improved measures into the emissions reduction plan. If forecast target reductions are not being met, the Town should determine which measures are not achieving the target and which measures are exceeding the target. As new technology comes online each year, the Town should consider improvements to climate science and determine what innovations can be implemented to help reduce emissions to reach reduction targets.

APPENDIXES

APPENDIX A

GREENHOUSE GAS REDUCTION MEASURES MATRIX

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN**

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
Transportation & Land Use			
LT-1	Update the zoning ordinance to further promote telecommuting and to provide additional operational flexibility for home-based businesses in existing and future residential neighborhoods, provided that neighborhood impacts are minimized, and the residential nature of structures and their surroundings is maintained.	High	Town/ Development
LT-2	Encourage Employer Commute Trip Reduction Programs, such as ride-share programs, provision of end-of-trip facilities (showers, lockers), guaranteed ride home programs, promotion of telecommuting, and preferential parking permit programs.	High	Town/ Employers
LT-3	Continue—and expand as feasible—the TRAFFIX program to reduce peak hour congestion around school campuses. The TRAFFIX program reduces traffic caused by parents driving their children to and from school. TRAFFIX is administered through a joint-powers agreement with other participating jurisdictions, and uses Measure J funds to provide low-cost school bus service as a means of avoiding congestion around school campuses.	High	Town/ Program Partners
LT-4	Seek grant funding for continuation of the "Street Smarts" program, a collaborative effort by the Town of Danville, the City of San Ramon, the San Ramon Unified School District, and Contra Costa County. Through implementation of the program, or an equivalent successor program, increase traffic safety education through community events, school activities, neighborhood initiatives, and other public outreach measures. Continue to implement other pedestrian safety improvements, access-ways, and connections which make it safer and easier to walk to school.	High	Town/ Program Partners
LT-5	Work with CCCTA (County Connection) to study the feasibility of a fixed-route shuttle system from the Sycamore Valley Park and Ride Lot to Downtown, major employment centers, and major retail centers.	Unknown	Town/CCTA
LT-6	Work with regional transit agencies to increase the frequency and coverage of buses connecting Danville to other cities, such as Walnut Creek and San Ramon, as well as the BART stations in Walnut Creek and Dublin/Pleasanton.	Unknown	Town/ Regional Transit Agencies
LT-7	Promote the safety and livability of Danville neighborhoods through continued use of the Neighborhood Traffic Management Program (NTMP), a citizen-based approach to traffic calming. Where appropriate, install NTMP-traffic calming measures to dissuade cut-through traffic, reduce vehicle speeds and volumes, and stimulate enhanced pedestrian and bicycle circulation. NTMP-traffic calming measures may include, but are not limited to, the following: speed humps, curb bulb-outs, textured pavement, bike lanes, and medians.	Low	Town
LT-8	Work with established car-share businesses and non-profits to accommodate car-sharing in the Danville area.	Unknown	Town/ Car-share organizations
LT-9	Implement General Plan policies to create a safer, more connected, and enhanced bicycle network in Danville, making it more feasible to travel within the Town without a motor vehicle.	Unknown	Town

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
LT-10	Continue investment in Downtown streetscape improvements which make it safer, more convenient, and more attractive to walk to, and within, Downtown Danville.	Unknown	Town
LT-11	Create opportunities for innovative workplaces within the Town which respond to the needs of the growing number of residents who telecommute, or who are self-employed and/or operate small businesses. This could include shared workplaces or "co-working" environments with shared administrative and support services. Accommodating such workplaces in Danville would reduce commuting to offices located in more distant communities, thereby reducing vehicle miles traveled.	High	Town/ Development
Energy and Green Building			
EG-1	Encourage residential projects to participate in the California Energy Commission's New Solar Homes Partnership (and its successor program, as applicable). *The New Solar Homes Partnership provides rebates to developers of six units or more who offer solar power in 50 percent of new units, and is a component of the California Solar Initiative.*	High	Town/ Development
EG-1 Support Measures			
EG-1a	Provide technical assistance in conjunction with the plan review process, and continue to disseminate available information regarding green building, energy-efficient practices, and available rebates. Target these efforts to residents, property owners, development professionals, schools, and special districts.	Unknown	Town
EG-1b	In partnership with Pacific Gas and Electric (PG&E) and local alternative energy companies, facilitate the development and installation of alternative energy facilities within the town, such as solar photovoltaic (PV) panels on urban residential and commercial roofs. *Such efforts would include the identification of optimal locations for such facilities and the implementation of best practices to avoid noise, aesthetic, and other potential land-use compatibility conflicts.*	Unknown	Town/ PG&E
EG-1c	Maintain low permitting fees for energy efficiency improvements and alternative energy system installation as a means to continue to incentivize such upgrades for Danville homes.	Unknown	Town
EG-1d	Disseminate information on applicable California Energy Commission energy efficiency requirements for the replacement of heating, ventilation, and air conditioning (HVAC) systems at the time of permit application, and ensure that these standards are fully enforced by the Building Division's plan examiners and building inspectors, and by the Town's consultant plan examiners.	Unknown	Town
EG-2	Within one year of any update to the State Building Code which increases energy efficiency requirements, amend the Danville Building Code to align with the new requirements and use available means to announce and summarize the changes to the public.	Unknown	Town

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
EG-2 Support Measures			
EG-2a	Provide incentives for green building projects, such as by offering priority processing and field inspection services. *Green building projects would be projects that secure LEED-Silver certification or equivalent GreenPoint rating.*	High	Town
EG-2b	Identify and consider the merits of removing regulatory or procedural barriers to implementing green building practices, such as use of outdated codes or zoning rules which serve to discourage green construction.	Unknown	Town
EG-2c	Train all Town plan examiners and building inspection staff in green building materials, techniques, and practices.	Unknown	Town
EG-2d	Coordinate with other local governments, special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and/or to develop green building policies and programs.	High	Town/ Other Agencies
EG-3	Maintain existing code requirements which require outdoor lighting fixtures to be energy-efficient, and expand these requirements as State codes are revised. Consider additional measures to reduce energy consumption from lighting fixtures, such as limitations on all-night outdoor lighting in construction sites, and encouraging the use of variable output lighting fixtures, timers, motion sensors and photocell-controlled fixtures	Unknown	Town/ Development
EG-4	Partner with PG&E and other appropriate energy providers to promote energy conservation, including the following: 1) Promote the purchase of ENERGY STAR appliances, the use of compact fluorescent light (CFL) or light-emitting diode (LED) bulbs, and the replacement of halogen lamps with more energy-efficient lamps; 2) Promote energy efficiency audits of existing buildings to check, repair, and readjust heating, ventilation, air conditioning, lighting, water heating equipment, insulation, and weatherization; 3) Encourage energy audits when residential and commercial buildings are sold, so that information regarding the opportunities for energy efficiency improvements are presented to the buyer; 4) Promote individualized energy management planning and related services for large energy users; and 5) Schedule periodic energy retrofits or "tune ups" of existing municipal buildings.	Unknown	Town/ PG&E
EG-5	Encourage the use of GreenPoint Rated Building Guidelines by providing the GreenPoint "checklist" to building permit applicants. *The use of GreenPoint guidelines should be particularly encouraged for new homes and projects that include remodels of at least 50 percent or more of a residence's square footage. The Town will publicize the link to the website maintained by the Build It Green organization to provide applicant access to the GreenPoint checklist. Build It Green is a membership supported non-profit organization whose mission is to promote healthy, energy- and resource-efficient homes in California.*	Unknown	Town

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
EG-6	Support efforts by Pacific Gas and Electric and other appropriate energy providers to provide incentives for solar water heater installation, pursuant to AB 1470 (Section 902 and Sections 2860-2867.3 of the California Public Utilities Code). *AB 1470, the Solar Hot Water Energy Efficiency Act of 2007, directs the California Energy Commission to establish a ten-year, statewide incentive program to encourage the installation of 200,000 solar water heating systems to offset natural gas usage for water and space heating. The incentives would be funded by energy providers (e.g. Pacific Gas and Electric) and typically include rebates to the customer; funds for this program would be provided by a surcharge of up to $250 million over ten years on certain major natural gas customers.*	High	Town/ PG&E
EG-7	Identify and remove regulatory and permit processing barriers that limit the ability to readily incorporate renewable energy generation improvements into mid- to large-size commercial or office projects undergoing rehabilitation and/or remodeling efforts.	Unknown	Town
EG-7 Support Measures			
EG-7a	Utilize available rebates and incentives for energy efficiency and distributed generation installations. *Such rebates and incentives could receive support from State or regional programs, which are typically funded by a public good surcharge on monthly utility bills.*	High	Town/Utilities/Businesses/ Residents
EG-7b	Facilitate the installation of parking lot solar arrays into commercial or office projects. *The 1978 California Solar Rights Act does not necessarily bar reasonable restrictions on solar installations. It does establish the legal right to a solar easement, defines which solar energy systems are covered by its provisions, and limits local governments from adopting ordinances that would unreasonably restrict the use of solar energy systems.*	High	Town/ Development
EG-8	Encourage new development to comply with Title 20 standards for energy efficient appliances and to use energy efficient lighting technologies that meet or exceed Title 24 standards. *Title 20 is an existing California state appliance efficiency regulation that has broad-reaching implications aimed at the reduction of energy consumption, reduced dependence on oil and strategies for addressing global climate change. A portion of this law mandates the efficiency of indoor and outdoor metal halide luminaires.* *Title 24 represents California's existing development standards for building energy efficiency Adopted in 2008, these standards address building insulation, HVAC systems, lighting, water heating, and other aspects of building construction and operations, and apply to all new buildings constructed within California.*	Moderate	Town/ Development

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
EG-9	Architects, landscape architects, and design-build contractors for new development and major rehabilitation and/or remodeling projects shall incorporate design measures which improve insulation and building energy efficiency. *Measures to reduce heat gain include shade trees, paving materials with a Solar Reflectance Index (SRI) of at least 29, the use of open grid pavement, and the placement of parking beneath commercial structures, rather than in surface parking lots.*	Unknown	Town/ Development
EG-9 Support Measures			
EG-9a	Participate in the CaliforniaFIRST program, which provides innovative, low-interest financing for energy efficiency projects for existing and new development. *The CaliforniaFIRST Program is a statewide Property Assessed Clean Energy (PACE) program authorized by the passage of AB 811 and AB 474. The CaliforniaFIRST Program provides financing for energy efficiency and renewable energy projects on residential and commercial properties. Under CaliforniaFIRST, the property owner repays the cost of the clean energy project through a line item on their property tax bill.*	Unknown	Town/ Development
EG-9b	Continue to maintain information on funding sources that local residents, businesses, or the Town may access to fund energy audits so that homeowners and businesses may improve the energy-efficiency of their homes and buildings.	Unknown	Town
EG-9c	Continue implementation of a low income weatherization programs sponsored and administered by PG&E and by Contra Costa County. *The Contra Costa County Weatherization Program is a federal and State funded program whose purpose is to assist low and/or fixed income residents throughout the County in making their homes more energy efficient. The program offers home improvements that will reduce monthly energy costs, including anything from caulking, weather-stripping doors, repair or replacement of gas water heaters, stoves and/or refrigerators.*	High	Town/PG&E/ Contra Costa County
EG-9d	Partner with local design professionals to create a brochure or web page to educate citizens on how to save energy through effective building design.	Unknown	Town/ Designers
EG-10	Implement planned landscaping and streetscape capital improvements projects in the North Hartz area to make the area more comfortable for pedestrians, increase shade, and potentially reduce cooling costs for adjoining structures.	Unknown	Town
Recycling and Waste Reduction			
RW-1	Require submittal of Waste Management Plans for mid- to large-scale construction and renovation projects. Continue to undertake measures which move toward 75 percent diversion of construction waste, consistent with the 2020 goals of AB 341. *Under current Town Ordinance requirements, qualifying projects are required to divert 50 percent of non-hazardous construction materials and to use certified waste facilities. Qualifying projects are construction and renovation projects with a value of over $50,000 and/or have an affected construction area of over 1,000 square feet.*	High	Town/ Development

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
RW-2	Consistent with AB 341, require all newly constructed multifamily developments and existing multifamily developments undergoing significant remodels to install or upgrade recycling areas for their residents, and to do so in a manner that meets Town and CCC Solid Waste Authority design standards. *Significant remodels are defined as those that add or alter 50 percent or more of the square footage or wall area. AB 341 requires the expansion of recycling to every multifamily dwelling and business, and would charge CalRecycle with the responsibility for ensuring that the state is diverting from landfills at least 75% of the garbage that it generates by 2020.*	High	Town/ Development
RW-3	Encourage the use of salvaged materials; recycled-content materials; and/or other materials that have low production-energy costs, for building materials, hard surfaces, and non-plant landscaping.	Unknown	Town/ Development
RW-4	Continue to work with public and private waste disposal entities to keep food and green waste out of landfills. *One potential program would be the expansion of the current "Food Recycling Project". That program entails a partnership between the CCC Solid Waste Authority, East Bay Municipal Utility District, and Allied Waste Services (AWS) to provide an innovative new program that diverts commercial food waste from landfill disposal for conversion into renewable energy. This project began as a pilot program in November 2008 and is currently available to serve restaurants, grocery stores, and other large commercial or institutional food waste generators in the Central Contra Costa County service area of the CCC Solid Waste Authority.*	High	Town/ Waste Handlers
RW-5	Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs. *By 2010, Central Contra Costa residents had exceeded state regulations by recycling and composting 58% of their waste to make more efficient use of their landfill.*	Unknown	Town
RW-6	Support efforts by public and private waste disposal entities to reduce methane emissions released from waste disposal, and promote methane recovery at the landfill to use for energy production.	Unknown	Town/ Waste Handlers
RW-7	Implement a pilot program for recycling containers in the Downtown area, and expand the program if the pilot containers experience adequate usage.	Unknown	
RW-8	Continue to partner with the CCC Solid Waste Authority to promote and encourage Danville residents to make us of the Authority's curbside pickup service for discarded holiday trees.	Unknown	

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
Water and Wastewater			
WW-1	For new development, require all water use and efficiency measures identified as mandatory in the California Green Building Standards Code, and consider more stringent targets based on the Code's voluntary requirements. As feasible and appropriate, partner with local water conservation entities on the development and implementation of supportive efforts to reduce outdoor use of potable water. *California Green Building Standards Code requirements include: 1) reduce indoor potable water use by 20 percent after meeting the Energy Policy Act of 1992 fixture performance requirements, and 2) reduce outdoor potable water use by 50 percent from a calibrated mid-summer baseline case, for example through irrigation efficiency, plant species, recycled wastewater, and captured rainwater.or new development, require all water use and efficiency measures identified as mandatory in the California Green Building Standards Code, and consider more stringent targets based on the Code's voluntary requirements. California Green Building Standards Code requirements include: 1) reduce indoor potable water use by 20 percent after meeting the Energy Policy Act of 1992 fixture performance requirements, and 2) reduce outdoor potable water use by 50 percent from a calibrated mid-summer baseline case, for example through irrigation efficiency, plant species, recycled wastewater, and captured rainwater. As appropriate, partner with local water conservation companies on the development and implementation of supportive efforts for this measure.*	High	Town
WW-2	Continue to require new development to use native plants or other appropriate non-invasive plants that are drought-tolerant.	High	Town/ Development
WW-3	Require new multi-family and mixed use projects on Housing Opportunity Sites and other mid- to large-size development projects to install dual piping for reclaimed water use, in anticipation of the eventual availability of a reclaimed water supply for non-potable water use.	Unknown	Town/ Development
WW-4	In collaboration with EBMUD, promote water audit programs that offer free water audits to single-family, multi-family, large landscape accounts, and commercial customers. Collaborate with purveyors to enact conservation programs for commercial, industrial, and institutional (CII) accounts, as well as programs to install ultra-low-flush toilets in public facilities.	Unknown	Town/EBMUD
WW-5	Promote the use of reclaimed water (i.e., treated wastewater) and gray water (i.e. shower water) for irrigation purposes consistent with the appropriate provisions of Title 22 and approval of the State Health Department. As part of this measure, support EBMUD efforts to inventory potential non-potable uses of water for potential substitution by recycled and/or gray water.	Unknown	Town/EBMUD
WW-6	Support EBMUD efforts to develop cost-effective strategies for increasing the supply of reclaimed water available to Danville for non-potable use. This should include the extension of reclaimed water infrastructure to Danville neighborhoods, and the development of new laterals and localized infrastructure which deliver this water supply to existing customers.	Unknown	Town/EBMUD

TABLE 1 **GREENHOUSE GAS REDUCTION MEASURES FOR DANVILLE SUSTAINABILITY ACTION PLAN** (CONTINUED)

Measure Number	Measure Text	Cost Effectiveness	Responsible Party
WW-7	Continue public information and school education programs to promote the benefits of water conservation, particularly those programs being implemented by EBMUD.	Unknown	Town/EBMUD
Other and Life Cycle			
OL-1	In conjunction with the Bay Area Air Quality Management District, encourage yard equipment exchange programs which allow residents to trade in gas-powered machines for electric models.	--	Town/ BAAQMD
OL-2	Require new developments to have outdoor electrical outlets to support use of electrical yard equipment, consistent with the current California Building and Energy Efficiency standards.	--	Town/ Development
OL-3	Develop incentives that encourage the public and private purchase and use of durable and nondurable items, including building materials, made from recycled materials or renewable resources.	--	Town
OL-4	Strongly support locally initiated efforts to develop community gardens on public easements, PG&E easements, rights of way, schoolyards, and other sites where gardens would be compatible with existing and planned land uses.	--	Town/ Residents
OL-5	Continue to allow small scale urban agriculture through the Zoning Ordinance. Encourage pesticide free growing.	--	Town/ Residents
OL-6	Continue to support the Danville Farmers' Market as a source for locally grown food.	--	Town
Community Outreach			
CO-1	Continue and expand Danville's Green Business Certification program and support the efforts of the Sustainable Business Program and other efforts which encourage local businesses to incorporate green and sustainable business practices.	--	Town/ Businesses
CO-2	Provide information on green building, low impact development, and energy efficiency, recycling, and other sustainability initiatives on the Town's website.	--	Town
CO-3	Use the Danville Today electronic newsletter as a means of disseminating information on energy efficiency and conservation programs to Danville residents and businesses.	--	Town
CO-4	Work with the BAAQMD, MTC, and other agencies to develop youth-oriented education and awareness programs relating to air quality and the imperative of greenhouse gas reduction. This should include a youth-oriented spare the air program.	--	Town/ Other Agencies

GREENHOUSE GAS MODELING TECHNICAL DOCUMENTATION

This technical appendix reflects calculations and modeling based on the Draft Sustainability Action Plan (SAP) and the Draft 2030 General Plan, both made public in October 2012. The Draft SAP and the Draft 2030 General Plan have since undergone revision based on direction from the Danville Town Council. Therefore, particular measures, calculations, or results which are shown in this appendix may no longer appear in or match those in the most recent version of the Sustainability Action Plan.

Local Waste Reduction Measures

Waste	Existing			
	Tons/Day	GHG MTons	Diverted Tons/Day	Total
Solid Waste	37,208	NA	NA	
ADC	12,452	NA	NA	
Total	49,660	7,383	47,080	96,740

Waste	2020			
	Tons/Day	GHG MTons	Diverted Tons/Day	Total
Solid Waste	39,563	NA	NA	
ADC	13,240	NA	NA	
Total	52,803	7,851	50,060	102,863
Increase	3,143	468		

Waste	2035			
	Tons/Day	GHG MTons	Diverted Tons/Day	Total
Solid Waste	42,506	NA	NA	
ADC	14,225	NA	NA	
Total	56,731	8,435	53,784	110,515
Increase	3,928	584		

	Average Diversion Rate
CalRecycle average diversion rate for Danville (2004 to 2006; not reported after 2007)	51%
2000	51%
2001	53%
2002	55%
2003	62%
2004	56%
2005	51%
2006	47%

Source: CalRecycle. Countywide, Regionwide, and Statewide Jurisdiction Diversion/Disposal Progress Report
http://www.calrecycle.ca.gov/LGCentral/Reports/jurisdiction/diversiondisposal.aspx

Local Measures that Support Waste Reduction and the Statewide Goal of 75% Waste Diversion

Assembly Bill 939 (AB 939), the California Integrated Waste Management Act of 1989, requires jurisdictions to divert 50 percent of waste from landfills. In 2011, the Governor signed Assembly Bill 341 (AB 341) expanding the waste reduction goals by ensuring the state is diverting 75 percent of municipal solid waste. AB 341 identifies a goal of the state that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by the year 2020.

SW-1	Revise the existing construction and demolition ordinance to require at least 50 percent diversion (i.e. reuse or recycling) of non-hazardous construction waste from disposal.
SW-2	within existing trash areas. Significant redevelopments and remodels include those that add or change 50 percent or more of the square footage or wall area.
SW-3	Partner with Pacific Gas and Electric to establish an end-of-life requirement for appliance disposal. Establish a protocol per US EPA's Responsible Appliance Disposal Program.
SW-4	Require the use of salvaged and recycled-content materials and other materials that have low production energy costs for building materials, hard surfaces, and non-plant landscaping. Require sourcing of construction materials locally, as feasible.
SW-5	Work with public and private waste disposal entities to keep food and green waste out of landfills.
SW-6	Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs.
SW-7	Work with public and private waste disposal entities to reduce methane emissions released from waste disposal and promote methane recovery at the landfill to use for energy production.
SW-8	Fund methane recovery programs through a waste disposal fee or through participation in a cap and trade market.
SW-9	Provide recycling containers in the Downtown area.
SW-10	Provide for the curbside pickup of holiday trees.
SW-11	Implement universal color coding for waste receptacles.

Based on historical trends in waste disposal reduction, as reported by CalRecycle, for the Town of Danville. Not corrected for SOI or Planning Area population and employment. Although population and employment increased, generally waste disposal has decreased.

Disposal Year	Solid Waste Disposal Tons	Alternative Daily Cover Tons	Total Tons
2005	33,537	11,804	45,341
2006	37,059	13,303	50,362
2007	36,782	11,426	48,207
2008	29,547	9,869	39,416
2009	NA	NA	NA
2010	NA	NA	NA

Source: California Department of Resources Recycling and Recovery (CalRecycle). Disposal Reporting System. Jurisdiction Disposal by Facility, Danville, 2005-2008. http://www.calrecycle.ca.gov/lgcentral/Reports/DRS/Default.aspx

1 Includes materials used for Alternative Intermediate Cover (AIC) in ADC. However, AIC materials are stipulated under the Public Resources Code Section 41781.3 as recycling and not disposal and are calculated separately in disposal years 2006 and after.

	Percent Reduction MSW	Percent Reduction ADC
2005-2006	10.5%	12.7%
2006-2007	-0.7%	-14.1%
2007-2008	-19.7%	-13.6%
2008-2009	NA	NA
Average % Reduction Per Year	-3.3%	-5.0%

Exponential Equation

Reduction = Beginning Amount (1 + r)^t

r = rate

t = time (8 years from 2012 to 2020)

The modeling conservatively assumes a 62% waste diversion rate (approximately 11 percent increase) based on historic trends in waste disposal in the Town for 2020 and 75% goal for 2035.

Waste	2020 MSW Adjusted Tons/Day	2020 ADC Adjusted Tons/Day	GHG MTons	Diversion Rate
Total	30,234	8,776	5,917	62%
Reduction	9,329	4,464	1,934	

Waste	2035 MSW Adjusted Tons/Day	2035 ADC Adjusted Tons/Day	GHG MTons	Diversion Rate
Total	22,442	5,356	4,321	75%
Reduction	20,064	8,869	4,114	

1	2008 units, residential units and employment have been interpolated from 2000 and 2010 estimates. While 2008 estimates are availbe from ABAG, the are apples-and-oranges with the numbers that were used for the actual projections.
2	The projections offered by the client for units are actually households living in various types of units. Client has recommended that we adjust households by Danville's 2006-2010 vacancy rate to estimate 2008 and 2035 units.
3	Per client direction, estimates of the presence of second units have been excluded from housing totals because these numbers are too uncertain and would represent <2% of the housing stock
4	Resident population estimates are based of existing/projeted number of households multiplied by census gauged persons per household
5	Total gas and electricity use figures include residential, commercial/industrial, and city use only. (County and district are excluded)
6	Water use by use category is available if need be
7	Wate disposal represents average of years 2006, 2007, and 2008. In 2009 Danville joined a regional waste district, so data for the Town alone are no longer available starting in that year.
8	Waste disposal data is for all sectors. Limited additional by-sector information is available in the solid waste summary spreadsheet
9	Water use is EMBUD data for Town of Danville averaged over years 2006, 2007, 2008
10	EMBUD and CalRecycle did not provide precise boundaries for the area considered to be the Town of Danville, so it is uncertain whether these areas are only those within the Town Limit or also include areas in the SOI or planning area.
11	

DATA NEEDS		CITY				SPHERE OF INFLUENCE outside Town Limit				Planning Area outside SOI				TOTAL			
		Existing	Existing	GP Horizon	SAP	Existing	Existing	GP Horizon	SAP	Existing	Existing	GP Horizon	SAP	Existing	Existing	GP Horizon	SAP
	Source	2008	2010	2035	2020	2008	2010	2035	2020	2008	2010	2035	2020	2008	2010	2035	2020
Residents	General Plan	42,287	42,641	47,198	44,467	1,720	2,150	2,321	2,100	2,529	2,582	4,266	3,279	46,536	47,373	53,785	49,846
Residential Units (not households!!!)	General Plan	15,593	15,724	17,404	16,397	634	793	856	775	933	952	1,573	1,209	17,160	17,469	19,833	18,381
Employment	General Plan	14,858	14,914	16,302	15,485	64	76	97	81	240	266	298	272	15,162	15,256	16,697	15,838
Non-Residential SQFt by type*	General Plan													0		0	0
Industrial*	General Plan																
Commercial/Retail*	General Plan																
Office*	General Plan																
VMT	Fehr & Peers													0		0	0
Trips start/end within City	Fehr & Peers																
Trips start in the City but external trip end	Fehr & Peers																
Trips end in the City but external trip start	Fehr & Peers																
Purchased Electricity (Kwh)	PG&E	209,344,014		232,626,185	219,626,335	6,538,110		8,861,563	7,996,136	10,147,070		16,725,535	13,012,680	226,029,193		258,213,283	240,635,151
Residential	PG&E	152,635,678		170,362,020	160,503,683	6,208,371		8,377,691	7,581,327	9,128,470		15,398,203	11,834,772	167,972,519		194,137,914	179,919,781
Commercial/Industrial	PG&E	53,532,306		58,734,935	55,790,637	230,587		349,484	293,546	864,703		1,073,673	980,554	54,627,596		60,158,091	57,064,736
Municipal	PG&E	3,176,029		3,529,230	3,332,015	99,152		134,389	121,264	153,897		253,660	197,355	3,429,078		3,917,278	3,650,633
Natural Gas (Therms or Btu)	PG&E	11,456,703		12,763,688	12,035,640	420,817		568,748	514,157	630,946		1,055,368	814,741	12,508,467		14,387,805	13,364,538
Residential	PG&E	10,205,292		11,390,483	10,731,350	415,095		560,136	506,891	610,334		1,029,531	791,278	11,230,720		12,980,150	12,029,519
Commercial/Industrial	PG&E	1,239,066		1,359,486	1,291,337	5,337		8,089	6,794	20,015		24,851	22,696	1,264,417		1,392,427	1,320,828
Municipal	PG&E	12,346		13,719	12,952	385		522	471	598		986	767	13,330		15,227	14,191
Water/Wastewater (million gallons)	General Plan?	6,540,798		7,268,189	6,862,040	204,196		276,763	249,733	316,939		522,394	406,437	7,061,933		8,067,346	7,518,211
Waste Disposal (tons)	CalRecycle	34,463		38,295	36,155	1,076		1,458	1,316	1,670		2,752	2,141	37,208		42,506	39,613
	ADC	11,533		12,816	12,099	360		488	440	559		921	717	12,452		14,225	13,256

Notes:

Year 2010 used for data. However, target needs to be calibrated since BAAQMD defines existing as 2005-2008 yea

Data aggregated for City + Planning Area. For the SAP this will be footnoted since although the City doesn't currently have jurisdictional authority over these planning areas, if incorporated they would. Therefore, they are included in both the existing and future model year scenario

* Ideally we would want sqft. Other metrics (such as acreage) could be used but this is far less reliable and we'd have additional assumptions for reductions in the absense of this data

2008 units, residential units and employment have been interpolated from 2000 and 2010 estimates. While 2008 estimates are availbe from ABAG, the are apples-and-oranges with the numbers that were used for the actual projections.

Residential electricity demand extrapolated based on projections of number of residents

Commercial/Industrial electricity demand extrapolated based on number of people employed

Total City electricity use also includes electricity use for city governement. City government electricity use was scaled/extrapoloated by combined employment and residential totals.

Summary of State and Federal GHG Reductions

		$MTCO_2e$ 2020	$MTCO_2e$ 2035
Federal State Reductions			
Energy	2020 PG&E CO2 Intensity - Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. The California Air Resources Board (CARB) has now approved an even higher goal of 33 percent by 2020. Investor-owned utilities, such as PG&E are also required to participate in CARB's Cap-and-Trade program and reduce High Global Warming Potential (HGWP) gases, such as reductions of SF6.	30,894	33,192
Energy	Title 24 Cycle updates to the California Building Code - The 2008 Building and Energy Efficiency standards (Title 24, Part 6) are approximately 15 percent more energy efficient than the 2005 Building and Energy Efficiency standards, which were in place at the time of CARB's Scoping Plan. The California Energy Commission anticipates that future code cycles (2014 and beyond) may require a 30 percent increase in energy efficiency compared to the 2008 Building and Energy Efficiency Standards. However, these future cycles are not included in the Adjusted Forecast.	858	1,930
Energy	SMART Grid - The California Public Utilities Commission (CPUC) has initiated a rulemaking R.08-12-009 to for California investor-owned electric utilities to develop a smarter electric grid in the state. Pursuant to Senate Bill 17, the CPUC developed requirements for a Smart Grid deployment plan. In July 2011, California Utilities filed with the CPUC 10-year Smart Grid Deployment Plans. New Smart Meters provide real-time electricity use information to consumers.	900	900
Transportation	The Federal Government has adopted and has implemented improved Federal Corporate Economy Fuel Efficiency (CAFE) Standards for vehicles that correspond with the California Assembly Bill 1493 (AB 1493) Pavley I Fuel Efficiency Standards. In addition, the State of California has adopted the Low Carbon Fuel Standard (LCFS). In January 2012, the California Air Resources Board (CARB) adopted the Advanced Clean Car Program which implements the Pavley II Fuel Efficiency Standards and projects that by 2025, one in every seven new cars sold will be electric vehicles (PHEV or PEV). However, the Pavley II Advanced Clean Car Program is not included in the transportation emissions reductions and therefore reductions are conservative.	39,361	60,881
Water	Water-Related Energy Use, 2020 PG&E CO2 Intensity - Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. The California Air Resources Board (CARB) has now approved an even higher goal of 33 percent by 2020. Investor-owned utilities, such as PG&E are also required to participate in CARB's Cap-and-Trade program and reduce High Global Warming Potential (HGWP) gases, such as reductions of SF6.	11,531	12,389
Other	Other Sources, Low Carbon Fuel Standard (LCFS) - Requires the carbon content of fuel to be reduced by 10 percent.	1,849	1,858
		85,393	111,150
	Percent Reduction from BAU	23%	26%

		$MTCO_2e$ 2020	% of Local	$MTCO_2e$ 2035	% of Local	Cost Effectivness
Land Use and Transportation Reductions						
LT-1	Update the Land Use and Development Code to promote telecommuting and allow home-based businesses in existing and future residential neighborhoods, subject to appropriate parking or traffic restrictions to protect neighborhood character.					High
LT-2	Encourage Employer Commute Trip Reduction Programs, which would be multi-strategy programs that encompass a combination of individual measures, such as ride-share programs, discounted transit program, end-of-trip facilities (showers, lockers), promotion of telecommuting, and preferential parking permit programs.					High
LT-3	Implement a School Pool Program that helps match parents to carpool students to school.	2,209	21%	2,396	17%	High
LT-4	Seek grant funding to establish Safe Routes to School (SR2S) Program to increase student walking and biking. The program may include: conducting school walking audits, improving nearby pedestrian and bicycle facilities, implementing nearby traffic calming measures, implementing school bus, vanpool, and carpools to school, implement walking buses to schools, and conducting traffic studies for specific schools for more efficient drop-off and pick-up activity at schools (staggered schedules, changing on-street parking to loading zones, etc.).					High
LT-5	Require a variety of local-serving commercial uses and encourage mixed-use development in the Downtown and at Housing Opportunity sites, reducing vehicle miles traveled (VMT).					High
LT-6	Incentivize land use intensity near and connectivity to retail and employment centers, services, and transit to reduce vehicle miles traveled (VMT) and increase the efficiency of delivery of services.	1,169	11%	1,269	9%	High
LT-7	Foster land use intensity near, along with connectivity to, the Downtown area.					High
LT-8	Require affordable housing to be located in transit-oriented development whenever feasible.					Moderate
LT-9	Reduce or eliminate parking requirements and establish parking maximums for non-residential and residential developments where alternative transportation facilities exist or are planned. Single-family homes would be excluded from this measure.	715	7%	775	5%	High
LT-10	Require that the cost of parking be unbundled from residential and commercial rents.					High
LT-11	Provide a fixed route shuttle system from key residential areas to Downtown, major employment centers, and major retail centers.	585	6%	634	4%	Low
LT-12	Work with regional transit agencies to increase the frequency and coverage of inter-town buses connecting Danville to other cities, such as Walnut Creek and San Ramon, as well as BART.					Low
LT-13	Design and implement traffic calming measures to dissuade cut-through traffic, reduce vehicle speeds and volumes, and attract pedestrian and bicycle traffic. Traffic calming measures may include the following: speed humps, curb bulb-outs, texture pavement, bike lanes, and medians.	130	1%	141	1%	Low
LT-14	Create a local car-sharing program or seek the expansion of an existing non-profit or for-profit car-share program into the Danville area.					Low
Energy and Green Building Reductions						
EG-1	Require that residential projects of six units or more participate in the California Energy Commission's New Solar Homes Partnership, which provides rebates to developers of six units or more who offer solar power in 50 percent of new units and is a component of the California Solar Initiative, or a similar program with solar power requirements equal to or greater than those of the California Energy Commission's New Solar Homes Partnership.	658	6%	1,481	10%	High
EG-1 Support measures						
EG-1a	Utilize all available rebates and incentives for energy efficiency and distributed generation installations, such as State public good programs (funding for energy efficiency from a "public good" fee on utility bills) and solar programs.					High
EG-1b	Require all new buildings to be constructed to allow for the easy, cost-effective installation of future solar energy systems. "Solar ready" features should include: proper solar orientation (i.e. south facing roof area sloped at 20° to 55° from the horizontal); clear access on the south sloped roof (i.e. no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.					High
EG-1c	In partnership with Pacific Gas and Electric and local alternative energy companies, develop an Alternative Energy Development Plan that includes townwide measurable goals and identifies the allowable and appropriate alternative energy facility types within the town, such as solar photovoltaic (PV) on urban residential and commercial roofs. Propose phasing and timing of alternative energy facility and infrastructure development. Provide the development review process list/worksheet to new alternative energy projects and conduct a review of Town policies and ordinances to address alternative energy production. Identify optimal locations and best means to avoid noise, aesthetic, and other potential land use compatibility conflicts (e.g., install tracking solar PV or angle fixed solar PV in a manner that reduces glare to surrounding land uses).	--	--	--	--	Low
EG-1d	Waive fees for permitting for solar array installation.					High
EG-1e	Where feasible, increase solar access by requiring that new streets be designed so that the blocks have one axis within plus or minus 15 degrees of geographical east/west, and the east/west length of those blocks are at least as long, or longer, as the north/south length of the block. Areas with topological constraints, among others, may be excluded from this requirement					Low

		$MTCO_2e$ 2020	% of Local	$MTCO_2e$ 2035	% of Local	Cost Effectivness
EG-2	Develop a Green Building Ordinance that requires energy efficient design, in excess of Title 24 standards, for all new residential and non-residential buildings. (15 to 40 percent above Title	90	1%	113	1%	High
EG-2 Support Measures						
EG-2a	Allow greater development flexibility, and provide permitting-related and other incentives for LEED-Silver certification or equivalent GreenPoint rating, e.g. give green projects priority in plan review, processing, and in field inspection services.		0%		0%	High
EG-2b	Identify and remove regulatory or procedural barriers to implementing green building practices in the town by updating codes, guidelines, and zoning.		0%		0%	High
EG-2c	Train all plan review and building inspection staff in green building materials, techniques, and practices.		0%		0%	Low
EG-2d	Provide green building information, marketing, training, and technical assistance to property owners, development professionals, schools, and special districts.		0%		0%	Moderate
EG-2e	Coordinate with other local governments, special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop green building policies and programs that are optimized on a regional scale.		0%		0%	High
EG-2f	Develop a "heat island" mitigation plan that includes guidelines for cool roofs, cool pavements, and strategically placed shade trees. Amend the applicable Design Guidelines to integrate the guidelines. Evaluate and balance tradeoffs between solar access and landscape tree shading in Design Guidelines.		0%		0%	High
EG-3	Require outdoor lighting fixtures to be energy-efficient. Require parking lot light fixtures and light fixtures on buildings to be on full cut-off fixtures, except emergency exit or safety lighting, and all permanently installed exterior lighting shall be controlled by either a photocell or an astronomical time switch. Prohibit continuous all night outdoor lighting in construction sites unless required for security reasons. Revise the Town Code to include these requirements.	48	0%	48	0%	High
EG-4	Partner with Pacific Gas & Electric and other appropriate energy providers to promote energy conservation, including the following: 1) Promote the purchase of ENERGY STAR appliances. Distribute free compact fluorescent light (CFL) bulbs and/or fixtures to community members. 2) Offer a halogen torchiere lamp exchange to community members. 3) Promote energy efficiency audits of existing buildings to check, repair, and readjust heating, ventilation, air conditioning, lighting, water heating equipment, insulation and weatherization. 4) Encourage energy audits to be performed when residential and commercial buildings are sold. Energy audits will include information regarding the opportunities for energy efficiency improvements, and will be presented to the buyer. 5) Commercial buildings to be "benchmarked" using EPA's ENERGY STAR Portfolio Manager Tool, consistent with AB 1103, which requires disclosure of commercial buildings' energy efficiency rating. 6) Promote individualized energy management planning and related services for large energy users. 7) Fund and schedule energy efficiency retrofits or "tune-ups" of existing	47	0%	67	0%	Unknown
EG-5	Adopt GreenPoint Rated Building Guidelines and require all new and significantly remodeled homes to follow the Guidelines. Significantly remodeled homes includes remodels of 50 percent or more of the square footage or wall area of the home.	31	0%	58	0%	High
EG-6	In partnership with Pacific Gas and Electric and other appropriate energy providers, develop a program that provides incentives that meet or exceed those of AB 1470 (Section 902 and Sections 2860-2867.3 of the California Public Utilities Code). AB 1470, the Solar Hot Water Energy Efficiency Act of 2007, directs the California Energy Commission to establish a ten-year, statewide incentive program to encourage the installation of 200,000 solar water heating systems to offset natural gas usage for water and space heating. The incentives would be funded by the energy providers (e.g. Pacific Gas and Electric) and typically include rebates to the customer; funds for this program would be provided by a surcharge on certain natural gas customers up to $250 million over ten years.	18	0%	23	0%	Unknown
EG-7	Require that new or major rehabilitations of commercial, office, or industrial development greater than or equal to 20,000 square feet in size incorporate solar or other renewable energy generation to provide 15 percent or more of the project's energy needs. Major rehabilitations are defined as remodeling/ additions of 20,000 square ft of office/retail commercial or 100,000 square feet of industrial floor area. Remove regulatory barriers to incorporating renewable energy generation.	9	0%	30	0%	High
EG-7 Support measures						
EG-7a	Utilize all available rebates and incentives for energy efficiency and distributed generation installations, such as State public good programs (funding for energy efficiency from a "public good" fee on utility bills) and solar programs.		0%		0%	High
EG-7b	Require all new buildings to be constructed to allow for the easy, cost-effective installation of future solar energy systems. "Solar ready" features should include: proper solar orientation (i.e. south facing roof area sloped at 20° to 55° from the horizontal); clear access on the south sloped roof (i.e. no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.		0%		0%	High
EG-7c	In partnership with Pacific Gas and Electric and local alternative energy companies, develop an Alternative Energy Development Plan that includes townwide measurable goals and identifies the allowable and appropriate alternative energy facility types within the town, such as solar photovoltaic (PV) on urban residential and commercial roofs. Propose phasing and timing of alternative energy facility and infrastructure development. Provide the development review process list/worksheet to new alternative energy projects and conduct a review of Town policies and ordinances to address alternative energy production. Identify optimal locations and best means to avoid noise, aesthetic, and other potential land use compatibility conflicts (e.g., install tracking solar PV or angle fixed solar PV in a manner that reduces glare to surrounding land uses).		0%		0%	Low
EG-7d	Waive fees for permitting for solar array installation.		0%		0%	High

		$MTCO_2e$ 2020	% of Local	$MTCO_2e$ 2035	% of Local	Cost Effectivness
EG-7e	Work with the local school districts to encourage the use of solar energy systems at school facilities.		0%		0%	High
EG-7f	Incentivize installation of parking lot solar arrays		0%		0%	Unknown
EG-8	Require new development to use energy-efficient appliances that meet Energy Star standards and energy efficient lighting technologies that meet or exceed Title 24 standards.	4	0%	5	0%	High
EG-9	Require all new development and major rehabilitation (i.e., additions or remodels of 20,000 square feet of office/retail commercial or 100,000 square feet of industrial floor area) projects to incorporate any combination of the following strategies to reduce heat gain for 50 percent of the non-roof impervious site landscape, which includes roads, sidewalks, courtyards, parking lots, and driveways: shaded within five years of occupancy; paving materials with a Solar Reflectance Index (SRI) of at least 29; open grid pavement system; and parking spaces underground, under deck, under roof, or under a building. Any roof used to shade or cover parking must have an SRI of at	1	0%	1	0%	Unknown
EG-9 Support Measures						
EG-9a	Participate in the CaliforniaFIRST program, which provides innovative, low-interest financing for energy efficiency projects for existing and new development.		0%		0%	Unknown
EG-9b	Compile a list of funding sources that local residents, businesses, or the Town could potentially access to fund energy audits to inform homeowners and businesses of opportunities to improve the energy-efficiency of their homes and buildings.		0%		0%	Unknown
EG-9c	Seek funding to implement a low-income weatherization program.		0%		0%	High
EG-9d	Form a volunteer committee of local design professionals to create a brochure to educate citizens on how to save energy through design.		0%		0%	Unknown
Recycling and Waste Reductions						
RW-1	Revise the existing construction and demolition ordinance to require at least 50 percent diversion (i.e. reuse or recycling) of non-hazardous construction waste from disposal.					High
RW-2	Require all new and significant redevelopments/remodels of existing multi-family developments to provide recycling areas for their residents within existing trash areas. Significant redevelopments and remodels include those that add or change 50 percent or more of the square footage or wall area.					High
RW-3	Partner with Pacific Gas and Electric to establish an end-of-life requirement for appliance disposal. Establish a protocol per US EPA's Responsible Appliance Disposal Program.					Unknown
RW-4	Require the use of salvaged and recycled-content materials and other materials that have low production energy costs for building materials, hard surfaces, and non-plant landscaping. Require sourcing of construction materials locally, as feasible.					Unknown
RW-5	Work with public and private waste disposal entities to keep food and green waste out of landfills.	1,934	18%	4,114	29%	Unknown
RW-6	Expand educational programs to inform residents about reuse, recycling, composting, waste to energy, and zero waste programs.					Unknown
RW-7	Work with public and private waste disposal entities to reduce methane emissions released from waste disposal and promote methane recovery at the landfill to use for energy production.					Unknown
RW-8	Fund methane recovery programs through a waste disposal fee or through participation in a cap and trade market.					Unknown
RW-9	Provide recycling containers in the Downtown area.					Unknown
RW-10	Provide for the curbside pickup of holiday trees.					Unknown
RW-11	Implement universal color coding for waste receptacles.					Unknown
Water and Wastewater Reductions						
WW-1	For new development, require all water use and efficiency measures identified as voluntary in the California Green Building Standards Code, and consider more stringent targets. California Green Building Standards Code requirements include: 1) reduce indoor potable water use by 20 percent after meeting the Energy Policy Act of 1992 fixture performance requirements, and 2) reduce outdoor potable water use by 50 percent from a calibrated mid-summer baseline case, for example through irrigation efficiency, plant species, recycled wastewater, and captured rainwater. Establish Town requirements for discretionary projects regarding watering timing, water-efficient irrigation equipment, water-efficient fixtures, and offsetting demand so that there is no net increase in imported water use. Include clear parameters for integrating water conservation infrastructure and technologies, including low-flush toilets and low-flow showerheads. As appropriate, partner					Unknown
WW-2	Require new development to use native plants or other appropriate non-invasive plants that are drought-tolerant.					High
WW-3	Implement a Water Efficient Landscape Ordinance with improved conservation programs and incentives for non-residential customers.					High
WW-4	Adopt a water efficiency retrofit ordinance that requires upgrades as a condition of issuing permits for renovations or additions. Work with local water purveyors to achieve consistent standards and review and approval procedures for implementation.					High

		$MTCO_2e$ 2020	% of Local	$MTCO_2e$ 2035	% of Local	Cost Effectivness
WW-5	Work with EBMUD to adopt water conservation pricing, such as tiered rate structures, to encourage efficient water use. As part of this measure, the water districts would conduct the following: 1) Provide notices in each billing to accounts with water use budgets showing the relationship between the budget and actual consumption. 2) Encourage wholesale water suppliers to provide financial incentives to their retail water agency customers that encourage water conservation efforts. 2) Work with EBMUD to meter with commodity rates for all new connections, and retrofit existing connections. 3) To help monitor landscaping water use, create accounts with dedicated irrigation meters, or develop and implement a strategy targeting and marketing large landscape water use surveys to commercial/industrial/ institutional accounts with mixed-use	2,843	27%	3,055	21%	High
WW-6	In collaboration with EBMUD, promote water audit programs that offer free water audits to single-family, multi-family, large landscape accounts, and commercial customers. Collaborate with purveyors to enact conservation programs for commercial, industrial, and institutional (CII) accounts and create programs to install ultra-low-flush toilets in facilities.					Unknown
WW-7	Promote the use of reclaimed water (i.e., treated wastewater) and gray water for irrigation purposes consistent with the appropriate provisions of Title 22 and approval of the State Health Department. As part of this measure, conduct the following: • Inventory potential non-potable uses of water for potential substitution by recycled and/or gray water. • Collaborate with responsible agencies to encourage the use of recycled water where cost and energy efficiencies for its production, distribution and use are favorable.					Unknown
WW-8	Develop a Non-Potable Water Master Plan, which covers the use of recycled water for non-potable uses. 1) Inventory potential non-potable uses of water for potential substitution by recycled water. 2) Assess associated energy/GHG tradeoffs versus non-recycled water supply. 3) Collaborate with responsible agencies to encourage the use of recycled water where cost and energy efficiencies for its production, distribution and use are favorable.					Low
WW-9	Implement a public information and school education program to promote water conservation and its benefits in coordination with efforts of local water purveyors. Conduct public education and outreach to reduce watering of non-vegetated surfaces and promote the use of pervious paving materials.					Unknown
Other and Life-Cylce Emissions Sources Reductions						
OL-1	Initiate yard equipment exchange program to allow residents to trade in gas-powered machines for electric models.	0.1	0%	0.1	0%	Unknown
OL-2	Adopt an ordinance to ban the use of two-stroke engine leaf blowers. As part of this ordinance, establish planting and maintenance guidelines to reduce maintenance needs.	--	--	--	--	Unknown
OL-3	Require new developments to have outdoor electrical outlets to support use of electrical yard equipment.	--	--	--	--	Unknown
OL-4	Require the use of cement substitutes and recycled building materials for new construction.	--	--	--	--	Low
OL-5	Develop policies, incentives, and design guidelines that encourage the public and private purchase and use of durable and nondurable items, including building materials, made from recycled materials or renewable resources.	--	--	--	--	Unknown
OL-6	Identify and inventory potential community garden and urban farm sites on public easements, PG&E easements, right-of-ways, and schoolyards, and develop a program to establish community gardens in appropriate locations.	--	--	--	--	Unknown
OL-7	Allow small-scale and pesticide-free food production through the Zoning Ordinance, with an emphasis on local food production.	--	--	--	--	Unknown
OL-8	Encourage significant new residential developments over 50 units to include space that can be used to grow food.	--	--	--	--	Unknown
OL-9	Establish a process through which a neighborhood can propose and adopt a site as a community garden.	--	--	--	--	Unknown
OL-10	Continue to support the Danville Farmers' Market as a source for locally-grown food.	--	--	--	--	Unknown
OL-11	Require the Danville farmers' market to accept food stamps and other public food benefits.	--	--	--	--	Unknown
OL-12	Continue economic vitality programs aimed at supporting local business by encouraging residents to shop locally.	--	--	--	--	Unknown
Community Outreach Measures						
CO-1	Develop and implement an outreach plan to engage local businesses in climate change reduction programs.					Unknown
CO-2	Establish and maintain a "sustainability information center" at Town Hall or Library to inform the public and distribute available brochures, and provide information on sustainability on the Town's website.	--	--	--	--	Unknown
CO-3	Create Growing Greener Together Campaign, which provides Town employees and community members with a newsletter featuring green tips and best practices for home and at work.					Unknown
		10,491		14,211		

Summary of Danville's GHG Emissions

	2008		2020		2035		2020 Adjusted		2035 Adjusted	
	MTons	**Percent**	**MTons**	**Percent**	**MTons**	**Percent**	**MTons**	**Percent**	**MTons**	**Percent**
Transportation	158,620	45%	169,290	45%	201,830	48%	129,920	45%	140,950	46%
Residential	119,120	34%	127,360	34%	137,670	33%	102,840	36%	110,340	36%
Purchased Electricity	44,240		47,300		51,130		23,300		24,970	
Natural Gas	74,880		80,060		86,540		79,540		85,370	
Commercial/Industrial	23,810	7%	24,890	7%	26,260	6%	16,760	6%	17,570	6%
Purchased Electricity	15,290		15,990		16,880		7,910		8,300	
Natural Gas	8,520		8,900		9,380		8,850		9,270	
Water/Wastewater	24,220	7%	25,750	7%	27,670	7%	14,220	5%	15,280	5%
Electricity	22,180		23,580		25,340		12,050		12,950	
Fugitive	2,040		2,170		2,330		2,170		2,330	
Waste	7,380	2%	7,850	2%	8,430	2%	7,850	3%	8,430	3%
Other	18,440	5%	18,490	5%	18,580	4%	16,640	6%	16,720	5%
Industrial (Permitted)	100		100		100		100		100	
Total (with Permitted)	351,690		373,730		420,540		288,330		309,390	
Total (without Permitted)	**351,590**	**100%**	**373,630**	**100%**	**420,440**	**100%**	**288,230**	**100%**	**309,290**	**100%**
15% Below "CAP Baseline"	298,852		298,852				298,852			
GHG Reductions Needed	52,739		74,779				-10,622			
Local Reductions							-10,490		-14,210	
TOTAL with Reductions	**351,590**		**373,630**		**420,440**		**277,740**		**295,080**	
Population	46,536		49,846		53,785		49,846		53,785	
Employment	15,162		15,838		16,697		15,838		16,697	
Service Population	61,698		65,684		70,482		65,684		70,482	
MTons/SP	5.70		5.69		5.97		4.39		4.39	
MTons/SP with Reductions							4.23		4.19	

*Inventory is rounded to the tens place.

** Not included in Target setting since permitted (industrial) sources of GHG emissions are under the jurisdiction of BAAQMD and not the Town of Danville.

Index	EMFAC2011 Veh & Tech	EMFAC2011 Vehicle	Description	Source	EMFAC2007 Vehicle	CTEMFAC Vehicle
1	LDA - DSL	LDA	Passenger Cars	EMFAC2011-LDV	LDA	Non-Trucks
2	LDA - GAS			EMFAC2011-LDV	LDA	Non-Trucks
3	LDT1 - DSL	LDT1	Light-Duty Trucks (0-3750 lbs)	EMFAC2011-LDV	LDT1	Non-Trucks
4	LDT1 - GAS			EMFAC2011-LDV	LDT1	Non-Trucks
5	LDT2 - DSL	LDT2	Light-Duty Trucks (3751-5750 lbs)	EMFAC2011-LDV	LDT2	Non-Trucks
6	LDT2 - GAS			EMFAC2011-LDV	LDT2	Non-Trucks
7	LHD1 - DSL	LHD1	Light-Heavy-Duty Trucks (8501-10000 lbs)	EMFAC2011-LDV	LHDT1	Trucks
8	LHD1 - GAS			EMFAC2011-LDV	LHDT1	Trucks
9	LHD2 - DSL	LHD2	Light-Heavy-Duty Trucks (10001-14000 lbs)	EMFAC2011-LDV	LHDT2	Trucks
10	LHD2 - GAS			EMFAC2011-LDV	LHDT2	Trucks
11	MCY - GAS	MCY	Motorcycles	EMFAC2011-LDV	MCY	Non-Trucks
12	MDV - DSL	MDV	Medium-Duty Trucks (5751-8500 lbs)	EMFAC2011-LDV	MDV	Trucks
13	MDV - GAS			EMFAC2011-LDV	MDV	Trucks
14	MH - DSL	MH	Motor Homes	EMFAC2011-LDV	MH	Non-Trucks
15	MH - GAS			EMFAC2011-LDV	MH	Non-Trucks
16	T6 Ag - DSL	T6 Ag	Medium-Heavy Duty Diesel Agriculture Truck	EMFAC2011-HD	MHDT	Trucks
17	T6 CAIRP heavy - DSL	T6 CAIRP heavy	Medium-Heavy Duty Diesel CA International Registration Plan Truck with GVWR>26000 lbs	EMFAC2011-HD	MHDT	Trucks
18	T6 CAIRP small - DSL	T6 CAIRP small	Medium-Heavy Duty Diesel CA International Registration Plan Truck with GVWR<=26000 lbs	EMFAC2011-HD	MHDT	Trucks
19	T6 instate construction heavy - DSL	T6 instate construction heavy	Medium-Heavy Duty Diesel instate construction Truck with GVWR>26000 lbs	EMFAC2011-HD	MHDT	Trucks
20	T6 instate construction small - DSL	T6 instate construction small	Medium-Heavy Duty Diesel instate construction Truck with GVWR<=26000 lbs	EMFAC2011-HD	MHDT	Trucks
21	T6 instate heavy - DSL	T6 instate heavy	Medium-Heavy Duty Diesel instate Truck with GVWR>26000 lbs	EMFAC2011-HD	MHDT	Trucks
22	T6 instate small - DSL	T6 instate small	Medium-Heavy Duty Diesel instate Truck with GVWR<=26000 lbs	EMFAC2011-HD	MHDT	Trucks
23	T6 OOS heavy - DSL	T6 OOS heavy	Medium-Heavy Duty Diesel Out-of-state Truck with GVWR>26000 lbs	EMFAC2011-HD	MHDT	Trucks
24	T6 OOS small - DSL	T6 OOS small	Medium-Heavy Duty Diesel Out-of-state Truck with GVWR<=26000 lbs	EMFAC2011-HD	MHDT	Trucks
25	T6 Public - DSL	T6 Public	Medium-Heavy Duty Diesel Public Fleet Truck	EMFAC2011-HD	MHDT	Trucks
26	T6 utility - DSL	T6 utility	Medium-Heavy Duty Diesel Utility Fleet Truck	EMFAC2011-HD	MHDT	Trucks
27	T6TS - GAS	T6TS		EMFAC2011-LDV	MHDT	Trucks
28	T7 Ag - DSL	T7 Ag	Heavy-Heavy Duty Diesel Agriculture Truck	EMFAC2011-HD	HHDT	Trucks
29	T7 CAIRP - DSL	T7 CAIRP	Heavy-Heavy Duty Diesel CA International Registration Plan Truck	EMFAC2011-HD	HHDT	Trucks
30	T7 CAIRP construction - DSL	T7 CAIRP construction	Heavy-Heavy Duty Diesel CA International Registration Plan Construction Truck	EMFAC2011-HD	HHDT	Trucks
31	T7 NNOOS - DSL	T7 NNOOS	Heavy-Heavy Duty Diesel Non-Neighboring Out-of-state Truck	EMFAC2011-HD	HHDT	Trucks
32	T7 NOOS - DSL	T7 NOOS	Heavy-Heavy Duty Diesel Neighboring Out-of-state Truck	EMFAC2011-HD	HHDT	Trucks
33	T7 other port - DSL	T7 other port	Heavy-Heavy Duty Diesel Drayage Truck at Other Facilities	EMFAC2011-HD	HHDT	Trucks
34	T7 POAK - DSL	T7 POAK	Heavy-Heavy Duty Diesel Drayage Truck in Bay Area	EMFAC2011-HD	HHDT	Trucks
35	T7 POLA - DSL	T7 POLA	Heavy-Heavy Duty Diesel Drayage Truck near South Coast	EMFAC2011-HD	HHDT	Trucks
36	T7 Public - DSL	T7 Public	Heavy-Heavy Duty Diesel Public Fleet Truck	EMFAC2011-HD	HHDT	Trucks
37	T7 Single - DSL	T7 Single	Heavy-Heavy Duty Diesel Single Unit Truck	EMFAC2011-HD	HHDT	Trucks
38	T7 single construction - DSL	T7 single construction	Heavy-Heavy Duty Diesel Single Unit Construction Truck	EMFAC2011-HD	HHDT	Trucks
39	T7 SWCV - DSL	T7 SWCV	Heavy-Heavy Duty Diesel Solid Waste Collection Truck	EMFAC2011-HD	HHDT	Trucks
40	T7 tractor - DSL	T7 tractor	Heavy-Heavy Duty Diesel Tractor Truck	EMFAC2011-HD	HHDT	Trucks
41	T7 tractor construction - DSL	T7 tractor construction	Heavy-Heavy Duty Diesel Tractor Construction Truck	EMFAC2011-HD	HHDT	Trucks
42	T7 utility - DSL	T7 utility	Heavy-Heavy Duty Diesel Utility Fleet Truck	EMFAC2011-HD	HHDT	Trucks
43	T7IS - GAS	T7IS	Medium-Heavy Duty Gasoline Instate Truck with GVWR>26000 lbs	EMFAC2011-LDV	HHDT	Trucks
44	PTO - DSL	PTO	Power Take Off	EMFAC2011-HD	HHDT	Trucks
45	SBUS - DSL	SBUS	School Buses	EMFAC2011-HD	SBUS	Non-Trucks
46	SBUS - GAS		School Buses	EMFAC2011-LDV	SBUS	Non-Trucks
47	UBUS - DSL	UBUS	Urban Buses	EMFAC2011-LDV	UBUS	Non-Trucks
48	UBUS - GAS			EMFAC2011-LDV	UBUS	Non-Trucks
49	Motor Coach - DSL	Motor Coach	Motor Coach	EMFAC2011-HD	OBUS	Non-Trucks
50	OBUS - GAS	OBUS	Other Buses	EMFAC2011-LDV	OBUS	Non-Trucks
51	All Other Buses - DSL	All Other Buses	All Other Buses	EMFAC2011-HD	OBUS	Non-Trucks

2008

											Tons/Day									
RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	Fuel_Gas	Fuel_Dsl
Vh	Contra Cost	2008	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	108	6,355	0.02%		5.514E-03	7.968E-02	1.611E-02	8.081E-05	4.689E-03	3.809E-03	8.470E+00	8.470E+00		7.623E-01
Vh	Contra Cost	2008	Annual	LDA	TOT	LDA - TOT	AllMYr	388,679	13,986,436	50.62%	2,437,178	6.794E+00	5.984E+00	6.603E+01	5.507E-02	7.836E-01	3.583E-01	5.402E+03	5.402E+03	5.856E+02	1.555E+00
Vh	Contra Cost	2008	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	48,209	1,757,848	6.36%	294,471	1.660E+00	1.565E+00	1.743E+01	8.072E-03	1.068E-01	5.235E-02	7.782E+02	7.782E+02	8.601E+01	7.591E-02
Vh	Contra Cost	2008	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	122,708	4,977,309	18.02%	779,032	1.963E+00	3.087E+00	2.351E+01	2.658E-02	2.693E-01	1.189E-01	2.622E+03	2.622E+03	2.834E+02	7.451E-02
Vh	Contra Cost	2008	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	24,891	1,133,548	4.10%	351,876	8.135E-01	3.511E+00	7.281E+00	1.051E-02	1.058E-01	5.895E-02	1.050E+03	1.050E+03	8.974E+01	1.977E+01
Vh	Contra Cost	2008	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	3,278	150,601	0.55%	44,029	9.359E-02	6.535E-01	8.053E-01	1.130E-03	2.076E-02	1.208E-02	1.145E+02	1.145E+02	6.138E+00	5.227E+00
Vh	Contra Cost	2008	Annual	MCY	TOT	MCY - TOT	AllMYr	19,491	159,608	0.58%	38,979	1.026E+00	2.653E-01	8.975E+00	3.965E-04	8.675E-03	3.745E-03	2.319E+01	2.319E+01	4.229E+00	0.000E+00
Vh	Contra Cost	2008	Annual	MDV	TOT	MDV - TOT	AllMYr	104,974	4,512,117	16.33%	670,496	1.584E+00	3.202E+00	2.228E+01	3.023E-02	2.406E-01	1.048E-01	2.989E+03	2.989E+03	3.223E+02	8.039E-02
Vh	Contra Cost	2008	Annual	MH	TOT	MH - TOT	AllMYr	4,411	56,158	0.20%	441	4.198E-02	1.898E-01	1.045E+00	4.861E-04	6.735E-03	4.201E-03	4.750E+01	4.750E+01	3.878E+00	1.155E+00
Vh	Contra Cost	2008	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	43	6,376	0.02%		6.279E-03	1.233E-01	2.691E-02	1.223E-04	4.435E-03	3.574E-03	1.282E+01	1.282E+01		1.154E+00
Vh	Contra Cost	2008	Annual	OBUS	TOT	OBUS - TOT	AllMYr	398	24,128	0.09%	18,187	3.745E-02	1.038E-01	5.284E-01	1.990E-04	1.279E-03	5.501E-04	1.900E+01	1.900E+01	2.123E+00	0.000E+00
Vh	Contra Cost	2008	Annual	PTO	TOT	PTO - TOT	AllMYr	0	10,639	0.04%		1.179E-02	2.011E-01	6.097E-02	2.416E-04	8.270E-03	7.608E-03	2.532E+01	2.532E+01		2.279E+00
Vh	Contra Cost	2008	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,697	65,900	0.24%	392	8.345E-02	9.349E-01	5.002E-01	9.393E-04	9.345E-02	6.050E-02	9.777E+01	9.777E+01	4.429E-01	8.469E+00
Vh	Contra Cost	2008	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	53	1,936	0.01%		1.730E-03	2.402E-02	5.023E-03	2.488E-05	1.446E-03	1.177E-03	2.608E+00	2.608E+00		2.347E-01
Vh	Contra Cost	2008	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	2	114	0.00%		5.632E-05	1.122E-03	1.767E-04	1.439E-06	5.904E-05	4.527E-05	1.508E-01	1.508E-01		1.358E-02
Vh	Contra Cost	2008	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	5	396	0.00%		1.523E-04	3.560E-03	4.976E-04	4.998E-06	1.810E-04	1.350E-04	5.239E-01	5.239E-01		4.715E-02
Vh	Contra Cost	2008	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	138	8,029	0.03%		5.695E-03	9.193E-02	1.703E-02	1.019E-04	5.117E-03	4.069E-03	1.068E+01	1.068E+01		9.615E-01
Vh	Contra Cost	2008	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	350	23,974	0.09%		1.149E-02	2.385E-01	3.649E-02	3.025E-04	1.204E-02	9.168E-03	3.171E+01	3.171E+01		2.854E+00
Vh	Contra Cost	2008	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	787	45,838	0.17%		3.251E-02	5.248E-01	9.722E-02	5.819E-04	2.921E-02	2.323E-02	6.099E+01	6.099E+01		5.489E+00
Vh	Contra Cost	2008	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	1,998	136,863	0.50%		6.558E-02	1.362E+00	2.083E-01	1.727E-03	6.871E-02	5.234E-02	1.810E+02	1.810E+02		1.629E+01
Vh	Contra Cost	2008	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	1	65	0.00%		3.229E-05	6.434E-04	1.013E-04	8.251E-07	3.385E-05	2.595E-05	8.648E-02	8.648E-02		7.783E-03
Vh	Contra Cost	2008	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	3	227	0.00%		8.732E-05	2.041E-03	2.853E-04	2.866E-06	1.037E-04	7.739E-05	3.004E-01	3.004E-01		2.703E-02
Vh	Contra Cost	2008	Annual	T6 public	DSL	T6 public - DSL	AllMYr	278	5,295	0.02%		2.184E-03	6.038E-02	7.088E-03	6.851E-05	2.639E-03	2.007E-03	7.181E+00	7.181E+00		6.463E-01
Vh	Contra Cost	2008	Annual	T6 public	TOT	T6 public - TOT	AllMYr	278	5,295	0.02%		2.184E-03	6.038E-02	7.088E-03	6.851E-05	2.639E-03	2.007E-03	7.181E+00	7.181E+00		6.463E-01
Vh	Contra Cost	2008	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	45	914	0.00%		2.331E-04	9.493E-03	8.243E-04	1.178E-05	3.531E-04	2.522E-04	1.234E+00	1.234E+00		1.111E-01
Vh	Contra Cost	2008	Annual	T6TS	TOT	T6TS - TOT	AllMYr	881	34,289	0.12%	17,626	1.508E-01	2.040E-01	1.534E+00	3.019E-04	2.167E-03	1.073E-03	2.748E+01	2.748E+01	3.220E+00	0.000E+00
Vh	Contra Cost	2008	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	93	6,845	0.02%		7.751E-03	1.370E-01	3.578E-02	1.288E-04	6.226E-03	5.317E-03	1.350E+01	1.350E+01		1.215E+00
Vh	Contra Cost	2008	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	300	72,937	0.26%		6.899E-02	1.245E+00	2.784E-01	1.374E-03	4.995E-02	4.157E-02	1.440E+02	1.440E+02		1.296E+01
Vh	Contra Cost	2008	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	36	8,802	0.03%		8.326E-03	1.503E-01	3.360E-02	1.658E-04	6.028E-03	5.017E-03	1.738E+01	1.738E+01		1.564E+00
Vh	Contra Cost	2008	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	295	82,052	0.30%		5.722E-02	1.069E+00	2.338E-01	1.566E-03	4.366E-02	3.524E-02	1.641E+02	1.641E+02		1.477E+01
Vh	Contra Cost	2008	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	109	26,562	0.10%		2.570E-02	4.553E-01	1.024E-01	5.034E-04	1.831E-02	1.525E-02	5.277E+01	5.277E+01		4.749E+00
Vh	Contra Cost	2008	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	52	8,202	0.03%		1.100E-02	2.007E-01	4.630E-02	1.526E-04	6.088E-03	5.109E-03	1.599E+01	1.599E+01		1.439E+00
Vh	Contra Cost	2008	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	220	28,465	0.10%		4.045E-02	7.123E-01	1.729E-01	5.378E-04	2.216E-02	1.867E-02	5.637E+01	5.637E+01		5.073E+00
Vh	Contra Cost	2008	Annual	T7 public	TOT	T7 public - TOT	AllMYr	180	4,490	0.02%		5.975E-03	1.066E-01	2.494E-02	9.894E-05	3.629E-03	3.069E-03	1.037E+01	1.037E+01		9.333E-01
Vh	Contra Cost	2008	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	558	44,236	0.16%		3.283E-02	7.690E-01	1.498E-01	8.271E-04	2.955E-02	2.453E-02	8.669E+01	8.669E+01		7.802E+00
Vh	Contra Cost	2008	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	287	22,770	0.08%		1.690E-02	3.958E-01	7.710E-02	4.257E-04	1.521E-02	1.263E-02	4.462E+01	4.462E+01		4.016E+00
Vh	Contra Cost	2008	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	244	12,220	0.04%		1.075E-02	2.450E-01	4.862E-02	2.466E-04	8.112E-03	6.729E-03	2.585E+01	2.585E+01		2.326E+00
Vh	Contra Cost	2008	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	802	133,249	0.48%		1.393E-01	2.487E+00	6.185E-01	2.472E-03	1.032E-01	8.698E-02	2.591E+02	2.591E+02		2.332E+01
Vh	Contra Cost	2008	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	211	16,977	0.06%		1.840E-02	3.204E-01	8.188E-02	3.174E-04	1.338E-02	1.129E-02	3.327E+01	3.327E+01		2.995E+00
Vh	Contra Cost	2008	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	31	762	0.00%		6.137E-04	1.669E-02	2.805E-03	1.667E-05	3.853E-04	3.087E-04	1.747E+00	1.747E+00		1.573E-01
Vh	Contra Cost	2008	Annual	T7IS	TOT	T7IS - TOT	AllMYr	79	6,805	0.02%	1,573	4.010E-02	8.485E-02	6.339E-01	5.673E-05	3.958E-04	1.817E-04	4.579E+00	4.579E+00	6.051E-01	0.000E+00
Vh	Contra Cost	2008	Annual	UBUS	TOT	UBUS - TOT	AllMYr	317	42,236	0.15%	1,267	4.348E-02	6.907E-01	2.733E-01	9.466E-04	4.244E-02	2.389E-02	9.843E+01	9.843E+01	9.139E-01	8.117E+00
									27,627,869												

2008										9.072E-01	MTons/Mile							2.000E+03	lbs/Mile							
RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)
Vh	Contra Cost	2008	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	108	6,355	0.02%		7.8726E-07	1.13758E-05	2.29973E-06	1.15361E-08	6.69366E-07	5.43724E-07	0.001209171	0.001209171	1.736E-03	2.508E-02	5.070E-03	2.543E-05	1.476E-03	1.199E-03	2.666E+00	2.666E+00
Vh	Contra Cost	2008	Annual	LDA	TOT	LDA - TOT	AllMYr	388,679	13,986,436	50.62%	2,437,178	4.40659E-07	3.88133E-07	4.28299E-06	3.57187E-09	5.08272E-08	2.32405E-08	0.000350355	0.000350355	9.715E-04	8.557E-04	9.442E-03	7.875E-06	1.121E-04	5.124E-05	7.724E-01	7.724E-01
Vh	Contra Cost	2008	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	48,209	1,757,848	6.36%	294,471	8.56551E-07	8.07708E-07	8.99589E-06	4.16556E-09	5.51177E-08	2.70189E-08	0.000401629	0.000401629	1.888E-03	1.781E-03	1.983E-02	9.183E-06	1.215E-04	5.957E-05	8.854E-01	8.854E-01
Vh	Contra Cost	2008	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	122,708	4,977,309	18.02%	779,032	3.57859E-07	5.62708E-07	4.28535E-06	4.84388E-09	4.90814E-08	2.16752E-08	0.000477849	0.000477849	7.889E-04	1.241E-03	9.448E-03	1.068E-05	1.082E-04	4.779E-05	1.053E+00	1.053E+00
Vh	Contra Cost	2008	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	24,891	1,133,548	4.10%	351,876	6.5103E-07	2.81E-06	5.82717E-06	8.4115E-09	8.47096E-08	4.71802E-08	0.000840474	0.000840474	1.435E-03	6.195E-03	1.285E-02	1.854E-05	1.868E-04	1.040E-04	1.853E+00	1.853E+00
Vh	Contra Cost	2008	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	3,278	150,601	0.55%	44,029	5.63759E-07	3.93647E-06	4.85092E-06	6.80569E-09	1.25032E-07	7.27392E-08	0.000689605	0.000689605	1.243E-03	8.678E-03	1.069E-02	1.500E-05	2.756E-04	1.604E-04	1.520E+00	1.520E+00
Vh	Contra Cost	2008	Annual	MCY	TOT	MCY - TOT	AllMYr	19,491	159,608	0.58%	38,979	5.8329E-06	1.50774E-06	5.10118E-05	2.25368E-09	4.93069E-08	2.12841E-08	0.000131797	0.000131797	1.286E-02	3.324E-03	1.125E-01	4.969E-06	1.087E-04	4.692E-05	2.906E-01	2.906E-01
Vh	Contra Cost	2008	Annual	MDV	TOT	MDV - TOT	AllMYr	104,974	4,512,117	16.33%	670,496	3.18562E-07	6.4379E-07	4.4789E-06	6.07722E-09	4.83787E-08	2.10764E-08	0.000601042	0.000601042	7.023E-04	1.419E-03	9.874E-03	1.340E-05	1.067E-04	4.647E-05	1.325E+00	1.325E+00
Vh	Contra Cost	2008	Annual	MH	TOT	MH - TOT	AllMYr	4,411	56,158	0.20%	441	6.78224E-07	3.0665E-06	1.68762E-05	7.85225E-09	1.08801E-07	6.78625E-08	0.000767338	0.000767338	1.495E-03	6.760E-03	3.721E-02	1.731E-05	2.399E-04	1.496E-04	1.692E+00	1.692E+00
Vh	Contra Cost	2008	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	43	6,376	0.02%		8.9333E-07	1.75398E-05	3.82883E-06	1.73967E-08	6.30974E-07	5.08403E-07	0.001823469	0.001823469	1.969E-03	3.867E-02	8.441E-03	3.835E-05	1.391E-03	1.121E-03	4.020E+00	4.020E+00
Vh	Contra Cost	2008	Annual	OBUS	TOT	OBUS - TOT	AllMYr	398	24,128	0.09%	18,187	1.40799E-06	3.90256E-06	1.98657E-05	7.48296E-09	4.80878E-08	2.06825E-08	0.00071438	0.00071438	3.104E-03	8.604E-03	4.380E-02	1.650E-05	1.060E-04	4.560E-05	1.575E+00	1.575E+00
Vh	Contra Cost	2008	Annual	PTO	TOT	PTO - TOT	AllMYr	0	10,639	0.04%		1.00516E-06	1.7147E-05	5.19904E-06	2.06005E-08	7.05156E-07	6.48743E-07	0.002159279	0.002159279	2.216E-03	3.780E-02	1.146E-02	4.542E-05	1.555E-03	1.430E-03	4.760E+00	4.760E+00
Vh	Contra Cost	2008	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,697	65,900	0.24%	392	1.14884E-06	1.287E-05	6.88603E-06	1.293E-08	1.28646E-06	8.32795E-07	0.00134597	0.00134597	2.533E-03	2.837E-02	1.518E-02	2.851E-05	2.836E-03	1.836E-03	2.967E+00	2.967E+00
Vh	Contra Cost	2008	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	53	1,936	0.01%		8.10819E-07	1.12556E-05	2.3543E-06	1.16607E-08	6.77863E-07	5.51541E-07	0.001222238	0.001222238	1.788E-03	2.481E-02	5.190E-03	2.571E-05	1.494E-03	1.216E-03	2.695E+00	2.695E+00
Vh	Contra Cost	2008	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	2	114	0.00%		4.48662E-07	8.939E-06	1.40783E-06	1.14639E-08	4.70318E-07	3.6066E-07	0.001201606	0.001201606	9.891E-04	1.971E-02	3.104E-03	2.527E-05	1.037E-03	7.950E-04	2.649E+00	2.649E+00
Vh	Contra Cost	2008	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	5	396	0.00%		3.48647E-07	8.14932E-06	1.13898E-06	1.14418E-08	4.1425E-07	3.09017E-07	0.001199288	0.001199288	7.686E-04	1.797E-02	2.511E-03	2.522E-05	9.133E-04	6.813E-04	2.644E+00	2.644E+00
Vh	Contra Cost	2008	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	138	8,029	0.03%		6.43391E-07	1.03862E-05	1.9241E-06	1.15159E-08	5.78104E-07	4.59763E-07	0.001207063	0.001207063	1.418E-03	2.290E-02	4.242E-03	2.539E-05	1.275E-03	1.014E-03	2.661E+00	2.661E+00
Vh	Contra Cost	2008	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	350	23,974	0.09%		4.34679E-07	9.02552E-06	1.38089E-06	1.14476E-08	4.55431E-07	3.46904E-07	0.001199902	0.001199902	9.583E-04	1.990E-02	3.044E-03	2.524E-05	1.004E-03	7.648E-04	2.645E+00	2.645E+00
Vh	Contra Cost	2008	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	787	45,838	0.17%		6.43391E-07	1.03862E-05	1.9241E-06	1.15159E-08	5.78104E-07	4.59763E-07	0.001207063	0.001207063	1.418E-03	2.290E-02	4.242E-03	2.539E-05	1.275E-03	1.014E-03	2.661E+00	2.661E+00
Vh	Contra Cost	2008	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	1,998	136,863	0.50%		4.34679E-07	9.02552E-06	1.38089E-06	1.14476E-08	4.55431E-07	3.46904E-07	0.001199902	0.001199902	9.583E-04	1.990E-02	3.044E-03	2.524E-05	1.004E-03	7.648E-04	2.645E+00	2.645E+00
Vh	Contra Cost	2008	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	1	65	0.00%		4.48662E-07	8.939E-06	1.40783E-06	1.14639E-08	4.70318E-07	3.6066E-07	0.001201606	0.001201606	9.891E-04	1.971E-02	3.104E-03	2.527E-05	1.037E-03	7.950E-04	2.649E+00	2.649E+00
Vh	Contra Cost	2008	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	3	227	0.00%		3.48647E-07	8.14932E-06	1.13898E-06	1.14418E-08	4.1425E-07	3.09017E-07	0.001199288	0.001199288	7.686E-04	1.797E-02	2.511E-03	2.522E-05	9.133E-04	6.813E-04	2.644E+00	2.644E+00
Vh	Contra Cost	2008	Annual	T6 public	DSL	T6 public - DSL	AllMYr	278	5,295	0.02%		3.74288E-07	1.03452E-05	1.21442E-06	1.17391E-08	4.52187E-07	3.43919E-07	0.001230458	0.001230458	8.252E-04	2.281E-02	2.677E-03	2.588E-05	9.969E-04	7.582E-04	2.713E+00	2.713E+00
Vh	Contra Cost	2008	Annual	T6 public	TOT	T6 public - TOT	AllMYr	278	5,295	0.02%		3.74288E-07	1.03452E-05	1.21442E-06	1.17391E-08	4.52187E-07	3.43919E-07	0.001230458	0.001230458	8.252E-04	2.281E-02	2.677E-03	2.588E-05	9.969E-04	7.582E-04	2.713E+00	2.713E+00
Vh	Contra Cost	2008	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	45	914	0.00%		2.31156E-07	9.42236E-06	8.18216E-07	1.16898E-08	3.50475E-07	2.50344E-07	0.001225285	0.001225285	5.101E-04	2.077E-02	1.804E-03	2.577E-05	7.727E-04	5.519E-04	2.701E+00	2.701E+00
Vh	Contra Cost	2008	Annual	T6TS	TOT	T6TS - TOT	AllMYr	881	34,289	0.12%	17,626	3.98924E-06	5.39638E-06	4.05811E-05	7.98647E-09	5.73372E-08	2.83993E-08	0.000727042	0.000727042	8.795E-03	1.190E-02	8.947E-02	1.761E-05	1.264E-04	6.261E-05	1.603E+00	1.603E+00
Vh	Contra Cost	2008	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	93	6,845	0.02%		1.02725E-06	1.81583E-05	4.74276E-06	1.70655E-08	8.25163E-07	7.04689E-07	0.00178875	0.00178875	2.265E-03	4.003E-02	1.046E-02	3.762E-05	1.819E-03	1.554E-03	3.944E+00	3.944E+00
Vh	Contra Cost	2008	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	300	72,937	0.26%		8.58079E-07	1.54911E-05	3.46244E-06	1.70848E-08	6.21215E-07	5.17057E-07	0.001790773	0.001790773	1.892E-03	3.415E-02	7.633E-03	3.767E-05	1.370E-03	1.140E-03	3.948E+00	3.948E+00
Vh	Contra Cost	2008	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	36	8,802	0.03%		8.58079E-07	1.54911E-05	3.46244E-06	1.70848E-08	6.21215E-07	5.17057E-07	0.001790773	0.001790773	1.892E-03	3.415E-02	7.633E-03	3.767E-05	1.370E-03	1.140E-03	3.948E+00	3.948E+00
Vh	Contra Cost	2008	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	295	82,052	0.30%		6.3265E-07	1.18205E-05	2.58482E-06	1.73125E-08	4.82716E-07	3.89638E-07	0.001814642	0.001814642	1.395E-03	2.606E-02	5.699E-03	3.817E-05	1.064E-03	8.590E-04	4.001E+00	4.001E+00
Vh	Contra Cost	2008	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	109	26,562	0.10%		8.77915E-07	1.55503E-05	3.49786E-06	1.71939E-08	6.25196E-07	5.2072E-07	0.001802211	0.001802211	1.935E-03	3.428E-02	7.711E-03	3.791E-05	1.378E-03	1.148E-03	3.973E+00	3.973E+00
Vh	Contra Cost	2008	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	52	8,202	0.03%		1.21676E-06	2.22033E-05	5.1213E-06	1.68769E-08	6.73366E-07	5.65035E-07	0.001768985	0.001768985	2.682E-03	4.895E-02	1.129E-02	3.721E-05	1.485E-03	1.246E-03	3.900E+00	3.900E+00
Vh	Contra Cost	2008	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	220	28,465	0.10%		1.28918E-06	2.27022E-05	5.51197E-06	1.71394E-08	7.06098E-07	5.9515E-07	0.00179649	0.00179649	2.842E-03	5.005E-02	1.215E-02	3.779E-05	1.557E-03	1.312E-03	3.961E+00	3.961E+00
Vh	Contra Cost	2008	Annual	T7 public	TOT	T7 public - TOT	AllMYr	180	4,490	0.02%		1.20733E-06	2.15414E-05	5.03968E-06	1.99906E-08	7.33228E-07	6.20109E-07	0.002095349	0.002095349	2.662E-03	4.749E-02	1.111E-02	4.407E-05	1.616E-03	1.367E-03	4.619E+00	4.619E+00
Vh	Contra Cost	2008	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	558	44,236	0.16%		6.73243E-07	1.577E-05	3.07184E-06	1.69616E-08	6.0602E-07	5.03077E-07	0.001777854	0.001777854	1.484E-03	3.477E-02	6.772E-03	3.739E-05	1.336E-03	1.109E-03	3.919E+00	3.919E+00
Vh	Contra Cost	2008	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	287	22,770	0.08%		6.73243E-07	1.577E-05	3.07184E-06	1.69616E-08	6.0602E-07	5.03077E-07	0.001777854	0.001777854	1.484E-03	3.477E-02	6.772E-03	3.739E-05	1.336E-03	1.109E-03	3.919E+00	3.919E+00
Vh	Contra Cost	2008	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	244	12,220	0.04%		7.98393E-07	1.81878E-05	3.60977E-06	1.83089E-08	6.02222E-07	4.99583E-07	0.001919077	0.001919077	1.760E-03	4.010E-02	7.958E-03	4.036E-05	1.328E-03	1.101E-03	4.231E+00	4.231E+00
Vh	Contra Cost	2008	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	802	133,249	0.48%		9.48633E-07	1.69337E-05	4.21107E-06	1.68284E-08	7.02899E-07	5.92206E-07	0.001763896	0.001763896	2.091E-03	3.733E-02	9.284E-03	3.710E-05	1.550E-03	1.306E-03	3.889E+00	3.889E+00
Vh	Contra Cost	2008	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	211	16,977	0.06%		9.83176E-07	1.71194E-05	4.3755E-06	1.69629E-08	7.14993E-07	6.03333E-07	0.00177799	0.00177799	2.168E-03	3.774E-02	9.646E-03	3.740E-05	1.576E-03	1.330E-03	3.920E+00	3.920E+00
Vh	Contra Cost	2008	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	31	762	0.00%		7.30975E-07	1.98809E-05	3.34086E-06	1.98563E-08	4.58896E-07	3.67724E-07	0.00208127	0.00208127	1.612E-03	4.383E-02	7.365E-03	4.378E-05	1.012E-03	8.107E-04	4.588E+00	4.588E+00
Vh	Contra Cost	2008	Annual	T7IS	TOT	T7IS - TOT	AllMYr	79	6,805	0.02%	1,573	5.34559E-06	1.13103E-05	8.45005E-05	7.56239E-09	5.27564E-08	2.4221E-08	0.000610451	0.000610451	1.179E-02	2.493E-02	1.863E-01	1.667E-05	1.163E-04	5.340E-05	1.346E+00	1.346E+00
Vh	Contra Cost	2008	Annual	UBUS	TOT	UBUS - TOT	AllMYr	317	42,236	0.15%	1,267	9.33805E-07	1.48352E-05	5.87103E-06	2.03327E-08	9.1163E-07	5.13197E-07	0.002114109	0.002114109	2.059E-03	3.271E-02	1.294E-02	4.483E-05	2.010E-03	1.131E-03	4.661E+00	4.661E+00
									27,627,869																		

												Tons/Day										
RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	Fuel_Gas	Fuel_Dsl
Vh	Contra Cost	2020	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	144	7,975	0.03%		1.196E-03	2.862E-02	4.390E-03	1.001E-04	1.694E-03	9.244E-04	1.049E+01	9.440E+00		9.440E-01
Vh	Contra Cost	2020	Annual	LDA	TOT	LDA - TOT	AllMYr	426,855	15,805,671	52.71%	2,695,455	1.701E+00	1.625E+00	1.770E+01	6.148E-02	8.203E-01	3.469E-01	6.130E+03	4.235E+03	6.531E+02	2.335E+00
Vh	Contra Cost	2020	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	52,676	1,968,560	6.57%	319,312	6.619E-01	5.464E-01	5.643E+00	8.881E-03	1.058E-01	4.655E-02	8.802E+02	6.477E+02	9.462E+01	9.674E-02
Vh	Contra Cost	2020	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	133,879	5,296,149	17.66%	842,112	8.642E-01	9.087E-01	8.182E+00	2.797E-02	2.742E-01	1.156E-01	2.788E+03	2.120E+03	2.983E+02	8.869E-02
Vh	Contra Cost	2020	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	26,836	1,082,656	3.61%	379,483	5.556E-01	2.003E+00	3.648E+00	1.001E-02	8.947E-02	4.571E-02	1.005E+03	9.048E+02	8.583E+01	1.847E+01
Vh	Contra Cost	2020	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	3,621	144,539	0.48%	48,619	4.569E-02	3.340E-01	2.777E-01	1.092E-03	1.707E-02	9.110E-03	1.113E+02	1.002E+02	6.263E+00	4.754E+00
Vh	Contra Cost	2020	Annual	MCY	TOT	MCY - TOT	AllMYr	21,945	194,114	0.65%	43,885	8.228E-01	2.799E-01	6.087E+00	4.901E-04	9.705E-03	3.906E-03	3.729E+01	3.356E+01	5.228E+00	0.000E+00
Vh	Contra Cost	2020	Annual	MDV	TOT	MDV - TOT	AllMYr	115,183	4,333,770	14.45%	709,758	1.300E+00	1.529E+00	1.232E+01	2.926E-02	2.262E-01	9.626E-02	2.910E+03	2.308E+03	3.119E+02	1.557E-01
Vh	Contra Cost	2020	Annual	MH	TOT	MH - TOT	AllMYr	4,765	61,514	0.21%	477	8.131E-03	1.056E-01	1.248E-01	5.116E-04	6.041E-03	3.441E-03	5.162E+01	4.646E+01	4.130E+00	1.173E+00
Vh	Contra Cost	2020	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	57	8,163	0.03%		2.500E-03	3.718E-02	1.206E-02	1.555E-04	1.921E-03	1.118E-03	1.630E+01	1.467E+01		1.467E+00
Vh	Contra Cost	2020	Annual	OBUS	TOT	OBUS - TOT	AllMYr	438	20,858	0.07%	20,022	2.586E-02	5.620E-02	3.276E-01	1.712E-04	1.055E-03	4.323E-04	1.658E+01	1.492E+01	1.827E+00	0.000E+00
Vh	Contra Cost	2020	Annual	PTO	TOT	PTO - TOT	AllMYr	0	15,087	0.05%		4.109E-03	9.767E-02	1.295E-02	3.394E-04	8.412E-04	7.739E-04	3.557E+01	3.202E+01		3.202E+00
Vh	Contra Cost	2020	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,624	59,643	0.20%	413	1.431E-02	6.286E-01	8.847E-02	8.481E-04	4.990E-02	2.310E-02	8.862E+01	7.976E+01	4.189E-01	7.630E+00
Vh	Contra Cost	2020	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	55	1,855	0.01%		5.512E-04	7.369E-03	1.884E-03	2.344E-05	5.531E-04	3.615E-04	2.456E+00	2.211E+00		2.211E-01
Vh	Contra Cost	2020	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	2	140	0.00%		1.817E-05	3.306E-04	6.727E-05	1.749E-06	2.822E-05	1.483E-05	1.834E-01	1.650E-01		1.650E-02
Vh	Contra Cost	2020	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	7	479	0.00%		6.397E-05	6.366E-04	2.386E-04	5.954E-06	9.745E-05	5.157E-05	6.241E-01	5.617E-01		5.617E-02
Vh	Contra Cost	2020	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	120	6,430	0.02%		8.970E-04	2.623E-02	3.282E-03	8.095E-05	1.352E-03	7.326E-04	8.485E+00	7.637E+00		7.637E-01
Vh	Contra Cost	2020	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	260	17,335	0.06%		2.723E-03	3.131E-02	1.012E-02	2.160E-04	3.805E-03	2.123E-03	2.264E+01	2.038E+01		2.038E+00
Vh	Contra Cost	2020	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	990	54,842	0.18%		7.603E-03	2.024E-01	2.792E-02	6.893E-04	1.145E-02	6.174E-03	7.225E+01	6.503E+01		6.503E+00
Vh	Contra Cost	2020	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	2,285	154,803	0.52%		2.356E-02	2.634E-01	8.760E-02	1.928E-03	3.344E-02	1.846E-02	2.021E+02	1.819E+02		1.819E+01
Vh	Contra Cost	2020	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	1	80	0.00%		1.042E-05	1.896E-04	3.857E-05	1.003E-06	1.618E-05	8.501E-06	1.051E-01	9.462E-02		9.462E-03
Vh	Contra Cost	2020	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	4	275	0.00%		3.667E-05	3.650E-04	1.368E-04	3.414E-06	5.587E-05	2.957E-05	3.578E-01	3.220E-01		3.220E-02
Vh	Contra Cost	2020	Annual	T6 public	TOT	T6 public - TOT	AllMYr	357	6,680	0.02%		6.920E-04	2.972E-02	2.868E-03	8.613E-05	1.303E-03	6.683E-04	9.028E+00	8.125E+00		8.125E-01
Vh	Contra Cost	2020	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	54	1,090	0.00%		1.176E-04	2.569E-03	5.046E-04	1.394E-05	2.072E-04	1.040E-04	1.461E+00	1.315E+00		1.315E-01
Vh	Contra Cost	2020	Annual	T6TS	TOT	T6TS - TOT	AllMYr	982	47,516	0.16%	19,651	4.301E-02	7.679E-02	5.281E-01	3.781E-04	2.420E-03	9.998E-04	3.695E+01	3.326E+01	4.033E+00	0.000E+00
Vh	Contra Cost	2020	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	100	6,717	0.02%		2.887E-03	4.570E-02	1.335E-02	1.266E-04	1.914E-03	1.358E-03	1.327E+01	1.194E+01		1.194E+00
Vh	Contra Cost	2020	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	421	103,857	0.35%		4.003E-02	3.674E-01	1.968E-01	2.010E-03	2.000E-02	1.217E-02	2.107E+02	1.896E+02		1.896E+01
Vh	Contra Cost	2020	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	27	6,536	0.02%		2.517E-03	2.343E-02	1.237E-02	1.265E-04	1.259E-03	7.660E-04	1.326E+01	1.194E+01		1.194E+00
Vh	Contra Cost	2020	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	415	116,836	0.39%		4.313E-02	3.178E-01	2.162E-01	2.279E-03	2.066E-02	1.199E-02	2.388E+02	2.149E+02		2.149E+01
Vh	Contra Cost	2020	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	153	37,822	0.13%		1.581E-02	1.405E-01	7.855E-02	7.435E-04	7.306E-03	4.451E-03	7.793E+01	7.014E+01		7.014E+00
Vh	Contra Cost	2020	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	64	10,077	0.03%		6.133E-03	8.880E-02	2.837E-02	1.923E-04	2.379E-03	1.584E-03	2.016E+01	1.814E+01		1.814E+00
Vh	Contra Cost	2020	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	301	54,852	0.18%		3.473E-02	4.921E-01	1.619E-01	1.058E-03	1.297E-02	8.639E-03	1.109E+02	9.984E+01		9.984E+00
Vh	Contra Cost	2020	Annual	T7 public	TOT	T7 public - TOT	AllMYr	234	5,803	0.02%		2.135E-03	7.907E-02	1.085E-02	1.282E-04	1.064E-03	6.306E-04	1.344E+01	1.210E+01		1.210E+00
Vh	Contra Cost	2020	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	812	62,989	0.21%		1.503E-02	3.425E-01	7.175E-02	1.187E-03	1.090E-02	6.247E-03	1.244E+02	1.120E+02		1.120E+01
Vh	Contra Cost	2020	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	220	16,908	0.06%		4.024E-03	9.503E-02	1.919E-02	3.188E-04	2.934E-03	1.684E-03	3.341E+01	3.007E+01		3.007E+00
Vh	Contra Cost	2020	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	315	15,794	0.05%		4.640E-03	1.379E-01	2.333E-02	3.172E-04	2.664E-03	1.503E-03	3.325E+01	2.992E+01		2.992E+00
Vh	Contra Cost	2020	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	1,164	189,737	0.63%		5.274E-02	9.220E-01	2.452E-01	3.510E-03	3.686E-02	2.253E-02	3.679E+02	3.311E+02		3.311E+01
Vh	Contra Cost	2020	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	160	12,606	0.04%		3.883E-03	6.966E-02	1.841E-02	2.374E-04	2.467E-03	1.512E-03	2.489E+01	2.240E+01		2.240E+00
Vh	Contra Cost	2020	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	37	931	0.00%		4.185E-04	7.055E-03	2.216E-03	2.033E-05	1.507E-04	8.279E-05	2.131E+00	1.918E+00		1.918E-01
Vh	Contra Cost	2020	Annual	T7IS	TOT	T7IS - TOT	AllMYr	71	8,511	0.03%	1,411	1.095E-02	5.401E-02	3.712E-01	6.179E-05	4.267E-04	1.727E-04	5.573E+00	5.016E+00	6.590E-01	0.000E+00
Vh	Contra Cost	2020	Annual	UBUS	TOT	UBUS - TOT	AllMYr	333	44,409	0.15%	1,332	4.067E-02	6.444E-01	2.348E-01	9.819E-04	4.348E-02	2.399E-02	1.022E+02	9.196E+01	9.356E-01	8.430E+00
									29,984,609												

											9.072E-01	MTons/Mile								2.000E+03	lbs/Mile						
RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)
Vh	Contra Cost	2020	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	144	7,975	0.03%		1.361E-07	3.25585E-06	4.99345E-07	1.13837E-08	1.9266E-07	1.05154E-07	0.001193198	0.001073878	3.000E-04	7.178E-03	1.101E-03	2.510E-05	4.247E-04	2.318E-04	2.631E+00	2.367E+00
Vh	Contra Cost	2020	Annual	LDA	TOT	LDA - TOT	AllMYr	426,855	15,805,671	52.71%	2,695,455	9.76257E-08	9.32611E-08	1.01577E-06	3.52848E-09	4.70802E-08	1.99103E-08	0.000351834	0.000243092	2.152E-04	2.056E-04	2.239E-03	7.779E-06	1.038E-04	4.389E-05	7.757E-01	5.359E-01
Vh	Contra Cost	2020	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	52,676	1,968,560	6.57%	319,312	3.05021E-07	2.51784E-07	2.60045E-06	4.09273E-09	4.87432E-08	2.14526E-08	0.000405616	0.000298482	6.725E-04	5.551E-04	5.733E-03	9.023E-06	1.075E-04	4.729E-05	8.942E-01	6.580E-01
Vh	Contra Cost	2020	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	133,879	5,296,149	17.66%	842,112	1.48027E-07	1.55658E-07	1.40151E-06	4.79133E-09	4.69683E-08	1.98073E-08	0.000477641	0.000363092	3.263E-04	3.432E-04	3.090E-03	1.056E-05	1.035E-04	4.367E-05	1.053E+00	8.005E-01
Vh	Contra Cost	2020	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	26,836	1,082,656	3.61%	379,483	4.65524E-07	1.6784E-06	3.05695E-06	8.38364E-09	7.49654E-08	3.83001E-08	0.000842431	0.000758188	1.026E-03	3.700E-03	6.739E-03	1.848E-05	1.653E-04	8.444E-05	1.857E+00	1.672E+00
Vh	Contra Cost	2020	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	3,621	144,539	0.48%	48,619	2.86767E-07	2.09613E-06	1.74325E-06	6.85077E-09	1.0713E-07	5.71791E-08	0.00069881	0.000628929	6.322E-04	4.621E-03	3.843E-03	1.510E-05	2.362E-04	1.261E-04	1.541E+00	1.387E+00
Vh	Contra Cost	2020	Annual	MCY	TOT	MCY - TOT	AllMYr	21,945	194,114	0.65%	43,885	3.84531E-06	1.30828E-06	2.84458E-05	2.29067E-09	4.53549E-08	1.82538E-08	0.000174281	0.000156853	8.477E-03	2.884E-03	6.271E-02	5.050E-06	9.999E-05	4.024E-05	3.842E-01	3.458E-01
Vh	Contra Cost	2020	Annual	MDV	TOT	MDV - TOT	AllMYr	115,183	4,333,770	14.45%	709,758	2.72029E-07	3.20027E-07	2.57885E-06	6.12432E-09	4.73444E-08	2.01503E-08	0.000609117	0.000483145	5.997E-04	7.055E-04	5.685E-03	1.350E-05	1.044E-04	4.442E-05	1.343E+00	1.065E+00
Vh	Contra Cost	2020	Annual	MH	TOT	MH - TOT	AllMYr	4,765	61,514	0.21%	477	1.19914E-07	1.5577E-06	1.84043E-06	7.54492E-09	8.90883E-08	5.07461E-08	0.000761276	0.000685149	2.644E-04	3.434E-03	4.057E-03	1.663E-05	1.964E-04	1.119E-04	1.678E+00	1.510E+00
Vh	Contra Cost	2020	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	57	8,163	0.03%		2.77882E-07	4.13216E-06	1.34063E-06	1.72851E-08	2.13471E-07	1.243E-07	0.00181177	0.001630593	6.126E-04	9.110E-03	2.956E-03	3.811E-05	4.706E-04	2.740E-04	3.994E+00	3.595E+00
Vh	Contra Cost	2020	Annual	OBUS	TOT	OBUS - TOT	AllMYr	438	20,858	0.07%	20,022	1.12495E-06	2.44433E-06	1.42508E-05	7.44815E-09	4.58945E-08	1.88046E-08	0.00072105	0.000648945	2.480E-03	5.389E-03	3.142E-02	1.642E-05	1.012E-04	4.146E-05	1.590E+00	1.431E+00
Vh	Contra Cost	2020	Annual	PTO	TOT	PTO - TOT	AllMYr	0	15,087	0.05%		2.47094E-07	5.87298E-06	7.78545E-07	2.04076E-08	5.05816E-08	4.65351E-08	0.002139056	0.001925151	5.447E-04	1.295E-02	1.716E-03	4.499E-05	1.115E-04	1.026E-04	4.716E+00	4.244E+00
Vh	Contra Cost	2020	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,624	59,643	0.20%	413	2.17669E-07	9.56149E-06	1.34561E-06	1.28991E-08	7.58952E-07	3.51415E-07	0.001347995	0.001213196	4.799E-04	2.108E-02	2.967E-03	2.844E-05	1.673E-03	7.747E-04	2.972E+00	2.675E+00
Vh	Contra Cost	2020	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	55	1,855	0.01%		2.69632E-07	3.60494E-06	9.21554E-07	1.1464E-08	2.70554E-07	1.76817E-07	0.00120162	0.001081458	5.944E-04	7.948E-03	2.032E-03	2.527E-05	5.965E-04	3.898E-04	2.649E+00	2.384E+00
Vh	Contra Cost	2020	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	2	140	0.00%		1.1764E-07	2.14109E-06	4.35655E-07	1.1329E-08	1.82731E-07	9.60196E-08	0.001187468	0.001068721	2.594E-04	4.720E-03	9.605E-04	2.498E-05	4.029E-04	2.117E-04	2.618E+00	2.356E+00
Vh	Contra Cost	2020	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	7	479	0.00%		1.21112E-07	1.2054E-06	4.5181E-07	1.12736E-08	1.84503E-07	9.76504E-08	0.001181664	0.001063498	2.670E-04	2.657E-03	9.961E-04	2.485E-05	4.068E-04	2.153E-04	2.605E+00	2.345E+00
Vh	Contra Cost	2020	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	120	6,430	0.02%		1.26554E-07	3.70153E-06	4.63097E-07	1.14219E-08	1.90711E-07	1.03361E-07	0.001197208	0.001077487	2.790E-04	8.160E-03	1.021E-03	2.518E-05	4.204E-04	2.279E-04	2.639E+00	2.375E+00
Vh	Contra Cost	2020	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	260	17,335	0.06%		1.42504E-07	1.63845E-06	5.29526E-07	1.13048E-08	1.99145E-07	1.11121E-07	0.001184935	0.001066442	3.142E-04	3.612E-03	1.167E-03	2.492E-05	4.390E-04	2.450E-04	2.612E+00	2.351E+00
Vh	Contra Cost	2020	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	990	54,842	0.18%		1.25768E-07	3.34802E-06	4.61791E-07	1.14027E-08	1.89365E-07	1.02123E-07	0.001195193	0.001075673	2.773E-04	7.381E-03	1.018E-03	2.514E-05	4.175E-04	2.251E-04	2.635E+00	2.371E+00
Vh	Contra Cost	2020	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	2,285	154,803	0.52%		1.38065E-07	1.54333E-06	5.13381E-07	1.12975E-08	1.95973E-07	1.08202E-07	0.001184162	0.001065746	3.044E-04	3.402E-03	1.132E-03	2.491E-05	4.320E-04	2.385E-04	2.611E+00	2.350E+00
Vh	Contra Cost	2020	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	1	80	0.00%		1.1764E-07	2.14109E-06	4.35655E-07	1.1329E-08	1.82731E-07	9.60196E-08	0.001187468	0.001068721	2.594E-04	4.720E-03	9.605E-04	2.498E-05	4.029E-04	2.117E-04	2.618E+00	2.356E+00
Vh	Contra Cost	2020	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	4	275	0.00%		1.21112E-07	1.2054E-06	4.5181E-07	1.12736E-08	1.84503E-07	9.76504E-08	0.001181664	0.001063498	2.670E-04	2.657E-03	9.961E-04	2.485E-05	4.068E-04	2.153E-04	2.605E+00	2.345E+00
Vh	Contra Cost	2020	Annual	T6 public	TOT	T6 public - TOT	AllMYr	357	6,680	0.02%		9.39686E-08	4.03555E-06	3.89529E-07	1.16967E-08	1.7701E-07	9.07568E-08	0.001226012	0.00110341	2.072E-04	8.897E-03	8.588E-04	2.579E-05	3.902E-04	2.001E-04	2.703E+00	2.433E+00
Vh	Contra Cost	2020	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	54	1,090	0.00%		9.78196E-08	2.1377E-06	4.19875E-07	1.16013E-08	1.72405E-07	8.65202E-08	0.001216005	0.001094404	2.157E-04	4.713E-03	9.257E-04	2.558E-05	3.801E-04	1.907E-04	2.681E+00	2.413E+00
Vh	Contra Cost	2020	Annual	T6TS	TOT	T6TS - TOT	AllMYr	982	47,516	0.16%	19,651	8.21182E-07	1.46615E-06	1.00829E-05	7.2186E-09	4.62046E-08	1.90882E-08	0.000705481	0.000634932	1.810E-03	3.232E-03	2.223E-02	1.591E-05	1.019E-04	4.208E-05	1.555E+00	1.400E+00
Vh	Contra Cost	2020	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	100	6,717	0.02%		3.89849E-07	6.17244E-06	1.80304E-06	1.70967E-08	2.58531E-07	1.83388E-07	0.001792021	0.001612819	8.595E-04	1.361E-02	3.975E-03	3.769E-05	5.700E-04	4.043E-04	3.951E+00	3.556E+00
Vh	Contra Cost	2020	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	421	103,857	0.35%		3.49669E-07	3.20908E-06	1.71899E-06	1.75596E-08	1.7472E-07	1.06282E-07	0.001840542	0.001656488	7.709E-04	7.075E-03	3.790E-03	3.871E-05	3.852E-04	2.343E-04	4.058E+00	3.652E+00
Vh	Contra Cost	2020	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	27	6,536	0.02%		3.4935E-07	3.25154E-06	1.71647E-06	1.75607E-08	1.74762E-07	1.06321E-07	0.00184065	0.001656585	7.702E-04	7.168E-03	3.784E-03	3.871E-05	3.853E-04	2.344E-04	4.058E+00	3.652E+00
Vh	Contra Cost	2020	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	415	116,836	0.39%		3.34916E-07	2.46734E-06	1.67854E-06	1.76919E-08	1.6041E-07	9.31162E-08	0.00185441	0.001668969	7.384E-04	5.440E-03	3.701E-03	3.900E-05	3.536E-04	2.053E-04	4.088E+00	3.679E+00
Vh	Contra Cost	2020	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	153	37,822	0.13%		3.79272E-07	3.36933E-06	1.88406E-06	1.78332E-08	1.75229E-07	1.0675E-07	0.001869222	0.001682299	8.362E-04	7.428E-03	4.154E-03	3.932E-05	3.863E-04	2.353E-04	4.121E+00	3.709E+00
Vh	Contra Cost	2020	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	64	10,077	0.03%		5.52125E-07	7.99398E-06	2.55366E-06	1.73125E-08	2.1417E-07	1.42575E-07	0.001814643	0.001633179	1.217E-03	1.762E-02	5.630E-03	3.817E-05	4.722E-04	3.143E-04	4.001E+00	3.601E+00
Vh	Contra Cost	2020	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	301	54,852	0.18%		5.74318E-07	8.13861E-06	2.67705E-06	1.75035E-08	2.14496E-07	1.42876E-07	0.001834655	0.00165119	1.266E-03	1.794E-02	5.902E-03	3.859E-05	4.729E-04	3.150E-04	4.045E+00	3.640E+00
Vh	Contra Cost	2020	Annual	T7 public	TOT	T7 public - TOT	AllMYr	234	5,803	0.02%		3.33687E-07	1.23604E-05	1.69644E-06	2.00464E-08	1.663414E-07	9.85733E-08	0.002101197	0.001891077	7.357E-04	2.725E-02	3.740E-03	4.419E-05	3.667E-04	2.173E-04	4.632E+00	4.169E+00
Vh	Contra Cost	2020	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	812	62,989	0.21%		2.16517E-07	4.93257E-06	1.0334E-06	1.70957E-08	1.56999E-07	8.99786E-08	0.001791915	0.001612723	4.773E-04	1.087E-02	2.278E-03	3.769E-05	3.461E-04	1.984E-04	3.950E+00	3.555E+00
Vh	Contra Cost	2020	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	220	16,908	0.06%		2.1591E-07	5.09884E-06	1.02977E-06	1.71034E-08	1.57405E-07	9.03516E-08	0.001792722	0.001613449	4.760E-04	1.124E-02	2.270E-03	3.771E-05	3.470E-04	1.992E-04	3.952E+00	3.557E+00
Vh	Contra Cost	2020	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	315	15,794	0.05%		2.66501E-07	7.92265E-06	1.33985E-06	1.82195E-08	1.53043E-07	8.6339E-08	0.001909711	0.00171874	5.875E-04	1.747E-02	2.954E-03	4.017E-05	3.374E-04	1.903E-04	4.210E+00	3.789E+00
Vh	Contra Cost	2020	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	1,164	189,737	0.63%		2.52152E-07	4.40851E-06	1.1722E-06	1.67834E-08	1.76261E-07	1.077E-07	0.001759177	0.00158326	5.559E-04	9.719E-03	2.584E-03	3.700E-05	3.886E-04	2.374E-04	3.878E+00	3.490E+00
Vh	Contra Cost	2020	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	160	12,606	0.04%		2.79397E-07	5.013E-06	1.32515E-06	1.70872E-08	1.77503E-07	1.08842E-07	0.00179102	0.001611918	6.160E-04	1.105E-02	2.921E-03	3.767E-05	3.913E-04	2.400E-04	3.949E+00	3.554E+00
Vh	Contra Cost	2020	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	37	931	0.00%		4.07918E-07	6.8765E-06	2.15983E-06	1.98152E-08	1.46914E-07	8.07001E-08	0.002076962	0.001869266	8.993E-04	1.516E-02	4.762E-03	4.369E-05	3.239E-04	1.779E-04	4.579E+00	4.121E+00
Vh	Contra Cost	2020	Annual	T7IS	TOT	T7IS - TOT	AllMYr	71	8,511	0.03%	1,411	1.16726E-06	5.75701E-06	3.95629E-05	6.58619E-09	4.54841E-08	1.84104E-08	0.000594037	0.000534633	2.573E-03	1.269E-02	8.722E-02	1.452E-05	1.003E-04	4.059E-05	1.310E+00	1.179E+00
Vh	Contra Cost	2020	Annual	UBUS	TOT	UBUS - TOT	AllMYr	333	44,409	0.15%	1,332	8.30787E-07	1.31637E-05	4.79604E-06	2.00585E-08	8.88275E-07	4.90029E-07	0.002087251	0.001878526	1.832E-03	2.902E-02	1.057E-02	4.422E-05	1.958E-03	1.080E-03	4.602E+00	4.141E+00
									29,984,609																		

Tons/Day

RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	Fuel_Gas	Fuel_Dsl
Vh	Contra Cost	2035	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	176	10,345	0.03%		1.569E-03	1.567E-02	5.881E-03	1.286E-04	2.153E-03	1.159E-03	1.348E+01	1.214E+01		1.214E+00
Vh	Contra Cost	2035	Annual	LDA	TOT	LDA - TOT	AllMYr	476,443	17,577,045	52.67%	3,007,053	1.181E+00	1.270E+00	1.355E+01	6.831E-02	9.234E-01	3.962E-01	6.822E+03	4.070E+03	7.257E+02	2.526E+00
Vh	Contra Cost	2035	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	58,270	2,185,173	6.55%	354,243	2.929E-01	2.018E-01	2.233E+00	9.854E-03	1.146E-01	4.907E-02	9.835E+02	6.113E+02	1.050E+02	1.073E-01
Vh	Contra Cost	2035	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	148,354	5,819,975	17.44%	927,179	6.980E-01	5.392E-01	5.460E+00	3.068E-02	3.051E-01	1.306E-01	3.064E+03	2.092E+03	3.271E+02	9.416E-02
Vh	Contra Cost	2035	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	29,844	1,208,283	3.62%	422,007	3.154E-01	1.065E+00	1.965E+00	1.111E-02	9.077E-02	4.261E-02	1.120E+03	1.008E+03	9.522E+01	2.060E+01
Vh	Contra Cost	2035	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	4,019	162,185	0.49%	53,965	2.543E-02	1.526E-01	2.000E-01	1.220E-03	1.717E-02	8.394E-03	1.246E+02	1.122E+02	6.997E+00	5.318E+00
Vh	Contra Cost	2035	Annual	MCY	TOT	MCY - TOT	AllMYr	24,963	219,716	0.66%	49,921	9.007E-01	3.127E-01	6.414E+00	5.556E-04	1.094E-02	4.384E-03	4.311E+01	3.880E+01	5.927E+00	0.000E+00
Vh	Contra Cost	2035	Annual	MDV	TOT	MDV - TOT	AllMYr	126,917	4,706,682	14.10%	758,378	9.182E-01	6.650E-01	6.493E+00	3.180E-02	2.462E-01	1.051E-01	3.175E+03	2.234E+03	3.390E+02	1.695E-01
Vh	Contra Cost	2035	Annual	MH	TOT	MH - TOT	AllMYr	5,108	65,997	0.20%	511	3.219E-03	5.993E-02	2.157E-02	5.490E-04	5.193E-03	2.499E-03	5.559E+01	5.004E+01	4.400E+00	1.287E+00
Vh	Contra Cost	2035	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	71	10,589	0.03%		3.314E-03	2.607E-02	1.615E-02	2.001E-04	2.434E-03	1.398E-03	2.097E+01	1.888E+01		1.888E+00
Vh	Contra Cost	2035	Annual	OBUS	TOT	OBUS - TOT	AllMYr	494	22,947	0.07%	22,537	1.881E-02	2.678E-02	1.818E-01	1.855E-04	1.145E-03	4.608E-04	1.826E+01	1.644E+01	1.979E+00	0.000E+00
Vh	Contra Cost	2035	Annual	PTO	TOT	PTO - TOT	AllMYr	0	19,755	0.06%		5.795E-03	4.551E-02	1.783E-02	4.398E-04	9.696E-04	8.921E-04	4.610E+01	4.149E+01		4.149E+00
Vh	Contra Cost	2035	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,500	51,975	0.16%	431	1.827E-02	2.737E-01	7.624E-02	7.361E-04	4.231E-02	1.937E-02	7.695E+01	6.925E+01	4.303E-01	6.563E+00
Vh	Contra Cost	2035	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	50	1,769	0.01%		2.663E-04	2.639E-03	1.036E-03	2.216E-05	3.653E-04	1.955E-04	2.322E+00	2.090E+00		2.090E-01
Vh	Contra Cost	2035	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	3	173	0.00%		2.232E-05	2.056E-04	8.388E-05	2.144E-06	3.426E-05	1.781E-05	2.247E-01	2.022E-01		2.022E-02
Vh	Contra Cost	2035	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	8	598	0.00%		7.335E-05	6.540E-04	2.750E-04	7.415E-06	1.170E-04	6.013E-05	7.772E-01	6.995E-01		6.995E-02
Vh	Contra Cost	2035	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	189	10,842	0.03%		1.529E-03	1.476E-02	5.763E-03	1.348E-04	2.205E-03	1.167E-03	1.413E+01	1.272E+01		1.272E+00
Vh	Contra Cost	2035	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	470	31,962	0.10%		4.111E-03	3.772E-02	1.542E-02	3.968E-04	6.336E-03	3.290E-03	4.160E+01	3.744E+01		3.744E+00
Vh	Contra Cost	2035	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	1,127	64,532	0.19%		9.107E-03	8.796E-02	3.433E-02	8.027E-04	1.313E-02	6.952E-03	8.413E+01	7.572E+01		7.572E+00
Vh	Contra Cost	2035	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	2,793	189,863	0.57%		2.443E-02	2.242E-01	9.165E-02	2.357E-03	3.764E-02	1.954E-02	2.471E+02	2.224E+02		2.224E+01
Vh	Contra Cost	2035	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	2	99	0.00%		1.280E-05	1.179E-04	4.809E-05	1.229E-06	1.964E-05	1.021E-05	1.288E-01	1.159E-01		1.159E-02
Vh	Contra Cost	2035	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	5	343	0.00%		4.205E-05	3.750E-04	1.576E-04	4.251E-06	6.706E-05	3.447E-05	4.456E-01	4.010E-01		4.010E-02
Vh	Contra Cost	2035	Annual	T6 public	TOT	T6 public - TOT	AllMYr	475	8,991	0.03%		1.050E-03	1.053E-02	4.602E-03	1.144E-04	1.707E-03	8.560E-04	1.199E+01	1.079E+01		1.079E+00
Vh	Contra Cost	2035	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	71	1,432	0.00%		1.607E-04	1.387E-03	7.047E-04	1.817E-05	2.689E-04	1.336E-04	1.905E+00	1.714E+00		1.714E-01
Vh	Contra Cost	2035	Annual	T6TS	TOT	T6TS - TOT	AllMYr	1,073	50,146	0.15%	21,473	2.458E-02	3.278E-02	2.403E-01	3.939E-04	2.496E-03	1.002E-03	3.904E+01	3.514E+01	4.202E+00	0.000E+00
Vh	Contra Cost	2035	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	89	6,408	0.02%		2.075E-03	1.674E-02	1.008E-02	1.210E-04	1.191E-03	7.108E-04	1.268E+01	1.141E+01		1.141E+00
Vh	Contra Cost	2035	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	559	135,491	0.41%		5.275E-02	4.117E-01	2.622E-01	2.630E-03	2.577E-02	1.558E-02	2.756E+02	2.481E+02		2.481E+01
Vh	Contra Cost	2035	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	49	11,773	0.04%		4.584E-03	3.578E-02	2.279E-02	2.285E-04	2.240E-03	1.354E-03	2.395E+01	2.155E+01		2.155E+00
Vh	Contra Cost	2035	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	552	152,422	0.46%		5.652E-02	4.052E-01	2.842E-01	2.977E-03	2.694E-02	1.563E-02	3.120E+02	2.808E+02		2.808E+01
Vh	Contra Cost	2035	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	203	49,342	0.15%		2.097E-02	1.591E-01	1.054E-01	9.736E-04	9.412E-03	5.697E-03	1.021E+02	9.185E+01		9.185E+00
Vh	Contra Cost	2035	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	82	12,787	0.04%		4.388E-03	4.139E-02	2.076E-02	2.371E-04	2.685E-03	1.703E-03	2.485E+01	2.237E+01		2.237E+00
Vh	Contra Cost	2035	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	554	114,033	0.34%		4.114E-02	3.796E-01	1.965E-01	2.133E-03	2.397E-02	1.521E-02	2.236E+02	2.012E+02		2.012E+01
Vh	Contra Cost	2035	Annual	T7 public	TOT	T7 public - TOT	AllMYr	314	7,810	0.02%		4.088E-03	4.100E-02	2.163E-02	1.695E-04	1.275E-03	7.043E-04	1.777E+01	1.599E+01		1.599E+00
Vh	Contra Cost	2035	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	1,042	82,174	0.25%		2.287E-02	1.692E-01	1.115E-01	1.546E-03	1.396E-02	7.907E-03	1.620E+02	1.458E+02		1.458E+01
Vh	Contra Cost	2035	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	387	30,454	0.09%		8.484E-03	6.276E-02	4.135E-02	5.729E-04	5.174E-03	2.931E-03	6.004E+01	5.404E+01		5.404E+00
Vh	Contra Cost	2035	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	424	21,257	0.06%		7.914E-03	5.343E-02	4.050E-02	4.219E-04	3.472E-03	1.918E-03	4.422E+01	3.980E+01		3.980E+00
Vh	Contra Cost	2035	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	1,488	247,528	0.74%		6.961E-02	6.148E-01	3.278E-01	4.559E-03	4.679E-02	2.819E-02	4.778E+02	4.301E+02		4.301E+01
Vh	Contra Cost	2035	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	282	22,706	0.07%		7.339E-03	6.145E-02	3.544E-02	4.267E-04	4.311E-03	2.603E-03	4.473E+01	4.026E+01		4.026E+00
Vh	Contra Cost	2035	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	49	1,222	0.00%		6.739E-04	3.842E-03	3.589E-03	2.643E-05	1.933E-04	1.045E-04	2.771E+00	2.494E+00		2.494E-01
Vh	Contra Cost	2035	Annual	T7IS	TOT	T7IS - TOT	AllMYr	64	7,397	0.02%	1,271	5.469E-03	4.192E-02	2.992E-01	5.322E-05	3.668E-04	1.465E-04	4.844E+00	4.360E+00	5.677E-01	0.000E+00
Vh	Contra Cost	2035	Annual	UBUS	TOT	UBUS - TOT	AllMYr	348	46,396	0.14%	1,392	2.201E-02	4.264E-01	1.178E-01	9.588E-04	4.207E-02	2.197E-02	9.992E+01	8.992E+01	9.582E-01	8.192E+00
									33,370,616												

																			9.072E-01	MTons/Mile							2.000E+03	lbs/Mile	
RecType	Sub-Area	CalYr	Season	Veh	Tech	Veh & Tech	MdlYr	Pop	VMT	Percent of VMT	Trips	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)	ROG_TOTAL	NOx_TOTEX	CO_TOTEX	SOx_TOTEX	PM10_TOTAL	PM2_5_TOTAL	CO2_TOTEX	CO2_TOTEX (Pavley I + LCFS)
Vh	Contra Cost	2035	Annual	All Other Buses	TOT	All Other Buses - TOT	AllMYr	176	10,345	0.03%		1.37584E-07	1.37401E-06	5.15682E-07	1.12812E-08	1.88802E-07	1.01605E-07	0.001182456	0.001064211	3.033E-04	3.029E-03	1.137E-03	2.487E-05	4.162E-04	2.240E-04	2.607E+00	2.346E+00
Vh	Contra Cost	2035	Annual	LDA	TOT	LDA - TOT	AllMYr	476,443	17,577,045	52.67%	3,007,053	6.09495E-08	6.5562E-08	6.99208E-07	3.52546E-09	4.7661E-08	2.04507E-08	0.000352077	0.000210072	1.344E-04	1.445E-04	1.541E-03	7.772E-06	1.051E-04	4.509E-05	7.762E-01	4.631E-01
Vh	Contra Cost	2035	Annual	LDT1	TOT	LDT1 - TOT	AllMYr	58,270	2,185,173	6.55%	354,243	1.21607E-07	8.37947E-08	9.27062E-07	4.09106E-09	4.75744E-08	2.03705E-08	0.000408312	0.000253787	2.681E-04	1.847E-04	2.044E-03	9.019E-06	1.049E-04	4.491E-05	9.002E-01	5.595E-01
Vh	Contra Cost	2035	Annual	LDT2	TOT	LDT2 - TOT	AllMYr	148,354	5,819,975	17.44%	927,179	1.08794E-07	8.4042E-08	8.51106E-07	4.78174E-09	4.7555E-08	2.03526E-08	0.000477619	0.00032612	2.399E-04	1.853E-04	1.876E-03	1.054E-05	1.048E-04	4.487E-05	1.053E+00	7.190E-01
Vh	Contra Cost	2035	Annual	LHD1	TOT	LHD1 - TOT	AllMYr	29,844	1,208,283	3.62%	422,007	2.36779E-07	7.99261E-07	1.47517E-06	8.34291E-09	6.81529E-08	3.19898E-08	0.000841153	0.000757038	5.220E-04	1.762E-03	3.252E-03	1.839E-05	1.503E-04	7.053E-05	1.854E+00	1.669E+00
Vh	Contra Cost	2035	Annual	LHD2	TOT	LHD2 - TOT	AllMYr	4,019	162,185	0.49%	53,965	1.42243E-07	8.53726E-07	1.11846E-06	6.82471E-09	9.60457E-08	4.69537E-08	0.000697078	0.000627371	3.136E-04	1.882E-03	2.466E-03	1.505E-05	2.117E-04	1.035E-04	1.537E+00	1.383E+00
Vh	Contra Cost	2035	Annual	MCY	TOT	MCY - TOT	AllMYr	24,963	219,716	0.66%	49,921	3.7188E-06	1.29113E-06	2.64826E-05	2.29411E-09	4.51535E-08	1.81011E-08	0.000177994	0.000160194	8.199E-03	2.846E-03	5.838E-02	5.058E-06	9.955E-05	3.991E-05	3.924E-01	3.532E-01
Vh	Contra Cost	2035	Annual	MDV	TOT	MDV - TOT	AllMYr	126,917	4,706,682	14.10%	758,378	1.76974E-07	1.28183E-07	1.25144E-06	6.12895E-09	4.74561E-08	2.02608E-08	0.000611908	0.000430503	3.902E-04	2.826E-04	2.759E-03	1.351E-05	1.046E-04	4.467E-05	1.349E+00	9.491E-01
Vh	Contra Cost	2035	Annual	MH	TOT	MH - TOT	AllMYr	5,108	65,997	0.20%	511	4.42494E-08	8.23847E-07	2.96516E-07	7.54637E-09	7.13814E-08	3.43461E-08	0.000764194	0.000687775	9.755E-05	1.816E-03	6.537E-04	1.664E-05	1.574E-04	7.572E-05	1.685E+00	1.516E+00
Vh	Contra Cost	2035	Annual	Motor Coach	TOT	Motor Coach - TOT	AllMYr	71	10,589	0.03%		2.8389E-07	2.23325E-06	1.38398E-06	1.71431E-08	2.08562E-07	1.19785E-07	0.00179688	0.001617192	6.259E-04	4.923E-03	3.051E-03	3.779E-05	4.598E-04	2.641E-04	3.961E+00	3.565E+00
Vh	Contra Cost	2035	Annual	OBUS	TOT	OBUS - TOT	AllMYr	494	22,947	0.07%	22,537	7.43472E-07	1.05852E-06	7.18904E-06	7.33355E-09	4.52527E-08	1.82164E-08	0.000721933	0.000649739	1.639E-03	2.334E-03	1.585E-02	1.617E-05	9.977E-05	4.016E-05	1.592E+00	1.432E+00
Vh	Contra Cost	2035	Annual	PTO	TOT	PTO - TOT	AllMYr	0	19,755	0.06%		2.66106E-07	2.08965E-06	8.18771E-07	2.01981E-08	4.45273E-08	4.09651E-08	0.002117099	0.001905389	5.867E-04	4.607E-03	1.805E-03	4.453E-05	9.817E-05	9.031E-05	4.667E+00	4.201E+00
Vh	Contra Cost	2035	Annual	SBUS	TOT	SBUS - TOT	AllMYr	1,500	51,975	0.16%	431	3.18814E-07	4.77719E-06	1.3307E-06	1.28474E-08	7.38487E-07	3.38015E-07	0.001343018	0.001208716	7.029E-04	1.053E-02	2.934E-03	2.832E-05	1.628E-03	7.452E-04	2.961E+00	2.665E+00
Vh	Contra Cost	2035	Annual	T6 Ag	TOT	T6 Ag - TOT	AllMYr	50	1,769	0.01%		1.36577E-07	1.35306E-06	5.31322E-07	1.13614E-08	1.8733E-07	1.00251E-07	0.001190862	0.001071776	3.011E-04	2.983E-03	1.171E-03	2.505E-05	4.130E-04	2.210E-04	2.625E+00	2.363E+00
Vh	Contra Cost	2035	Annual	T6 CAIRP heavy	TOT	T6 CAIRP heavy - TOT	AllMYr	3	173	0.00%		1.17315E-07	1.08045E-06	4.4086E-07	1.12674E-08	1.80089E-07	9.35894E-08	0.001181007	0.001062906	2.586E-04	2.382E-03	9.719E-04	2.484E-05	3.970E-04	2.063E-04	2.604E+00	2.343E+00
Vh	Contra Cost	2035	Annual	T6 CAIRP small	TOT	T6 CAIRP small - TOT	AllMYr	8	598	0.00%		1.11364E-07	9.92998E-07	4.17473E-07	1.12576E-08	1.7759E-07	9.12897E-08	0.001179987	0.001061988	2.455E-04	2.189E-03	9.204E-04	2.482E-05	3.915E-04	2.013E-04	2.601E+00	2.341E+00
Vh	Contra Cost	2035	Annual	T6 instate construction heavy	TOT	T6 instate construction heavy - TOT	AllMYr	189	10,842	0.03%		1.27919E-07	1.23507E-06	4.82241E-07	1.12836E-08	1.84548E-07	9.76912E-08	0.001182713	0.001064441	2.820E-04	2.723E-03	1.063E-03	2.488E-05	4.069E-04	2.154E-04	2.607E+00	2.347E+00
Vh	Contra Cost	2035	Annual	T6 instate construction small	TOT	T6 instate construction small - TOT	AllMYr	470	31,962	0.10%		1.16679E-07	1.07074E-06	4.37747E-07	1.12638E-08	1.79851E-07	9.33702E-08	0.001180636	0.001062572	2.572E-04	2.361E-03	9.651E-04	2.483E-05	3.965E-04	2.058E-04	2.603E+00	2.343E+00
Vh	Contra Cost	2035	Annual	T6 instate heavy	TOT	T6 instate heavy - TOT	AllMYr	1,127	64,532	0.19%		1.2803E-07	1.23659E-06	4.82651E-07	1.12837E-08	1.84595E-07	9.77342E-08	0.001182722	0.00106445	2.823E-04	2.726E-03	1.064E-03	2.488E-05	4.070E-04	2.155E-04	2.607E+00	2.347E+00
Vh	Contra Cost	2035	Annual	T6 instate small	TOT	T6 instate small - TOT	AllMYr	2,793	189,863	0.57%		1.1672E-07	1.07131E-06	4.37899E-07	1.12639E-08	1.79868E-07	9.3386E-08	0.001180639	0.001062575	2.573E-04	2.362E-03	9.654E-04	2.483E-05	3.965E-04	2.059E-04	2.603E+00	2.343E+00
Vh	Contra Cost	2035	Annual	T6 OOS heavy	TOT	T6 OOS heavy - TOT	AllMYr	2	99	0.00%		1.17315E-07	1.08045E-06	4.4086E-07	1.12674E-08	1.80089E-07	9.35894E-08	0.001181007	0.001062906	2.586E-04	2.382E-03	9.719E-04	2.484E-05	3.970E-04	2.063E-04	2.604E+00	2.343E+00
Vh	Contra Cost	2035	Annual	T6 OOS small	TOT	T6 OOS small - TOT	AllMYr	5	343	0.00%		1.11364E-07	9.92998E-07	4.17473E-07	1.12576E-08	1.7759E-07	9.12897E-08	0.001179987	0.001061988	2.455E-04	2.189E-03	9.204E-04	2.482E-05	3.915E-04	2.013E-04	2.601E+00	2.341E+00
Vh	Contra Cost	2035	Annual	T6 public	TOT	T6 public - TOT	AllMYr	475	8,991	0.03%		1.05937E-07	1.06268E-06	4.64385E-07	1.15414E-08	1.72242E-07	8.63698E-08	0.001209733	0.001088759	2.336E-04	2.343E-03	1.024E-03	2.544E-05	3.797E-04	1.904E-04	2.667E+00	2.400E+00
Vh	Contra Cost	2035	Annual	T6 utility	TOT	T6 utility - TOT	AllMYr	71	1,432	0.00%		1.01831E-07	8.78783E-07	4.4653E-07	1.15141E-08	1.70386E-07	8.46627E-08	0.001206867	0.00108618	2.245E-04	1.937E-03	9.844E-04	2.538E-05	3.756E-04	1.866E-04	2.661E+00	2.395E+00
Vh	Contra Cost	2035	Annual	T6TS	TOT	T6TS - TOT	AllMYr	1,073	50,146	0.15%	21,473	4.44604E-07	5.93025E-07	4.34685E-06	7.12677E-09	4.51534E-08	1.81243E-08	0.0007063	0.00063567	9.802E-04	1.307E-03	9.583E-03	1.571E-05	9.955E-05	3.996E-05	1.557E+00	1.401E+00
Vh	Contra Cost	2035	Annual	T7 Ag	TOT	T7 Ag - TOT	AllMYr	89	6,408	0.02%		2.93745E-07	2.37013E-06	1.42657E-06	1.71284E-08	1.68577E-07	1.0063E-07	0.001795338	0.001615804	6.476E-04	5.225E-03	3.145E-03	3.776E-05	3.716E-04	2.219E-04	3.958E+00	3.562E+00
Vh	Contra Cost	2035	Annual	T7 CAIRP	TOT	T7 CAIRP - TOT	AllMYr	559	135,491	0.41%		3.53176E-07	2.75637E-06	1.75583E-06	1.76068E-08	1.7257E-07	1.04303E-07	0.001845482	0.001660933	7.786E-04	6.077E-03	3.871E-03	3.882E-05	3.805E-04	2.299E-04	4.069E+00	3.662E+00
Vh	Contra Cost	2035	Annual	T7 CAIRP construction	TOT	T7 CAIRP construction - TOT	AllMYr	49	11,773	0.04%		3.53239E-07	2.75681E-06	1.75618E-06	1.76072E-08	1.72576E-07	1.04309E-07	0.001845529	0.001660976	7.788E-04	6.078E-03	3.872E-03	3.882E-05	3.805E-04	2.300E-04	4.069E+00	3.662E+00
Vh	Contra Cost	2035	Annual	T7 NNOOS	TOT	T7 NNOOS - TOT	AllMYr	552	152,422	0.46%		3.36372E-07	2.4115E-06	1.69129E-06	1.7716E-08	1.60315E-07	9.30293E-08	0.001856927	0.001671234	7.416E-04	5.316E-03	3.729E-03	3.906E-05	3.534E-04	2.051E-04	4.094E+00	3.684E+00
Vh	Contra Cost	2035	Annual	T7 NOOS	TOT	T7 NOOS - TOT	AllMYr	203	49,342	0.15%		3.8557E-07	2.9246E-06	1.93859E-06	1.79007E-08	1.73042E-07	1.04738E-07	0.001876296	0.001688667	8.500E-04	6.448E-03	4.274E-03	3.946E-05	3.815E-04	2.309E-04	4.137E+00	3.723E+00
Vh	Contra Cost	2035	Annual	T7 other port	TOT	T7 other port - TOT	AllMYr	82	12,787	0.04%		3.11327E-07	2.93663E-06	1.47307E-06	1.68232E-08	1.90495E-07	1.20795E-07	0.001763353	0.001587018	6.864E-04	6.474E-03	3.248E-03	3.709E-05	4.200E-04	2.663E-04	3.888E+00	3.499E+00
Vh	Contra Cost	2035	Annual	T7 POAK	TOT	T7 POAK - TOT	AllMYr	554	114,033	0.34%		3.27309E-07	3.01963E-06	1.56324E-06	1.69683E-08	1.90728E-07	1.21009E-07	0.001778556	0.001600701	7.216E-04	6.657E-03	3.446E-03	3.741E-05	4.205E-04	2.668E-04	3.921E+00	3.529E+00
Vh	Contra Cost	2035	Annual	T7 public	TOT	T7 public - TOT	AllMYr	314	7,810	0.02%		4.74766E-07	4.76185E-06	2.51184E-06	1.96907E-08	1.4812E-07	8.18094E-08	0.002063914	0.001857523	1.047E-03	1.050E-02	5.538E-03	4.341E-05	3.265E-04	1.804E-04	4.550E+00	4.095E+00
Vh	Contra Cost	2035	Annual	T7 Single	TOT	T7 Single - TOT	AllMYr	1,042	82,174	0.25%		2.5251E-07	1.86772E-06	1.23056E-06	1.70634E-08	1.54073E-07	8.72862E-08	0.001788524	0.001609672	5.567E-04	4.118E-03	2.713E-03	3.762E-05	3.397E-04	1.924E-04	3.943E+00	3.549E+00
Vh	Contra Cost	2035	Annual	T7 single construction	TOT	T7 single construction - TOT	AllMYr	387	30,454	0.09%		2.52726E-07	1.86961E-06	1.23169E-06	1.70645E-08	1.54112E-07	8.73226E-08	0.001788648	0.001609784	5.572E-04	4.122E-03	2.715E-03	3.762E-05	3.398E-04	1.925E-04	3.943E+00	3.549E+00
Vh	Contra Cost	2035	Annual	T7 SWCV	TOT	T7 SWCV - TOT	AllMYr	424	21,257	0.06%		3.37756E-07	2.28046E-06	1.72865E-06	1.80048E-08	1.4817E-07	8.18558E-08	0.001887207	0.001698487	7.446E-04	5.028E-03	3.811E-03	3.969E-05	3.267E-04	1.805E-04	4.161E+00	3.745E+00
Vh	Contra Cost	2035	Annual	T7 tractor	TOT	T7 tractor - TOT	AllMYr	1,488	247,528	0.74%		2.5512E-07	2.25319E-06	1.20147E-06	1.67082E-08	1.71479E-07	1.033E-07	0.001751301	0.001576171	5.624E-04	4.967E-03	2.649E-03	3.684E-05	3.780E-04	2.277E-04	3.861E+00	3.475E+00
Vh	Contra Cost	2035	Annual	T7 tractor construction	TOT	T7 tractor construction - TOT	AllMYr	282	22,706	0.07%		2.9321E-07	2.45504E-06	1.41586E-06	1.70497E-08	1.72227E-07	1.03988E-07	0.001787088	0.001608379	6.464E-04	5.412E-03	3.121E-03	3.759E-05	3.797E-04	2.293E-04	3.940E+00	3.546E+00
Vh	Contra Cost	2035	Annual	T7 utility	TOT	T7 utility - TOT	AllMYr	49	1,222	0.00%		5.00203E-07	2.85203E-06	2.66387E-06	1.9621E-08	1.43508E-07	7.75662E-08	0.002056608	0.001850947	1.103E-03	6.288E-03	5.873E-03	4.326E-05	3.164E-04	1.710E-04	4.534E+00	4.081E+00
Vh	Contra Cost	2035	Annual	T7IS	TOT	T7IS - TOT	AllMYr	64	7,397	0.02%	1,271	6.70698E-07	5.14039E-06	3.66908E-05	6.52654E-09	4.49891E-08	1.79718E-08	0.000594087	0.000534678	1.479E-03	1.133E-02	8.089E-02	1.439E-05	9.918E-05	3.962E-05	1.310E+00	1.179E+00
Vh	Contra Cost	2035	Annual	UBUS	TOT	UBUS - TOT	AllMYr	348	46,396	0.14%	1,392	4.30275E-07	8.3374E-06	2.30268E-06	1.87478E-08	8.22512E-07	4.29523E-07	0.001953661	0.001758294	9.486E-04	1.838E-02	5.077E-03	4.133E-05	1.813E-03	9.469E-04	4.307E+00	3.876E+00
									33,370,616																				

Year 2008 (MTons/Year)

Based on EMFAC2011

	Emission year	Annual VMT		GWP	GWP			
	2008	**325,063,750**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.02%		1	0	90	99	90	99
LDA	50.62%		64	2	57,655	58,285	57,655	58,285
LDT1	6.36%		17	1	8,307	8,471	8,307	8,471
LDT2	18.02%		33	1	27,984	28,309	27,984	28,309
LHD1	4.10%		37	1	11,209	11,579	11,209	11,579
LHD2	0.55%		7	0	1,222	1,291	1,222	1,291
MCY	0.58%		3	0	248	275	248	275
MDV	16.33%		34	1	31,908	32,245	31,908	32,245
MH	0.20%		2	0	507	527	507	527
Motor Coach	0.02%		1	0	137	150	137	150
OBUS	0.09%		1	0	203	214	203	214
PTO	0.04%		2	0	270	291	270	291
SBUS	0.24%		10	0	1,044	1,142	1,044	1,142
T6 Ag	0.01%		0	0	28	30	28	30
T6 CAIRP heavy	0.00%		0	0	2	2	2	2
T6 CAIRP small	0.00%		0	0	6	6	6	6
T6 instate construction heavy	0.03%		1	0	114	124	114	124
T6 instate construction small	0.09%		3	0	338	364	338	364
T6 instate heavy	0.17%		6	0	651	706	651	706
T6 instate small	0.50%		15	0	1,932	2,075	1,932	2,075
T6 OOS heavy	0.00%		0	0	1	1	1	1
T6 OOS small	0.00%		0	0	3	3	3	3
T6 public	0.02%		1	0	77	83	77	83
T6 public	0.02%		1	0	77	83	77	83
T6 utility	0.00%		0	0	13	14	13	14
T6TS	0.12%		2	0	293	315	293	315
T7 Ag	0.02%		1	0	144	158	144	158
T7 CAIRP	0.26%		13	0	1,537	1,668	1,537	1,668
T7 CAIRP construction	0.03%		2	0	185	201	185	201
T7 NNOOS	0.30%		11	0	1,752	1,864	1,752	1,864
T7 NOOS	0.10%		5	0	563	611	563	611
T7 other port	0.03%		2	0	171	192	171	192
T7 POAK	0.10%		8	0	602	677	602	677
T7 public	0.02%		1	0	111	122	111	122
T7 Single	0.16%		8	0	925	1,006	925	1,006
T7 single construction	0.08%		4	0	476	518	476	518
T7 SWCV	0.04%		3	0	276	302	276	302
T7 tractor	0.48%		27	1	2,765	3,027	2,765	3,027
T7 tractor construction	0.06%		3	0	355	389	355	389
T7 utility	0.00%		0	0	19	20	19	20
T7IS	0.02%		1	0	49	58	49	58
UBUS	0.15%		7	0	1,051	1,123	1,051	1,123
TOTAL			**337**	**11**	**155,299**	**158,621**	**155,299**	**158,621**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2020 (MTons/Year)

Based on EMFAC2011

Greenhouse Gas Reductions TOTAL

	Emission year	Annual VMT		GWP	GWP			
TOTAL	**2020**	**12,975,371**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%		0	0	4	4	4	4
LDA	52.71%		1	0	2,406	2,413	1,663	1,669
LDT1	6.57%		0	0	346	348	254	256
LDT2	17.66%		0	0	1,095	1,098	832	836
LHD1	3.61%		1	0	395	402	355	363
LHD2	0.48%		0	0	44	45	39	41
MCY	0.65%		0	0	15	16	13	14
MDV	14.45%		1	0	1,142	1,148	906	912
MH	0.21%		0	0	20	21	18	19
Motor Coach	0.03%		0	0	6	7	6	6
OBUS	0.07%		0	0	7	7	6	6
PTO	0.05%		0	0	14	14	13	13
SBUS	0.20%		0	0	35	37	31	34
T6 Ag	0.01%		0	0	1	1	1	1
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.02%		0	0	3	3	3	3
T6 instate construction small	0.06%		0	0	9	9	8	8
T6 instate heavy	0.18%		0	0	28	29	26	26
T6 instate small	0.52%		0	0	79	80	71	72
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.02%		0	0	4	4	3	3
T6 utility	0.00%		0	0	1	1	1	1
T6TS	0.16%		0	0	15	15	13	13
T7 Ag	0.02%		0	0	5	5	5	5
T7 CAIRP	0.35%		0	0	83	84	74	76
T7 CAIRP construction	0.02%		0	0	5	5	5	5
T7 NNOOS	0.39%		0	0	94	95	84	86
T7 NOOS	0.13%		0	0	31	31	28	28
T7 other port	0.03%		0	0	8	8	7	7
T7 POAK	0.18%		0	0	44	45	39	41
T7 public	0.02%		0	0	5	6	5	5
T7 Single	0.21%		0	0	49	50	44	45
T7 single construction	0.06%		0	0	13	13	12	12
T7 SWCV	0.05%		0	0	13	14	12	12
T7 tractor	0.63%		0	0	144	148	130	134
T7 tractor construction	0.04%		0	0	10	10	9	9
T7 utility	0.00%		0	0	1	1	1	1
T7IS	0.03%		0	0	2	2	2	2
UBUS	0.15%		0	0	40	43	36	39
TOTAL			**5**	**0**	**6,215**	**6,264**	**4,758**	**4,807**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Land Use/Location Strategies (Measures LU-3, LU-5, LU-6, and LU-7)

Emission year	Annual VMT		GWP	GWP			
2020	**3,156,312**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%	0	0	1	1	1	1
LDA	52.71%	0	0	585	587	404	406
LDT1	6.57%	0	0	84	85	62	62
LDT2	17.66%	0	0	266	267	202	203
LHD1	3.61%	0	0	96	98	86	88
LHD2	0.48%	0	0	11	11	10	10
MCY	0.65%	0	0	4	4	3	3
MDV	14.45%	0	0	278	279	220	222
MH	0.21%	0	0	5	5	4	5
Motor Coach	0.03%	0	0	2	2	1	1
OBUS	0.07%	0	0	2	2	1	1
PTO	0.05%	0	0	3	3	3	3
SBUS	0.20%	0	0	8	9	8	8
T6 Ag	0.01%	0	0	0	0	0	0
T6 CAIRP heavy	0.00%	0	0	0	0	0	0
T6 CAIRP small	0.00%	0	0	0	0	0	0
T6 instate construction heavy	0.02%	0	0	1	1	1	1
T6 instate construction small	0.06%	0	0	2	2	2	2
T6 instate heavy	0.18%	0	0	7	7	6	6
T6 instate small	0.52%	0	0	19	20	17	18
T6 OOS heavy	0.00%	0	0	0	0	0	0
T6 OOS small	0.00%	0	0	0	0	0	0
T6 public	0.02%	0	0	1	1	1	1
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.16%	0	0	4	4	3	3
T7 Ag	0.02%	0	0	1	1	1	1
T7 CAIRP	0.35%	0	0	20	20	18	18
T7 CAIRP construction	0.02%	0	0	1	1	1	1
T7 NNOOS	0.39%	0	0	23	23	21	21
T7 NOOS	0.13%	0	0	7	8	7	7
T7 other port	0.03%	0	0	2	2	2	2
T7 POAK	0.18%	0	0	11	11	10	10
T7 public	0.02%	0	0	1	1	1	1
T7 Single	0.21%	0	0	12	12	11	11
T7 single construction	0.06%	0	0	3	3	3	3
T7 SWCV	0.05%	0	0	3	3	3	3
T7 tractor	0.63%	0	0	35	36	32	32
T7 tractor construction	0.04%	0	0	2	2	2	2
T7 utility	0.00%	0	0	0	0	0	0
T7IS	0.03%	0	0	1	1	0	1
UBUS	0.15%	0	0	10	10	9	9
TOTAL		**1**	**0**	**1,512**	**1,524**	**1,157**	**1,169**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Transit System Improvement Strategies (TR-1, TR-15)

Emission year	Annual VMT		GWP	GWP			
2020	**1,578,156**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%	0	0	1	1	0	0
LDA	52.71%	0	0	293	293	202	203
LDT1	6.57%	0	0	42	42	31	31
LDT2	17.66%	0	0	133	134	101	102
LHD1	3.61%	0	0	48	49	43	44
LHD2	0.48%	0	0	5	5	5	5
MCY	0.65%	0	0	2	2	2	2
MDV	14.45%	0	0	139	140	110	111
MH	0.21%	0	0	2	3	2	2
Motor Coach	0.03%	0	0	1	1	1	1
OBUS	0.07%	0	0	1	1	1	1
PTO	0.05%	0	0	2	2	2	2
SBUS	0.20%	0	0	4	5	4	4
T6 Ag	0.01%	0	0	0	0	0	0
T6 CAIRP heavy	0.00%	0	0	0	0	0	0
T6 CAIRP small	0.00%	0	0	0	0	0	0
T6 instate construction heavy	0.02%	0	0	0	0	0	0
T6 instate construction small	0.06%	0	0	1	1	1	1
T6 instate heavy	0.18%	0	0	3	4	3	3
T6 instate small	0.52%	0	0	10	10	9	9
T6 OOS heavy	0.00%	0	0	0	0	0	0
T6 OOS small	0.00%	0	0	0	0	0	0
T6 public	0.02%	0	0	0	0	0	0
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.16%	0	0	2	2	2	2
T7 Ag	0.02%	0	0	1	1	1	1
T7 CAIRP	0.35%	0	0	10	10	9	9
T7 CAIRP construction	0.02%	0	0	1	1	1	1
T7 NNOOS	0.39%	0	0	11	12	10	10
T7 NOOS	0.13%	0	0	4	4	3	3
T7 other port	0.03%	0	0	1	1	1	1
T7 POAK	0.18%	0	0	5	6	5	5
T7 public	0.02%	0	0	1	1	1	1
T7 Single	0.21%	0	0	6	6	5	6
T7 single construction	0.06%	0	0	2	2	1	1
T7 SWCV	0.05%	0	0	2	2	1	1
T7 tractor	0.63%	0	0	18	18	16	16
T7 tractor construction	0.04%	0	0	1	1	1	1
T7 utility	0.00%	0	0	0	0	0	0
T7IS	0.03%	0	0	0	0	0	0
UBUS	0.15%	0	0	5	5	4	5
TOTAL		**1**	**0**	**756**	**762**	**579**	**585**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Commute Trip Reduction Strategies (LU-4, TR-2, TR-9, TR-10)

Emission year	Annual VMT		GWP	GWP			
2020	**5,961,460**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%	0	0	2	2	2	2
LDA	52.71%	0	0	1,106	1,109	764	767
LDT1	6.57%	0	0	159	160	117	118
LDT2	17.66%	0	0	503	505	382	384
LHD1	3.61%	0	0	181	185	163	167
LHD2	0.48%	0	0	20	21	18	19
MCY	0.65%	0	0	7	7	6	7
MDV	14.45%	0	0	525	528	416	419
MH	0.21%	0	0	9	9	8	9
Motor Coach	0.03%	0	0	3	3	3	3
OBUS	0.07%	0	0	3	3	3	3
PTO	0.05%	0	0	6	7	6	6
SBUS	0.20%	0	0	16	17	14	16
T6 Ag	0.01%	0	0	0	0	0	0
T6 CAIRP heavy	0.00%	0	0	0	0	0	0
T6 CAIRP small	0.00%	0	0	0	0	0	0
T6 instate construction heavy	0.02%	0	0	2	2	1	1
T6 instate construction small	0.06%	0	0	4	4	4	4
T6 instate heavy	0.18%	0	0	13	13	12	12
T6 instate small	0.52%	0	0	36	37	33	33
T6 OOS heavy	0.00%	0	0	0	0	0	0
T6 OOS small	0.00%	0	0	0	0	0	0
T6 public	0.02%	0	0	2	2	1	2
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.16%	0	0	7	7	6	6
T7 Ag	0.02%	0	0	2	2	2	2
T7 CAIRP	0.35%	0	0	38	39	34	35
T7 CAIRP construction	0.02%	0	0	2	2	2	2
T7 NNOOS	0.39%	0	0	43	44	39	39
T7 NOOS	0.13%	0	0	14	14	13	13
T7 other port	0.03%	0	0	4	4	3	3
T7 POAK	0.18%	0	0	20	21	18	19
T7 public	0.02%	0	0	2	3	2	2
T7 Single	0.21%	0	0	22	23	20	21
T7 single construction	0.06%	0	0	6	6	5	6
T7 SWCV	0.05%	0	0	6	6	5	6
T7 tractor	0.63%	0	0	66	68	60	61
T7 tractor construction	0.04%	0	0	4	5	4	4
T7 utility	0.00%	0	0	0	0	0	0
T7IS	0.03%	0	0	1	1	1	1
UBUS	0.15%	0	0	18	20	17	18
TOTAL		**2**	**0**	**2,855**	**2,878**	**2,186**	**2,209**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Parking Policy/Pricing Strategies (TR-6, TR-17)

	Emission year	Annual VMT		GWP	GWP			
	2020	**1,928,626**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
LDA	0.03%		0	0	1	1	1	1
LDT1	52.71%		0	0	358	359	247	248
LDT2	6.57%		0	0	51	52	38	38
LHD1	17.66%		0	0	163	163	124	124
LHD2	3.61%		0	0	59	60	53	54
MCY	0.48%		0	0	6	7	6	6
MDV	0.65%		0	0	2	2	2	2
MH	14.45%		0	0	170	171	135	136
Motor Coach	0.21%		0	0	3	3	3	3
OBUS	0.03%		0	0	1	1	1	1
PTO	0.07%		0	0	1	1	1	1
SBUS	0.05%		0	0	2	2	2	2
T6 Ag	0.20%		0	0	5	6	5	5
T6 CAIRP heavy	0.01%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.00%		0	0	0	0	0	0
T6 instate construction small	0.02%		0	0	0	1	0	0
T6 instate heavy	0.06%		0	0	1	1	1	1
T6 instate small	0.18%		0	0	4	4	4	4
T6 OOS heavy	0.52%		0	0	12	12	11	11
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.00%		0	0	0	0	0	0
T6 utility	0.02%		0	0	1	1	0	0
T6TS	0.00%		0	0	0	0	0	0
T7 Ag	0.16%		0	0	2	2	2	2
T7 CAIRP	0.02%		0	0	1	1	1	1
T7 CAIRP construction	0.35%		0	0	12	13	11	11
T7 NNOOS	0.02%		0	0	1	1	1	1
T7 NOOS	0.39%		0	0	14	14	13	13
T7 other port	0.13%		0	0	5	5	4	4
T7 POAK	0.03%		0	0	1	1	1	1
T7 public	0.18%		0	0	6	7	6	6
T7 Single	0.02%		0	0	1	1	1	1
T7 single construction	0.21%		0	0	7	7	7	7
T7 SWCV	0.06%		0	0	2	2	2	2
T7 tractor	0.05%		0	0	2	2	2	2
T7 tractor construction	0.63%		0	0	21	22	19	20
T7 utility	0.04%		0	0	1	1	1	1
T7IS	0.00%		0	0	0	0	0	0
UBUS	0.03%		0	0	0	0	0	0
TOTAL	0.15%		0	0	6	6	5	6
TOTAL			**1**	**0**	**924**	**931**	**707**	**715**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Neighborhood/Site Enhancements Strategies (RE-12, TR-13)

Emission year	Annual VMT		GWP	GWP			
2020	**350,817**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
LDT1	0.03%	0	0	0	0	0	0
LDT2	52.71%	0	0	65	65	45	45
LHD1	6.57%	0	0	9	9	7	7
LHD2	17.66%	0	0	30	30	22	23
MCY	3.61%	0	0	11	11	10	10
MDV	0.48%	0	0	1	1	1	1
MH	0.65%	0	0	0	0	0	0
Motor Coach	14.45%	0	0	31	31	24	25
OBUS	0.21%	0	0	1	1	0	1
PTO	0.03%	0	0	0	0	0	0
SBUS	0.07%	0	0	0	0	0	0
T6 Ag	0.05%	0	0	0	0	0	0
T6 CAIRP heavy	0.20%	0	0	1	1	1	1
T6 CAIRP small	0.01%	0	0	0	0	0	0
T6 instate construction heavy	0.00%	0	0	0	0	0	0
T6 instate construction small	0.00%	0	0	0	0	0	0
T6 instate heavy	0.02%	0	0	0	0	0	0
T6 instate small	0.06%	0	0	0	0	0	0
T6 OOS heavy	0.18%	0	0	1	1	1	1
T6 OOS small	0.52%	0	0	2	2	2	2
T6 public	0.00%	0	0	0	0	0	0
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.02%	0	0	0	0	0	0
T7 Ag	0.00%	0	0	0	0	0	0
T7 CAIRP	0.16%	0	0	0	0	0	0
T7 CAIRP construction	0.02%	0	0	0	0	0	0
T7 NNOOS	0.35%	0	0	2	2	2	2
T7 NOOS	0.02%	0	0	0	0	0	0
T7 other port	0.39%	0	0	3	3	2	2
T7 POAK	0.13%	0	0	1	1	1	1
T7 public	0.03%	0	0	0	0	0	0
T7 Single	0.18%	0	0	1	1	1	1
T7 single construction	0.02%	0	0	0	0	0	0
T7 SWCV	0.21%	0	0	1	1	1	1
T7 tractor	0.06%	0	0	0	0	0	0
T7 tractor construction	0.05%	0	0	0	0	0	0
T7 utility	0.63%	0	0	4	4	4	4
T7IS	0.04%	0	0	0	0	0	0
UBUS	0.00%	0	0	0	0	0	0
TOTAL	0.03%	0	0	0	0	0	0
TOTAL	0.15%	0	0	1	1	1	1
TOTAL		**0**	**0**	**168**	**169**	**129**	**130**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2035 (MTons/Year)

Based on EMFAC2011

GHG Reductions TOTAL

	Emission year	Annual VMT		GWP	GWP			
TOTAL	**2035**	**15,282,574**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%		0	0	6	6	5	5
LDA	52.67%		1	0	2,834	2,839	1,691	1,696
LDT1	6.55%		0	0	409	409	254	255
LDT2	17.44%		0	0	1,273	1,275	869	871
LHD1	3.62%		0	0	465	470	419	423
LHD2	0.49%		0	0	52	52	47	47
MCY	0.66%		0	0	18	19	16	17
MDV	14.10%		0	0	1,319	1,322	928	931
MH	0.20%		0	0	23	23	21	21
Motor Coach	0.03%		0	0	9	9	8	8
OBUS	0.07%		0	0	8	8	7	7
PTO	0.06%		0	0	19	19	17	17
SBUS	0.16%		0	0	32	33	29	30
T6 Ag	0.01%		0	0	1	1	1	1
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.03%		0	0	6	6	5	5
T6 instate construction small	0.10%		0	0	17	17	16	16
T6 instate heavy	0.19%		0	0	35	35	31	32
T6 instate small	0.57%		0	0	103	104	92	93
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.03%		0	0	5	5	4	5
T6 utility	0.00%		0	0	1	1	1	1
T6TS	0.15%		0	0	16	16	15	15
T7 Ag	0.02%		0	0	5	5	5	5
T7 CAIRP	0.41%		0	0	115	116	103	105
T7 CAIRP construction	0.04%		0	0	10	10	9	9
T7 NNOOS	0.46%		0	0	130	131	117	118
T7 NOOS	0.15%		0	0	42	43	38	39
T7 other port	0.04%		0	0	10	10	9	9
T7 POAK	0.34%		0	0	93	94	84	85
T7 public	0.02%		0	0	7	8	7	7
T7 Single	0.25%		0	0	67	68	61	61
T7 single construction	0.09%		0	0	25	25	22	23
T7 SWCV	0.06%		0	0	18	19	17	17
T7 tractor	0.74%		0	0	199	201	179	181
T7 tractor construction	0.07%		0	0	19	19	17	17
T7 utility	0.00%		0	0	1	1	1	1
T7IS	0.02%		0	0	2	2	2	2
UBUS	0.14%		0	0	42	43	37	39
TOTAL			**3**	**0**	**7,435**	**7,468**	**5,183**	**5,215**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Land Use/Location Strategies (LU-3, LU-5, LU-6, LU-7)

Emission year	Annual VMT		GWP	GWP			
2035	**3,717,411**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%	0	0	1	1	1	1
LDA	52.67%	0	0	689	691	411	413
LDT1	6.55%	0	0	99	100	62	62
LDT2	17.44%	0	0	310	310	211	212
LHD1	3.62%	0	0	113	114	102	103
LHD2	0.49%	0	0	13	13	11	11
MCY	0.66%	0	0	4	5	4	4
MDV	14.10%	0	0	321	321	226	226
MH	0.20%	0	0	6	6	5	5
Motor Coach	0.03%	0	0	2	2	2	2
OBUS	0.07%	0	0	2	2	2	2
PTO	0.06%	0	0	5	5	4	4
SBUS	0.16%	0	0	8	8	7	7
T6 Ag	0.01%	0	0	0	0	0	0
T6 CAIRP heavy	0.00%	0	0	0	0	0	0
T6 CAIRP small	0.00%	0	0	0	0	0	0
T6 instate construction heavy	0.03%	0	0	1	1	1	1
T6 instate construction small	0.10%	0	0	4	4	4	4
T6 instate heavy	0.19%	0	0	9	9	8	8
T6 instate small	0.57%	0	0	25	25	22	23
T6 OOS heavy	0.00%	0	0	0	0	0	0
T6 OOS small	0.00%	0	0	0	0	0	0
T6 public	0.03%	0	0	1	1	1	1
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.15%	0	0	4	4	4	4
T7 Ag	0.02%	0	0	1	1	1	1
T7 CAIRP	0.41%	0	0	28	28	25	25
T7 CAIRP construction	0.04%	0	0	2	2	2	2
T7 NNOOS	0.46%	0	0	32	32	28	29
T7 NOOS	0.15%	0	0	10	10	9	9
T7 other port	0.04%	0	0	3	3	2	2
T7 POAK	0.34%	0	0	23	23	20	21
T7 public	0.02%	0	0	2	2	2	2
T7 Single	0.25%	0	0	16	17	15	15
T7 single construction	0.09%	0	0	6	6	5	6
T7 SWCV	0.06%	0	0	4	5	4	4
T7 tractor	0.74%	0	0	48	49	43	44
T7 tractor construction	0.07%	0	0	5	5	4	4
T7 utility	0.00%	0	0	0	0	0	0
T7IS	0.02%	0	0	0	1	0	0
UBUS	0.14%	0	0	10	11	9	10
TOTAL		**1**	**0**	**1,809**	**1,817**	**1,261**	**1,269**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Transit System Improvements Strategies (TR-1, TR-15)

Emission year	Annual VMT		GWP	GWP			
2035	**1,858,532**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT	**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%	0	0	1	1	1	1
LDA	52.67%	0	0	345	345	206	206
LDT1	6.55%	0	0	50	50	31	31
LDT2	17.44%	0	0	155	155	106	106
LHD1	3.62%	0	0	57	57	51	51
LHD2	0.49%	0	0	6	6	6	6
MCY	0.66%	0	0	2	2	2	2
MDV	14.10%	0	0	160	161	113	113
MH	0.20%	0	0	3	3	3	3
Motor Coach	0.03%	0	0	1	1	1	1
OBUS	0.07%	0	0	1	1	1	1
PTO	0.06%	0	0	2	2	2	2
SBUS	0.16%	0	0	4	4	3	4
T6 Ag	0.01%	0	0	0	0	0	0
T6 CAIRP heavy	0.00%	0	0	0	0	0	0
T6 CAIRP small	0.00%	0	0	0	0	0	0
T6 instate construction heavy	0.03%	0	0	1	1	1	1
T6 instate construction small	0.10%	0	0	2	2	2	2
T6 instate heavy	0.19%	0	0	4	4	4	4
T6 instate small	0.57%	0	0	12	13	11	11
T6 OOS heavy	0.00%	0	0	0	0	0	0
T6 OOS small	0.00%	0	0	0	0	0	0
T6 public	0.03%	0	0	1	1	1	1
T6 utility	0.00%	0	0	0	0	0	0
T6TS	0.15%	0	0	2	2	2	2
T7 Ag	0.02%	0	0	1	1	1	1
T7 CAIRP	0.41%	0	0	14	14	13	13
T7 CAIRP construction	0.04%	0	0	1	1	1	1
T7 NNOOS	0.46%	0	0	16	16	14	14
T7 NOOS	0.15%	0	0	5	5	5	5
T7 other port	0.04%	0	0	1	1	1	1
T7 POAK	0.34%	0	0	11	11	10	10
T7 public	0.02%	0	0	1	1	1	1
T7 Single	0.25%	0	0	8	8	7	7
T7 single construction	0.09%	0	0	3	3	3	3
T7 SWCV	0.06%	0	0	2	2	2	2
T7 tractor	0.74%	0	0	24	24	22	22
T7 tractor construction	0.07%	0	0	2	2	2	2
T7 utility	0.00%	0	0	0	0	0	0
T7IS	0.02%	0	0	0	0	0	0
UBUS	0.14%	0	0	5	5	5	5
TOTAL		**0**	**0**	**904**	**908**	**630**	**634**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Commute Trip Reduction Strategies (LU-4, TR-2, TR-9, TR-10)

	Emission year	Annual VMT		GWP	GWP			
	2035	**7,021,892**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%		0	0	3	3	2	2
LDA	52.67%		0	0	1,302	1,305	777	779
LDT1	6.55%		0	0	188	188	117	117
LDT2	17.44%		0	0	585	586	399	400
LHD1	3.62%		0	0	214	216	192	194
LHD2	0.49%		0	0	24	24	21	22
MCY	0.66%		0	0	8	9	7	8
MDV	14.10%		0	0	606	607	426	428
MH	0.20%		0	0	11	11	10	10
Motor Coach	0.03%		0	0	4	4	4	4
OBUS	0.07%		0	0	3	4	3	3
PTO	0.06%		0	0	9	9	8	8
SBUS	0.16%		0	0	15	15	13	14
T6 Ag	0.01%		0	0	0	0	0	0
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.03%		0	0	3	3	2	2
T6 instate construction small	0.10%		0	0	8	8	7	7
T6 instate heavy	0.19%		0	0	16	16	14	15
T6 instate small	0.57%		0	0	47	48	42	43
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.03%		0	0	2	2	2	2
T6 utility	0.00%		0	0	0	0	0	0
T6TS	0.15%		0	0	7	8	7	7
T7 Ag	0.02%		0	0	2	2	2	2
T7 CAIRP	0.41%		0	0	53	53	47	48
T7 CAIRP construction	0.04%		0	0	5	5	4	4
T7 NNOOS	0.46%		0	0	60	60	54	54
T7 NOOS	0.15%		0	0	19	20	18	18
T7 other port	0.04%		0	0	5	5	4	4
T7 POAK	0.34%		0	0	43	43	38	39
T7 public	0.02%		0	0	3	3	3	3
T7 Single	0.25%		0	0	31	31	28	28
T7 single construction	0.09%		0	0	11	12	10	10
T7 SWCV	0.06%		0	0	8	9	8	8
T7 tractor	0.74%		0	0	91	92	82	83
T7 tractor construction	0.07%		0	0	9	9	8	8
T7 utility	0.00%		0	0	1	1	0	0
T7IS	0.02%		0	0	1	1	1	1
UBUS	0.14%		0	0	19	20	17	18
TOTAL			**2**	**0**	**3,416**	**3,431**	**2,381**	**2,396**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Parking Policy/ Pricing Strategies (TR-6, TR-17)

	Emission year	Annual VMT		GWP	GWP			
	2035	**2,271,809**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
LDA	0.03%		0	0	1	1	1	1
LDT1	52.67%		0	0	421	422	251	252
LDT2	6.55%		0	0	61	61	38	38
LHD1	17.44%		0	0	189	190	129	130
LHD2	3.62%		0	0	69	70	62	63
MCY	0.49%		0	0	8	8	7	7
MDV	0.66%		0	0	3	3	2	3
MH	14.10%		0	0	196	196	138	138
Motor Coach	0.20%		0	0	3	3	3	3
OBUS	0.03%		0	0	1	1	1	1
PTO	0.07%		0	0	1	1	1	1
SBUS	0.06%		0	0	3	3	3	3
T6 Ag	0.16%		0	0	5	5	4	4
T6 CAIRP heavy	0.01%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.00%		0	0	0	0	0	0
T6 instate construction small	0.03%		0	0	1	1	1	1
T6 instate heavy	0.10%		0	0	3	3	2	2
T6 instate small	0.19%		0	0	5	5	5	5
T6 OOS heavy	0.57%		0	0	15	15	14	14
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.00%		0	0	0	0	0	0
T6 utility	0.03%		0	0	1	1	1	1
T6TS	0.00%		0	0	0	0	0	0
T7 Ag	0.15%		0	0	2	2	2	2
T7 CAIRP	0.02%		0	0	1	1	1	1
T7 CAIRP construction	0.41%		0	0	17	17	15	16
T7 NNOOS	0.04%		0	0	1	2	1	1
T7 NOOS	0.46%		0	0	19	20	17	18
T7 other port	0.15%		0	0	6	6	6	6
T7 POAK	0.04%		0	0	2	2	1	1
T7 public	0.34%		0	0	14	14	12	13
T7 Single	0.02%		0	0	1	1	1	1
T7 single construction	0.25%		0	0	10	10	9	9
T7 SWCV	0.09%		0	0	4	4	3	3
T7 tractor	0.06%		0	0	3	3	2	2
T7 tractor construction	0.74%		0	0	30	30	27	27
T7 utility	0.07%		0	0	3	3	2	3
T7IS	0.00%		0	0	0	0	0	0
UBUS	0.02%		0	0	0	0	0	0
TOTAL	0.14%		0	0	6	6	6	6
TOTAL			**0**	**0**	**1,105**	**1,110**	**770**	**775**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Neighborhood/ Site Enhancements Strategies (Tr-12,TR-13)

	Emission year	Annual VMT		GWP	GWP			
	2035	**412,930**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
LDT1	0.03%		0	0	0	0	0	0
LDT2	52.67%		0	0	77	77	46	46
LHD1	6.55%		0	0	11	11	7	7
LHD2	17.44%		0	0	34	34	23	24
MCY	3.62%		0	0	13	13	11	11
MDV	0.49%		0	0	1	1	1	1
MH	0.66%		0	0	0	1	0	0
Motor Coach	14.10%		0	0	36	36	25	25
OBUS	0.20%		0	0	1	1	1	1
PTO	0.03%		0	0	0	0	0	0
SBUS	0.07%		0	0	0	0	0	0
T6 Ag	0.06%		0	0	1	1	0	0
T6 CAIRP heavy	0.16%		0	0	1	1	1	1
T6 CAIRP small	0.01%		0	0	0	0	0	0
T6 instate construction heavy	0.00%		0	0	0	0	0	0
T6 instate construction small	0.00%		0	0	0	0	0	0
T6 instate heavy	0.03%		0	0	0	0	0	0
T6 instate small	0.10%		0	0	0	0	0	0
T6 OOS heavy	0.19%		0	0	1	1	1	1
T6 OOS small	0.57%		0	0	3	3	2	3
T6 public	0.00%		0	0	0	0	0	0
T6 utility	0.00%		0	0	0	0	0	0
T6TS	0.03%		0	0	0	0	0	0
T7 Ag	0.00%		0	0	0	0	0	0
T7 CAIRP	0.15%		0	0	0	0	0	0
T7 CAIRP construction	0.02%		0	0	0	0	0	0
T7 NNOOS	0.41%		0	0	3	3	3	3
T7 NOOS	0.04%		0	0	0	0	0	0
T7 other port	0.46%		0	0	4	4	3	3
T7 POAK	0.15%		0	0	1	1	1	1
T7 public	0.04%		0	0	0	0	0	0
T7 Single	0.34%		0	0	3	3	2	2
T7 single construction	0.02%		0	0	0	0	0	0
T7 SWCV	0.25%		0	0	2	2	2	2
T7 tractor	0.09%		0	0	1	1	1	1
T7 tractor construction	0.06%		0	0	0	1	0	0
T7 utility	0.74%		0	0	5	5	5	5
T7IS	0.07%		0	0	1	1	0	0
UBUS	0.00%		0	0	0	0	0	0
TOTAL	0.02%		0	0	0	0	0	0
TOTAL	0.14%		0	0	1	1	1	1
TOTAL			**0**	**0**	**201**	**202**	**140**	**141**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2035 (MTons/Year)

Based on EMFAC2011

	Emission year	Annual VMT		GWP	GWP			
	2035	**413,044,163**		**310**	**1**	**MTons**		**MTons**
	Percent of VMT		**NOx**	**N2O**	**CO2**	**CO2e**	**CO2w/Pavley + LCF**	**CO2e w/ Pavley + LCFS**
All Other Buses	0.03%		0	0	151	153	136	138
LDA	52.67%		14	0	76,598	76,738	45,703	45,844
LDT1	6.55%		2	0	11,044	11,066	6,864	6,887
LDT2	17.44%		6	0	34,406	34,466	23,493	23,552
LHD1	3.62%		12	0	12,580	12,698	11,322	11,440
LHD2	0.49%		2	0	1,399	1,416	1,259	1,276
MCY	0.66%		4	0	484	519	436	470
MDV	14.10%		7	0	35,648	35,721	25,080	25,153
MH	0.20%		1	0	624	631	562	568
Motor Coach	0.03%		0	0	236	238	212	215
OBUS	0.07%		0	0	205	208	185	188
PTO	0.06%		1	0	518	523	466	471
SBUS	0.16%		3	0	864	894	778	808
T6 Ag	0.01%		0	0	26	26	23	24
T6 CAIRP heavy	0.00%		0	0	3	3	2	2
T6 CAIRP small	0.00%		0	0	9	9	8	8
T6 instate construction heavy	0.03%		0	0	159	160	143	144
T6 instate construction small	0.10%		0	0	467	471	420	425
T6 instate heavy	0.19%		1	0	945	954	850	860
T6 instate small	0.57%		3	0	2,775	2,799	2,497	2,522
T6 OOS heavy	0.00%		0	0	1	1	1	1
T6 OOS small	0.00%		0	0	5	5	5	5
T6 public	0.03%		0	0	135	136	121	122
T6 utility	0.00%		0	0	21	22	19	19
T6TS	0.15%		0	0	438	442	395	398
T7 Ag	0.02%		0	0	142	144	128	130
T7 CAIRP	0.41%		5	0	3,095	3,141	2,785	2,831
T7 CAIRP construction	0.04%		0	0	269	273	242	246
T7 NNOOS	0.46%		5	0	3,503	3,548	3,153	3,198
T7 NOOS	0.15%		2	0	1,146	1,164	1,031	1,049
T7 other port	0.04%		0	0	279	284	251	256
T7 POAK	0.34%		4	0	2,510	2,552	2,259	2,301
T7 public	0.02%		0	0	200	204	180	184
T7 Single	0.25%		2	0	1,819	1,838	1,637	1,656
T7 single construction	0.09%		1	0	674	681	607	614
T7 SWCV	0.06%		1	0	497	502	447	453
T7 tractor	0.74%		7	0	5,366	5,434	4,829	4,897
T7 tractor construction	0.07%		1	0	502	509	452	459
T7 utility	0.00%		0	0	31	32	28	28
T7IS	0.02%		0	0	54	59	49	54
UBUS	0.14%		5	0	1,122	1,169	1,010	1,057
TOTAL			**90**	**3**	**200,949**	**201,834**	**140,068**	**140,953**

N2O emissions were calculated using an off-model adjustment provided by CARB in AB 32 Technical Appendices. The off-model adjustment uses a linear regression correlating N2O with NOx. (N2O = 0.0167 + 0.0318 x NOx)

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2008

Based on EMFAC2011

	Emission year	Daily						
	2008	**936,783**				**lbs/day**		
	Percent of VMT		**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	0.02%		0	5	1	0	0	0
LDA	50.62%		461	406	4,478	4	53	24
LDT1	6.36%		113	106	1,182	1	7	4
LDT2	18.02%		133	209	1,594	2	18	8
LHD1	4.10%		55	238	494	1	7	4
LHD2	0.55%		6	44	55	0	1	1
MCY	0.58%		70	18	609	0	1	0
MDV	16.33%		107	217	1,511	2	16	7
MH	0.20%		3	13	71	0	0	0
Motor Coach	0.02%		0	8	2	0	0	0
OBUS	0.09%		3	7	36	0	0	0
PTO	0.04%		1	14	4	0	1	1
SBUS	0.24%		6	63	34	0	6	4
T6 Ag	0.01%		0	2	0	0	0	0
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.03%		0	6	1	0	0	0
T6 instate construction small	0.09%		1	16	2	0	1	1
T6 instate heavy	0.17%		2	36	7	0	2	2
T6 instate small	0.50%		4	92	14	0	5	4
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.02%		0	4	0	0	0	0
T6 public	0.02%		0	4	0	0	0	0
T6 utility	0.00%		0	1	0	0	0	0
T6TS	0.12%		10	14	104	0	0	0
T7 Ag	0.02%		1	9	2	0	0	0
T7 CAIRP	0.26%		5	84	19	0	3	3
T7 CAIRP construction	0.03%		1	10	2	0	0	0
T7 NNOOS	0.30%		4	73	16	0	3	2
T7 NOOS	0.10%		2	31	7	0	1	1
T7 other port	0.03%		1	14	3	0	0	0
T7 POAK	0.10%		3	48	12	0	2	1
T7 public	0.02%		0	7	2	0	0	0
T7 Single	0.16%		2	52	10	0	2	2
T7 single construction	0.08%		1	27	5	0	1	1
T7 SWCV	0.04%		1	17	3	0	1	0
T7 tractor	0.48%		9	169	42	0	7	6
T7 tractor construction	0.06%		1	22	6	0	1	1
T7 utility	0.00%		0	1	0	0	0	0
T7IS	0.02%		3	6	43	0	0	0
TOTAL	100%		**1,009**	**2,094**	**10,372**	**10**	**143**	**78**

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2008

Based on EMFAC2011

	Emission year	Daily						
	2008	**936,783**				**lbs/day**		
	Percent of VMT		**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	0.02%		0	5	1	0	0	0
LDA	50.62%		461	406	4,478	4	53	24
LDT1	6.36%		113	106	1,182	1	7	4
LDT2	18.02%		133	209	1,594	2	18	8
LHD1	4.10%		55	238	494	1	7	4
LHD2	0.55%		6	44	55	0	1	1
MCY	0.58%		70	18	609	0	1	0
MDV	16.33%		107	217	1,511	2	16	7
MH	0.20%		3	13	71	0	0	0
Motor Coach	0.02%		0	8	2	0	0	0
OBUS	0.09%		3	7	36	0	0	0
PTO	0.04%		1	14	4	0	1	1
SBUS	0.24%		6	63	34	0	6	4
T6 Ag	0.01%		0	2	0	0	0	0
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.03%		0	6	1	0	0	0
T6 instate construction small	0.09%		1	16	2	0	1	1
T6 instate heavy	0.17%		2	36	7	0	2	2
T6 instate small	0.50%		4	92	14	0	5	4
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.02%		0	4	0	0	0	0
T6 public	0.02%		0	4	0	0	0	0
T6 utility	0.00%		0	1	0	0	0	0
T6TS	0.12%		10	14	104	0	0	0
T7 Ag	0.02%		1	9	2	0	0	0
T7 CAIRP	0.26%		5	84	19	0	3	3
T7 CAIRP construction	0.03%		1	10	2	0	0	0
T7 NNOOS	0.30%		4	73	16	0	3	2
T7 NOOS	0.10%		2	31	7	0	1	1
T7 other port	0.03%		1	14	3	0	0	0
T7 POAK	0.10%		3	48	12	0	2	1
T7 public	0.02%		0	7	2	0	0	0
T7 Single	0.16%		2	52	10	0	2	2
T7 single construction	0.08%		1	27	5	0	1	1
T7 SWCV	0.04%		1	17	3	0	1	0
T7 tractor	0.48%		9	169	42	0	7	6
T7 tractor construction	0.06%		1	22	6	0	1	1
T7 utility	0.00%		0	1	0	0	0	0
T7IS	0.02%		3	6	43	0	0	0
TOTAL	100%		**1,009**	**2,094**	**10,372**	**10**	**143**	**78**

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2020

Based on EMFAC2011

	Emission year	Daily						
	2020	**1,010,628**				**lbs/day**		
	Percent of VMT		**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	0.03%		0	2	0	0	0	0
LDA	52.71%		115	110	1,193	4	55	23
LDT1	6.57%		45	37	380	1	7	3
LDT2	17.66%		58	61	552	2	18	8
LHD1	3.61%		37	135	246	1	6	3
LHD2	0.48%		3	23	19	0	1	1
MCY	0.65%		55	19	410	0	1	0
MDV	14.45%		88	103	830	2	15	6
MH	0.21%		1	7	8	0	0	0
Motor Coach	0.03%		0	3	1	0	0	0
OBUS	0.07%		2	4	22	0	0	0
PTO	0.05%		0	7	1	0	0	0
SBUS	0.20%		1	42	6	0	3	2
T6 Ag	0.01%		0	0	0	0	0	0
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.02%		0	2	0	0	0	0
T6 instate construction small	0.06%		0	2	1	0	0	0
T6 instate heavy	0.18%		1	14	2	0	1	0
T6 instate small	0.52%		2	18	6	0	2	1
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.02%		0	2	0	0	0	0
T6 utility	0.00%		0	0	0	0	0	0
T6TS	0.16%		3	5	36	0	0	0
T7 Ag	0.02%		0	3	1	0	0	0
T7 CAIRP	0.35%		3	25	13	0	1	1
T7 CAIRP construction	0.02%		0	2	1	0	0	0
T7 NNOOS	0.39%		3	21	15	0	1	1
T7 NOOS	0.13%		1	9	5	0	0	0
T7 other port	0.03%		0	6	2	0	0	0
T7 POAK	0.18%		2	33	11	0	1	1
T7 public	0.02%		0	5	1	0	0	0
T7 Single	0.21%		1	23	5	0	1	0
T7 single construction	0.06%		0	6	1	0	0	0
T7 SWCV	0.05%		0	9	2	0	0	0
T7 tractor	0.63%		4	62	17	0	2	2
T7 tractor construction	0.04%		0	5	1	0	0	0
T7 utility	0.00%		0	0	0	0	0	0
T7IS	0.03%		1	4	25	0	0	0
UBUS	0.15%		3	43	16	0	3	2
TOTAL	100%		**429**	**853**	**3,828**	**11**	**123**	**55**

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

Year 2035

Based on EMFAC2011

	Emission year	Daily						
	2035	**1,190,329**				**lbs/day**		
	Percent of VMT		**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
All Other Buses	0.03%		0	1	0	0	0	0
LDA	52.67%		84	91	966	5	66	28
LDT1	6.55%		21	14	159	1	8	4
LDT2	17.44%		50	38	390	2	22	9
LHD1	3.62%		22	76	140	1	6	3
LHD2	0.49%		2	11	14	0	1	1
MCY	0.66%		64	22	458	0	1	0
MDV	14.10%		66	47	463	2	18	7
MH	0.20%		0	4	2	0	0	0
Motor Coach	0.03%		0	2	1	0	0	0
OBUS	0.07%		1	2	13	0	0	0
PTO	0.06%		0	3	1	0	0	0
SBUS	0.16%		1	20	5	0	3	1
T6 Ag	0.01%		0	0	0	0	0	0
T6 CAIRP heavy	0.00%		0	0	0	0	0	0
T6 CAIRP small	0.00%		0	0	0	0	0	0
T6 instate construction heavy	0.03%		0	1	0	0	0	0
T6 instate construction small	0.10%		0	3	1	0	0	0
T6 instate heavy	0.19%		1	6	2	0	1	0
T6 instate small	0.57%		2	16	7	0	3	1
T6 OOS heavy	0.00%		0	0	0	0	0	0
T6 OOS small	0.00%		0	0	0	0	0	0
T6 public	0.03%		0	1	0	0	0	0
T6 utility	0.00%		0	0	0	0	0	0
T6TS	0.15%		2	2	17	0	0	0
T7 Ag	0.02%		0	1	1	0	0	0
T7 CAIRP	0.41%		4	29	19	0	2	1
T7 CAIRP construction	0.04%		0	3	2	0	0	0
T7 NNOOS	0.46%		4	29	20	0	2	1
T7 NOOS	0.15%		1	11	8	0	1	0
T7 other port	0.04%		0	3	1	0	0	0
T7 POAK	0.34%		3	27	14	0	2	1
T7 public	0.02%		0	3	2	0	0	0
T7 Single	0.25%		2	12	8	0	1	1
T7 single construction	0.09%		1	4	3	0	0	0
T7 SWCV	0.06%		1	4	3	0	0	0
T7 tractor	0.74%		5	44	23	0	3	2
T7 tractor construction	0.07%		1	4	3	0	0	0
T7 utility	0.00%		0	0	0	0	0	0
T7IS	0.02%		0	3	21	0	0	0
UBUS	0.14%		2	30	8	0	3	2
TOTAL	100%		**341**	**570**	**2,777**	**13**	**145**	**65**

Based on the emission factors and Fleet mix for the San Francisco Air Basin, Contra Costa County.

TOWN OF DANVILLE — TRANSPORTATION SECTOR

VMT	Town of Danville + Sphere of Influence (SOI)					
	Population	Employment	Service Population (SP)		VMT	Annual VMT
2008	46,536	15,162	61,698		936,783	325,063,750
2020	49,938	15,832	65,770		1,010,628	350,687,916
2010	47,373	15,256	62,629		963,656	334,388,632
2035	53,785	16,697	70,482		1,190,329	413,044,163

Source: Fehr & Peers 2012, based on the updated Contra CostaTransportation Authority (CCTA) model.

2008 daily VMT is approximated using an interpolation of the change in population and employment between 2008 to 2010. 2020 daily VMT is approximated using an interpolation of the change in population and employment between 2010 to 2035.

Daily vehicles miles traveled (VMT) multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

CRITERIA AIR POLLUTANTS

	lbs/day					
	ROG	NOx	CO	SOx	PM10	PM2.5
2008	1,009	2,094	10,372	10	143	78
2020	429	853	3,828	11	123	55
2035	341	570	2,777	13	145	65
	Tons/year					
	ROG	NOx	CO	SOx	PM10	PM2.5
2008	175	363	1,800	2	25	14
2020	74	148	664	2	21	10
2035	59	99	482	2	25	11

Daily emissions multiplied by 347 days/year to account for reduced traffic on weekends and holidays. This assumption is consistent with the California Air Resources Board's (CARB) methodology within the Climate Change Scoping Plan Measure Documentation Supplement.

Source: EMFAC2011-SG

GHG EMISSIONS

	MTons/year - Business as Usual (BAU)			MTons/year - Adjusted			Percent Reduction from BAU
	N_2O	CO_2	CO_2e	N_2O	CO_2	CO_2e	
2008	11	155,299	158,621	11	155,299	158,621	0%
2020	4	167,963	169,286	4	128,602	129,925	-23%
2035	3	200,949	201,834	3	140,068	140,953	-30%

Source: EMFAC2011-SG

Note: MTons = metric tons; CO_2e = carbon dioxide-equivalent. Adjusted BAU Includes Pavley and the Low Carbon Fuel Standard (LCFS).

State and Federal Fuel Efficiency Improvements + Low Carbon Fuel Standard (LCFS)

Assembly Bill 1493 (AB 1493) Pavley I Fuel Efficiency Standards. In addition, the State of California has adopted the Low Carbon Fuel Standard (LCFS). In January 2012, the California Air Resources Board (CARB) adopted the Advanced Clean Car Program which implements the Pavley II Fuel Efficiency Standards and projects that by 2025, one in every seven new cars sold will be electric vehicles (PHEV or PEV). However, the Pavley II Advanced Clean Car Program is not included in the transportation emissions reductions and therefore reductions are

On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoins the CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Night Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision.

WARM OUTPUTs

Existing 2008		**TONS MSW**		**TONS ADC**	**TOTAL**		**MTons CO2e**
		37,208		12,452	49,660		29,534
	MSW	**TONS MSW**	**ADC**	**TONS ADC**		**TOTAL**	**MTons CO2e With 75% Landfill Recovery**
Inputs For WARM	%	37,208	%	12,452	49,660	%	7,383
Aluminum Cans	0.1%	45		0	45	0.1%	
Aluminum Ingot	0.2%	79		0	79	0.2%	
Steel Cans	0.6%	241		0	241	0.5%	
Copper Wire	2.0%	751		0	751	1.5%	
Glass	1.4%	530		0	530	1.1%	
HDPE	0.4%	148		0	148	0.3%	
LDPE	4.3%	1,590		0	1,590	3.2%	
PET	0.5%	187		0	187	0.4%	
LLDPE	1.2%	455		0	455	0.9%	
PP	0.0%	0		0	0	0.0%	
PS	0.0%	0		0	0	0.0%	
PVC	0.0%	0		0	0	0.0%	
PLA	0.0%	0		0	0	0.0%	
Corrugated Containers	0.4%	153		0	153	0.3%	
Magazines/Third-class Mail	0.7%	265		0	265	0.5%	
Newspaper	1.3%	468		0	468	0.9%	
Office Paper	1.8%	685		0	685	1.4%	
Phonebooks	0.1%	23		0	23	0.0%	
Textbooks	0.0%	0		0	0	0.0%	
Dimensional Lumber	14.5%	5,400		0	5,400	10.9%	
Medium-density Fiberboard	0.0%	0		0	0	0.0%	
Food Scraps	15.5%	5,768		0	5,768	11.6%	
Yard Trimmings	2.7%	992	58.1%	7,233	8,225	16.6%	
Grass	3.8%	1,417		0	1,417	2.9%	
Leaves	0.0%	0		0	0	0.0%	
Branches	0.6%	230		0	230	0.5%	
Mixed Paper (general)	13.4%	4,984		0	4,984	10.0%	
Mixed Paper (primarily residential)	0.0%	0		0	0	0.0%	
Mixed Paper (primarily from offices)	0.0%	0		0	0	0.0%	
Mixed Metals	1.6%	580	15.7%	1,957	2,537	5.1%	
Mixed Plastics	2.8%	1,035		0	1,035	2.1%	
Mixed Recyclables	0.0%	0		0	0	0.0%	
Mixed Organics	4.4%	1,630	12.4%	1,539	3,169	6.4%	
Mixed MSW	4.8%	1,777	0.5%	59	1,836	3.7%	
Carpet	3.2%	1,204		0	1,204	2.4%	
Personal Computers	0.5%	203		0	203	0.4%	
Clay Bricks	3.2%	1,180		0	1,180	2.4%	
Concrete	1.2%	453		0	453	0.9%	
Fly Ash	0.1%	38	0.1%	9	47	0.1%	
Tires	0.2%	56	1.3%	159	216	0.4%	
Asphalt Concrete	0.3%	122	12.0%	1,496	1,617	3.3%	
Asphalt Shingles	2.8%	1,051		0	1,051	2.1%	
Drywall	7.1%	2,639		0	2,639	5.3%	
Fiberglass Insulation	2.2%	831		0	831	1.7%	
Vinyl Flooring	0.0%	0		0	0	0.0%	
Wood Flooring	0.0%	0		0	0	0.0%	
	100%	37,208	100.0%	12,452	49,660	100.0%	

Assumes a 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.1. Because the landfill gas captured is not under the jurisdiction of Danville, the landfill gas emissions from the capture system are not included in Danville's inventory. Only fugitive sources of GHG emissions from landfill are included.

Does not include tonnage from alternative daily cover (ADC) disposed of in Danville.

Energy - Purchase Electricity and Natural Gas

Pacific Gas & Electric - Emission Factors

	Intensity factor				CO_2e
Electricity	lbs CO_2/MWH	MTons CO_2/MWh	CH4 MTons/MWH	N2O MTons/MWH	MTons/MWh
3-Year Average (2006-2008) based on PG&E Request	577	0.262	0.000013	0.000005	**0.263**
2020 (CO_2)	290	0.133	0.000013	0.000005	**0.135**
Source: Pacific Gas & Electric (PG&E). 2012, April. Community Wide GHG Inventory Report for Danville 2005 to 2010. The Intensity factor is based on an average of Kwh and CO_2 emissions for non-government and city generated electricity for year 2005.			CH_4 and N_2O intensity based on California E-Grid data (CH_4 = 0.029 lbs/MWH; N_2O = 0.011 lbs/MWH)		

Note: The 2020 emissions rate is estimated by PG&E. It includes reductions from 33% Renewable Portfolio Standard (RPS), Cap-and-Trade, and other regulatory reductions for High Global Warming Potential (HGWP) gases such as reductions of SF_6.

Natural Gas	Intensity factor				CO_2e
	lbs CO_2/Therm	MTons CO_2/Therm	CH4 MTons/Therm	N2O MTons/Therm	MTons/Therm
All Years	11.7	0.00531	0.00005	0.000001	**0.00667**
CO2 intentsiy based on PG&E's third-party-verified GHG inventory submitted to the California Climate Action Registry (CCAR)6 (2003-2008) or The Climate Registry (TCR) (2009).			CH4 and N2O intensity based on Table G.3 of the LGOP for residential and non-residential (CH4: 0.005 kg/MMBtu; N2O: 0.0001 kg/MMBtu)		

General Conversion Factors

kg to MTons	0.001
Mmbtu to Therm	0.1
killowatt hrs to megawatt hrs	0.001
lbs to Tons	2000
Tons to Mton	0.9071847

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

	Global Warming Potentials (GWP)
CO2	1
CH4	21
N2O	310

Souce: Intergovernmental Panel on Climate Change (IPCC). 2001. Third Assessment Report: Climate Change 2011.

Danville Electricity & Natural Gas Use (based on a 3-year average, 2006 to 2008)

Electricity	2008 (avg) Kwh/Year	2020 Kwh/Year	2035 Kwh/Year
Residential	167,972,519	179,601,584	194,137,914
Commercial	54,627,596	57,085,594	60,158,091
Municipal	3,429,078	3,646,056	3,917,278
Total	226,029,193	240,333,234	258,213,283

Electricity	2008 (avg) CO_2e MTons/Year	2020 CO_2e MTons/Year	2035 CO_2e MTons/Year
Residential	44,239	47,301	51,130
Commercial	14,387	15,035	15,844
Municipal	903	960	1,032
Total	59,529	63,296	68,005

Natural Gas	2008 (avg) Therms/Year	2020 Therms/Year	2035 Therms/Year
Residential	11,230,720	12,008,244	12,980,150
Commercial	1,264,417	1,321,311	1,392,427
Municipal	13,330	14,173	15,227
Total	12,508,467	13,343,728	14,387,804

Natural Gas	2008 CO_2e MTons/Year	2020 CO_2e MTons/Year	2035 CO_2e MTons/Year
Residential	74,876	80,059	86,539
Commercial/Industrial	8,430	8,809	9,283
Municipal	89	94	102
Total	83,394	88,963	95,924

Summary	CO_2e MTons/Year	CO_2e MTons/Year	CO_2e MTons/Year
Residential	119,114	127,361	137,669
Commercia/Industrial*	23,809	24,899	26,260
Total	142,923	152,259	163,929

*includes Municipal

Adjusted Forecast - 2020 PG&E CO2 Intensity

Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. The California Air Resources Board (CARB) has now approved an even higher goal of 33 percent by 2020. Investor-owned utilities, such as PG&E are also required to participate in CARB's Cap-and-Trade program and reduce High Global Warming Potential (HGWP) gases, such as reductions of SF6.

Source: Pacific Gas & Electric (PG&E). 2011, April 8. Greenhouse Gas Emission Factors Info Sheet.
http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Note: Energy and Building reductions in the measures below are based on the PG&E 2020 GHG Intensity. (i.e., applied RPS then accounted for additional reductions)

Electricity	2008 CO_2e MTons/Year	2020 Adjusted CO_2e MTons/Year	2035 Adjusted CO_2e MTons/Year
Residential	44,239	24,214	26,174
Commercial	14,387	7,696	8,111
Municipal	903	492	528
Total	59,529	32,402	34,813
GHG Reductions	0	30,894	33,192

Adjusted Forecast - Title 24 Cycle Updates to the California Building Code

The 2008 Building and Energy Efficiency standards (Title 24, Part 6) are approximately 15 percent more energy efficient than the 2005 Building and Energy Efficiency standards, which were in place at the time of CARB's Scoping Plan. The California Energy Commission anticipates that future code cycles (2014 and beyond) may require a 30 percent increase in energy efficiency compared to the 2008 Building and Energy Efficiency Standards. However, these future cycles are not included in the Adjusted Forecast.

Local Measures that support Statewide Energy Reductions

GB-7 Require any roof to have a Solar Reflectance Index (SRI) of at least 29.

GB-9 Require measures that reduce energy use through solar orientation by taking advantage of shade, prevailing winds, landscaping, and sun screens.

EC-4 Conduct education and outreach to promote quality insulation installation (QII), which eliminates gaps in buildings .

EC-12 Require the installation of programmable thermostats in new and existing residential and commercial buildings.

Reductions

13% Non-Residential Natural Gas Reduction (2008 Building and Energy Efficiency Standards)

10% Residential Natural Gas Reduction (2008 Building and Energy Efficiency Standards)

15% Residential and Non-residential Electricity improvements under the 2008 Building and Energy Efficiency Standards + Title 25 Appliance Energy Efficiency Standards

Source: Bay Area Air Quality Management District (BAAQMD). 2010 (Revised May 2011). CEQA Air Quality Guidelines

Electricity	2008 (avg) **Kwh/Year**	New Buildings 2020 **Kwh/Year**	New Building 2035 **Kwh/Year**	Total 2020 **Kwh/Year**	Total 2035 **Kwh/Year**
Residential	167,972,519	9,884,705	12,355,881	177,857,224	190,213,105
Commercial	54,627,596	2,089,298	2,611,622	56,716,894	59,328,517
Municipal	3,429,078	184,431	230,539	3,613,509	3,844,048
Total	226,029,193	12,158,435	15,198,042	238,187,628	253,385,670

Electricity	2008 w/2020 **CO_2e MTons/Year**	2020 **CO_2e MTons/Year**	2035 **CO_2e MTons/Year**	Total 2020 **CO_2e MTons/Year**	Total 2035 **CO_2e MTons/Year**
Residential	22,647	1,333	1,666	23,979	25,645
Commercial	7,365	282	352	7,647	7,999
Municipal	462	25	31	487	518
Total	30,474	1,639	2,049	32,113	34,162

Natural Gas	2008 (avg) **Therms/Year**	New Buildings 2020 **Therms/Year**	New Building 2035 **Therms/Year**	Total 2020 **Therms/Year**	Total 2035 **Therms/Year**
Residential	11,230,720	699,772	874,715	11,930,492	12,805,207
Commercial	1,264,417	49,498	61,871	1,313,915	1,375,786
Municipal	13,330	733	917	14,063	14,980
Total	12,508,467	750,003	937,503	13,258,470	14,195,973

Natural Gas	2008 w/2020 **CO_2e MTons/Year**	New Buildings 2020 **CO_2e MTons/Year**	New Building 2035 **CO_2e MTons/Year**	Total 2020 **CO_2e MTons/Year**	Total 2035 **CO_2e MTons/Year**
Residential	74,876	4,665	5,832	79,541	85,373
Commercial/Industrial	8,430	330	412	8,760	9,172
Municipal	89	5	6	94	100
Total	83,394	5,000	6,250	88,395	94,645

Summary	**2008 CO_2e MTons/Year**	**2020 BAU CO_2e MTons/Year**	**2035 BAU CO_2e MTons/Year**	**Adjusted 2020 CO_2e MTons/Year**	**Adjusted 2035 CO_2e MTons/Year**

Residential	119,114	127,361	137,669	103,520	111,018
Commercia/Industrial*	23,809	24,899	26,260	16,988	17,789
Total	142,923	152,259	163,929	120,508	128,807
Reduction from BAU				-31,752	-35,122
*includes Municipal			Reductions from Title 24	-858	-1,930

Adjusted Forecast - SMART Grid

The California Public Utilities Commission (CPUC) has initiated a rulemaking R.08-12-009 to for California investor-owned electric utilities to develop a smarter electric grid in the state. Pursuant to Senate Bill 17, the CPUC developed requirements for a Smart Grid deployment plan. In July 2011, California Utilities filed with the CPUC 10-year Smart Grid Deployment Plans. New Smart Meters provide real-time electricity use information to consumers.

Local Measures that support Statewide Energy Reductions

EC-2 Launch an "energy efficiency challenge" campaign for community residents.

EC-3 Create the Kill-A-Watt Electritown Usage Monitor program, through which residents can check out a device from the library that can be plugged into household electronics to see how much electricity they require.

Reduction in Energy Consumption

	Low	High	% Reduction
Residential	1%	10%	3%
Commercial/Office	1%	10%	3%

Source: Pacific Northwest National Laboratory. 2010, January. The Smart Grid: An Estimation of the Energy and CO2 Benefits. http://energyenvironment.pnnl.gov/news/pdf/PNNL-19112_Revision_1_Final.pdf. Table 3.3 Estimated Direct Impacts of the Conservation Effect of Consumer Information and Feedback Systems.

Energy Savings Applied to Existing Land Uses Only

Electricity	2008 (avg) Adjusted **Kwh/Year**	New Buildings 2020 **Kwh/Year**	New Building 2035 **Kwh/Year**	Total 2020 **Kwh/Year**	Total 2035 **Kwh/Year**
Residential	162,933,343	9,884,705	12,355,881	172,818,049	185,173,929
Commercial	52,988,768	2,089,298	2,611,622	55,078,066	57,689,689
Municipal	3,429,078	184,431	230,539	3,613,509	3,844,048
Total	219,351,190	12,158,435	15,198,042	231,509,624	246,707,666

Electricity	2008 w/2020 (Adjusted) **CO_2e MTons/Year**	New Buildings 2020 **CO_2e MTons/Year**	New Building 2035 **CO_2e MTons/Year**	Total 2020 **CO_2e MTons/Year**	Total 2035 **CO_2e MTons/Year**
Residential	21,967	1,333	1,666	23,300	24,966
Commercial	7,144	282	352	7,426	7,778
Municipal	462	25	31	487	518
Total	29,574	1,639	2,049	31,213	33,262

For Natural Gas for the Adjusted Forecast - see Title 24 Updates

Summary	**2008 BAU CO_2e MTons/Year**	**2020 BAU CO_2e MTons/Year**	**2035 BAU CO_2e MTons/Year**	**Adjusted 2020 CO_2e MTons/Year**	**Adjusted 2035 CO_2e MTons/Year**
Residential	119,114	127,361	137,669	102,841	110,338
Commercia/Industrial*	23,809	24,899	26,260	16,767	17,568
Total	142,923	152,259	163,929	119,607	127,907
Reduction from BAU				-32,652	-36,022
*includes Municipal			Reductions from Smart Grid	-900	-900

California Natural Gas Use by End Use

Source: California Energy Commission.Residential End Use Survey. http://energyalmanac.ca.gov/naturalgas/residential_use.html

Residential	Annual Energy % Total	Non-Title 24	Title 24
Water Heating	44%		44%
Space Heating	44%		44%
Pools, Spas, Misc.	2%	2%	
Clothes Dryers	3%	3%	
Cooking	7%	7%	
Total	100%	12%	88%

Source: California Energy Commission. 2006, March. California Commercial End-Use Survey. Prepared by Itron. CEC-400-2006-005. http://www.energy.ca.gov/2006publications/CEC-400-2006-005/CEC-400-2006-005.PDF

Commercial	Annual Energy % Total	Non-Title 24	Title 24
Water Heating	31.8%		32%
Heating	36.4%		36%
Cooling	1.5%	2%	
Process	5.9%	6%	
Miscellaneous	1.8%	2%	
Cooking	22.6%	23%	
Total	100%	32%	68%

California Electricity Consumption by End Use

Source: Brown, Richard E. and Koomey, Jonathan G., 2002, May. E*lectricity Use in California: Past Trends and Present Usage Patterns.* University of California, Berkeley (UCB), Energy analysis Department, Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory. lBL-47992. http://enduse.lbl.gov/Projects/CAdata.html

	Annual Energy TWh	Annual Energy % Total	% of Sector	Non-Title 24	Title 24
Commercial					
Air Conditioning	13.8	5%	15%		15%
Interior Lighting	30.3	12%	34%		34%
Other	19.9	8%	22%	22%	
Ventilation	9.1	4%	10%		10%
Refrigeration	6.5	3%	7%	7%	
Office Equipment	1.6	1%	2%	2%	
Domestic Hot Water	0.5	0%	1%		1%
Exterior Lighting	5.0	2%	6%		6%
Cooking	0.6	0%	1%	1%	
Space Heating	2.1	1%	2%		2%
Total Commercial	*89.5*	*36%*	100%	*32%*	*68%*
Residential					
Air Conditioning	4.8	2%	6%		6%
Miscellaneous	24.6	10%	33%	33%	
Refrigerator	13.7	5%	18%	18%	
Cooking	3.6	1%	5%	5%	
Dryer	5.7	2%	8%	8%	
Pools & Spas	4.1	2%	5%	5%	
Domestic Hot Water	4.2	2%	6%		6%
Television	3.4	1%	5%	5%	
Freezer	2.5	1%	3%	3%	
Dishwasher	2.0	1%	3%	3%	
Waterbed Heater	2.1	1%	3%	3%	
Clothes Washer	0.7	0%	1%	1%	
Space Heating	0.4	2%	1%		1%
Total Residential	*75.4*	*30%*	100%	83%	12%
Industrial					
Assembly	33	13%	62%	62%	
Process	14	6%	26%	26%	
Other	6.1	2%	11%	11%	
Total Industrial	*53.5*	*21%*	100%	99%	
Agricultural					
Total Industrial	*17.8*	*7%*	100%	100%	
Transport & Street Lighting					
Total Transport & Lighting	*15.3*	*6%*	100%	100%	
Total Statewide	251.6	100%			

Energy & Green Buildings Measures

Electricity	Residential 2020		Non-Residential 2020		Residential 2035		Non-Residential 2035	
	Existing Kwh	New Kwh	Existing Kwh	New Kwh	Existing Kwh	New Kwh	Existing Kwh	New Kwh
Title 24	20,312,645	1,232,311	38,326,313	1,544,612	20,312,645	1,540,388	38,326,313	1,930,764
Non-Title 24	134,841,388	8,180,446	18,028,496	726,577	134,841,388	10,225,556	18,028,496	908,221
	155,154,033	9,412,756	56,354,809	2,271,189	155,154,033	11,765,945	56,354,809	2,838,986

Natural Gas	Residential 2020		Non-Residential 2020		Residential 2035		Non-Residential 2035	
	Existing Therms	New Therms	Existing Therms	New Therms	Existing Therms	New Therms	Existing Therms	New Therms
Title 24	1,400,116	87,239	868,011	34,124	1,400,116	109,049	868,011	42,654
Non-Title 24	9,294,389	579,121	408,308	16,052	9,294,389	723,902	408,308	20,064
	10,694,505	666,361	1,276,319	50,175	10,694,505	832,952	1,276,319	62,718

Sources: Brown, Richard E. and Koomey, Jonathan G., 2002, May. Electricity Use in California: Past Trends and Present Usage Patterns. University of California, Berkeley (UCB), Energy analysis Department, Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory. lBL-47992. http://enduse.lbl.gov/Projects/CAdata.html; California Energy Commission. Residential End Use Survey. http://energyalmanac.ca.gov/naturalgas/residential_use.html; and California Energy Commission. 2006, March. California Commercial End-Use Survey. Prepared by Itron. CEC-400-2006-005.

New Development (Residential and Nonresidential)- Increase in Energy Efficiency Above the California Building Code

GB-1 Develop a Green Building Ordinance that requires energy efficient design, in excess of Title 24 standards, for all new residential and non-residential buildings. (15 to 40 percent above Title 24 Standards).

Support Measures

GB-3 Allow greater development flexibility, and provide permitting-related and other incentives for LEED-Silver certification or equivalent GreenPoint rating, e.g. give green projects priority in plan review, processing, and in field inspection services.

GB-8 Identify and remove regulatory or procedural barriers to implementing green building practices in the town by updating codes, guidelines, and zoning.

GB-10 Train all plan review and building inspection staff in green building materials, techniques, and practices.

GB-11 Provide green building information, marketing, training, and technical assistance to property owners, development professionals, schools, and special districts.

GB-12 Coordinate with other local governments, special districts, nonprofits, and other public organizations to share resources, achieve economies of scale, and develop green building policies and programs that are optimized on a regional scale.

EC-7 Develop a "heat island" mitigation plan that includes guidelines for cool roofs, cool pavements, and strategically placed shade trees. Amend the applicable Design Guidelines to integrate the guidelines. Evaluate and balance tradeoffs between solar access and landscape tree shading in Design Guidelines.

New Buildings

15% percent increase in energy efficiency

	2020			2035		
Electricity	Kwh from New Building w/2008 Title 24	Kwh Reductions with 15% above Title 24	GHG Reductions (MTons)	Kwh from New Building w/2008 Title 24	Kwh Reductions with 15% above Title 24	GHG Reductions (MTons)
Residential	1,232,311	1,844	0.2	1,540,388	2,304	0.3
Non-Residential	1,544,612	35,676	5	1,930,764	44,595	6
Total	2,776,923	37,520	5	3,471,153	46,900	6

	2020			2035		
Natural Gas	Therms from New Building w/2008 Title 24	Therms Reductions with 30% above Title 24	GHG Reductions (MTons)	Therms from New Building w/2008 Title 24	Therms Reductions with 30% above Title 24	GHG Reductions (MTons)
Residential	87,239	10,306	69	109,049	12,883	86
Non-Residential	34,124	2,478	17	42,654	3,098	21
Total	121,363	12,785	85	151,703	15,981	107

	Electricity Ratio for 1% over Title 24	Natural Gas Ratio for 1% over Title 24
Residential (avg)	0.08	0.90
multi-family	0.12	0.88
single-family	0.04	0.91
Non-Residential	0.23	0.71
Commercial	0.26	0.72
Office	0.36	0.95
Industrial	0.06	0.46

Source: California Air Pollution Control Officer's Association (CAPCOA). 2010, August. Quantifying Greenhouse Gas Mitigation Measures. Table BE-1.1 and BE-1.2, Climate Zone 5.

Existing Residential - Increase Energy Efficiency

GB-4 Adopt GreenPoint Rated Building Guidelines and require all new and significantly remodeled homes to follow the Guidelines. Significantly remodeled homes includes remodels of 50 percent or more of the square footage or wall area of the home.

Danville Permit History: http://www.ci.danville.ca.us/Permits/Building/ (includes residential and non-residential)

	Permits Issued	Significant remodels	PVs or Solar	Furnace/HVAC	Water heater	windows	roof
April 2012	139	10	14	12	17	4	13
March 2012	156	9	11	16	14	10	7
February 2012	184	7	12	22	20	8	12

Average Monthly Permits	Average number of significant remodels/ Month	Per Year	
160	9	104	assumes 1/2 are for residential and 1/2 are non-residential

Significant Remodels (Residential) between 2012 and 2020: 416 — 2% of total existing housing stock

Significant Remodels (Residential) between 2012 and 2035: 5% of total existing housing stock

GreenPoint Homes:

Use 20 percent less energy per year through lighting, insulation, and heating/cooling

Use 35 percent less water per year through high water efficiency appliances and landscapes

Assumes: Significant remodels, because of the percentage of square footage remodeled, would improve energy efficiency of older structures that pre-date the 2005 Building and Energy Efficiency standards. For a conservative estimate, building remodels are assumed to improve energy efficiency of building energy use by 15 percent (natural gas and electricity). While significant remodels would likely also improve water efficient, reductions for water use are accounted for in existing Water District programs.

15% percent increase in energy efficiency

		2020			2035		
Electricity	Title 24 Kwh from Existing (pre-2005 Title 24)	Kwh from existing homes that would be Significantly Renovated	Kwh Reductions with 15% improvement	GHG Reductions (MTons)	Kwh from existing homes that would be Significantly Renovated	Kwh Reductions with 15% improvement	GHG Reductions (MTons)
Residential	20,312,645	492,428	5,909	0.8	923,302	11,080	1.5

		2020			2035		
Natural Gas	Title 24 Therms from Existing (pre-2005 Title 24)	Therms from existing homes that would be Significantly Renovated	Therms Reductions with 15% improvement	GHG Reductions (MTons)	Kwh from existing homes that would be Significantly Renovated	Kwh Reductions with 15% improvement	GHG Reductions (MTons)
Residential	1,400,116	33,942	4,557	30	63,642	8,544	57

Renewable Energy Generation - New Residential

RE-2	Require that residential projects of six units or more participate in the California Energy Commission's New Solar Homes Partnership, which provides rebates to developers of six units or more who offer solar power in 50 percent of new units and is a component of the California Solar Initiative, or a similar program with solar power requirements equal to or greater than those of the California Energy Commission's New Solar Homes Partnership.
Support Measures	
GB-2	Utilize all available rebates and incentives for energy efficiency and distributed generation installations, such as State public good programs (funding for energy efficiency from a "public good" fee on utility bills) and solar programs.
GB-6	Require all new buildings to be constructed to allow for the easy, cost-effective installation of future solar energy systems. "Solar ready" features should include: proper solar orientation (i.e. south facing roof area sloped at 20° to 55° from the horizontal); clear access on the south sloped roof (i.e. no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.
RE-1	In partnership with Pacific Gas and Electric and local alternative energy companies, develop an Alternative Energy Development Plan that includes townwide measurable goals and identifies the allowable and appropriate alternative energy facility types within the town, such as solar photovoltaic (PV) on urban residential and commercial
RE-5	Waive fees for permitting for solar array installation.
EC-13	Where feasible, increase solar access by requiring that new streets be designed so that the blocks have one axis within plus or minus 15 degrees of geographical east/west, and the east/west length of those blocks are at least as long, or longer, as the north/south length of the block. Areas with topological constraints, among others, may be excluded from this requirement

	2020	2035		
New Residential:	1188	2673	2020	2035
Assumes 50% of new residential in subdivisions			594	1,337

			Power Offset			2020
Residential	8,218	kwh/unit/year	4,881,492	kwh	658	GHG MTons
			Power Offset			2035
Residential	8,218	kwh/unit/year	10,983,357	kwh	1,481	GHG MTons

Source: California Energy Commission (CEC). 2012. Clean Power Estimator.
http://www.gosolarcalifornia.org/tools/clean_power_estimator.php. Based on a 5,000 Watt-ac PV system (residential or 5.0 kw system) in zip code 94526 (based on Danville 2012 permit average).

Renewable Energy Generation - New or Existing Non-Residential

RE-3	Require that new or major rehabilitations of commercial, office, or industrial development greater than or equal to 20,000 square feet in size incorporate solar or other renewable energy generation to provide 15 percent or more of the project's energy needs. Major rehabilitations are defined as remodeling/ additions of 20,000 square ft of office/retail commercial or 100,000 square feet of industrial floor area. Remove regulatory barriers to incorporating renewable energy generation.
Support Measures	
GB-2	Utilize all available rebates and incentives for energy efficiency and distributed generation installations, such as State public good programs (funding for energy efficiency from a "public good" fee on utility bills) and solar programs.
GB-6	Require all new buildings to be constructed to allow for the easy, cost-effective installation of future solar energy systems. "Solar ready" features should include: proper solar orientation (i.e. south facing roof area sloped at 20° to 55° from the horizontal); clear access on the south sloped roof (i.e. no chimneys, heating vents, plumbing vents, etc.); electrical conduit installed for solar electric system wiring; plumbing installed for solar hot water system; and space provided for a solar hot water storage tank.
RE-1	In partnership with Pacific Gas and Electric and local alternative energy companies, develop an Alternative Energy Development Plan that includes townwide measurable goals and identifies the allowable and appropriate alternative energy facility types within the town, such as solar photovoltaic (PV) on urban residential and commercial
RE-5	Waive fees for permitting for solar array installation.
RE-6	Work with the local school districts to encourage the use of solar energy systems at school facilities.
RE-7	Incentivize installation of parking lot solar arrays
EC-13	Where feasible, increase solar access by requiring that new streets be designed so that the blocks have one axis within plus or minus 15 degrees of geographical east/west, and the east/west length of those blocks are at least as long, or longer, as the north/south length of the block. Areas with topological constraints, among others, may be

Non-Residential: Assumes 8 non-residential buildings constructed/remodeled over the next 8 years (1 per year) that will include PV (27 by 2035).

			Power Offset			2020
Non-Residential	8,218	kwh/unit/year	65,744	kwh	9	GHG MTons
			Power Offset			2035
Non-Residential	8,218	kwh/unit/year	221,886	kwh	30	GHG MTons

Source: California Energy Commission (CEC). 2012. Clean Power Estimator.
http://www.gosolarcalifornia.org/tools/clean_power_estimator.php. Based on a 5,000 Watt-ac PV system (commercial or 5.0 kw-ac system) in zip code 94526 (based on Danville 2012 permit average).

Residential Solar Hot Water Heating

RE-4 In partnership with Pacific Gas and Electric and other appropriate energy providers, develop a program that provides incentives that meet or exceed those of AB 1470 (Section 902 and Sections 2860-2867.3 of the California Public Utilities Code). AB 1470, the Solar Hot Water Energy Efficiency Act of 2007, directs the California Energy

Assumes 0.1 percent of existing residential customers would participate: 17 1 home per year between 2008 and 2020.

Solar Energy Factors range from 1.0 to 11. Systems with solar energy factors of 2 or 3 are more common. (assume 3)

Solar Fraction varies from 0. to 1.0. Typical solar factors are 0.5 to 0.75. (assume 1.0)

Assumes pumps to circulate water run on electricity

Conventional water heaters use 64.3 gal/day

Gas water heater efficiency: 0.57

	Annual Energy	Units	GHG
Electricity Solar Water Heater=	1,464	kwh	0.2
Gas Water Heater =	263	therms	1.8
%Reduction from Solar		Efficiency:	-89%

Source: US Department of Energy. Solar Water Heater Energy Efficiency.
http://www.energysavers.gov/your_home/water_heating/index.cfm/mytopic=12900

	2020 GHG Reduction from 0.5% Participation (Existing Residential only)		2035 GHG Reduction from 1% Participation (Existing Residential only)	
Water heaters are 44% of total Residential Natural Gas Use	2,733	Therms	3,389	Therms
	18	MTons	23	MTons

Source: California Energy Commission (CEC). Residential End Use Survey. http://energyalmanac.ca.gov/naturalgas/residential_use.html;

Existing Non-Residential Building Retrofits

EC-10	Require all new development and major rehabilitation (i.e., additions or remodels of 20,000 square feet of office/retail commercial or 100,000 square feet of industrial floor area) projects to incorporate any combination of the following strategies to reduce heat gain for 50 percent of the non-roof impervious site landscape, which includes roads, sidewalks, courtyards, parking lots, and driveways: shaded within five years of occupancy; paving materials with a Solar Reflectance Index (SRI) of at least 29; open grid pavement system; and parking spaces underground, under deck, under roof, or under a building. Any roof used to shade or cover parking must have an SRI of at least 29.
Support Measures	
EC-8	Participate in the CaliforniaFIRST program, which provides innovative, low-interest financing for energy efficiency projects for existing and new development.
EC-9	Compile a list of funding sources that local residents, businesses, or the Town could potentially access to fund energy audits to inform homeowners and businesses of opportunities to improve the energy-efficiency of their homes and buildings.
EC-5	Seek funding to implement a low-income weatherization program.
EC-15	Form a volunteer committee of local design professionals to create a brochure to educate citizens on how to save energy through design.

Assumes	15%	percent increase in energy efficiency
Assumes	0.1%	of energy use from existing non-residential buildings would be affected by 2020.
Assumes	0.2%	of energy use from existing non-residential buildings would be affected by 2020.

		2020			2035		
Electricity	Title 24 Kwh from Existing (pre-2005 Title 24)	Kwh from existing non-residential that would improve energy efficiency	Kwh Reductions with 15% improvement	GHG Reductions (MTons)	Kwh from existing non-residential that would improve energy efficiency	Kwh Reductions with 15% improvement	GHG Reductions (MTons)
Non-Residential	38,326,313	38,326	1,303	0.2	71,862	2,443	0.3

		2020			2035		
Natural Gas	Title 24 Therms from Existing (pre-2005 Title 24)	Therms from existing non-residential that would improve energy efficiency	Therms Reductions with 15% improvement	GHG Reductions (MTons)	Therms from existing non-residential that would improve energy efficiency	Therms Reductions with 15% improvement	GHG Reductions (MTons)
Non-Residential	868,011	868	92	0.6	1,628	173	1.2

New Residential - Energy Star Appliances

EC-1 — Require new development to use energy-efficient appliances that meet Energy Star standards and energy efficient lighting technologies that meet or exceed Title 24 standards.

Assumes developers would provide energy-efficient appliances or residents would purchase new appliances, which meet the Title 25 Energy Code.

Percent of Total Electricity	Residential
Refrigerators	18%
Clothes washer	1%
Dishwasher	3%

Sources: Brown, Richard E. and Koomey, Jonathan G., 2002, May. Electricity Use in California: Past Trends and Present Usage Patterns. University of California, Berkeley (UCB), Energy analysis Department, Environmental Energy

Energy Star appliances Increased Efficiency - CLIMATE ZONE 5

	Single Family	Multi-Family	Townhome	Residential (average)
Refrigerators	1.99%	3.07%	2.78%	2.61%
Clothes washer	0.58%	0.03%	0.35%	0.32%
Dishwasher	0.14%	0.12%	0.14%	0.13%

Source: California Air Pollution Control Officers Association (CAPCOA). 2010, August. Quantifying GHG Mitigation Measures. Average based on percentage multi-family and single-family units anticipated in Climate Zone 5.

Lighting (hard-wired interior [6%] and exterior [33%]) is 39% of total commercial energy use (CEC). Hard-wired lighting is regulated under Title 24 and therefore not included in reductions.

ENERGY STAR Appliances:	2020		2035	
	kwh	MTon	kwh	MTon
Energy Saving from New Residential Units:	30,323	4	37,904	5

Existing Residential - Turnover to Energy Efficient Appliances

EC-6

Partner with Pacific Gas & Electric and other appropriate energy providers to promote energy conservation, including the following: 1) Promote the purchase of ENERGY STAR appliances. Distribute free compact fluorescent light (CFL) bulbs and/or fixtures to community members. 2) Offer a halogen torchiere lamp exchange to community members. 3) Promote energy efficiency audits of existing buildings to check, repair, and readjust heating, ventilation, air conditioning, lighting, water heating equipment, insulation and weatherization. 4) Encourage energy audits to be performed when residential and commercial buildings are sold. Energy audits will include information regarding the opportunities for energy efficiency improvements, and will be presented to the buyer. 5) Commercial buildings to be "benchmarked" using EPA's ENERGY STAR Portfolio Manager Tool, consistent with AB 1103, which requires disclosure of commercial buildings' energy efficiency rating. 6) Promote individualized energy management planning and related services for large energy users. 7) Fund and schedule energy efficiency retrofits or "tune-ups" of existing buildings.

ENERGY STAR APPLIANCES - EXISTING

Assume a portion of the existing residential uses would purchase new energy-efficient appliances which meet the Title 25 Energy Code.

Percent of Total Electricity	Residential
Refrigerators	18%
Clothes washer	1%
Dishwasher	3%

Sources: Brown, Richard E. and Koomey, Jonathan G., 2002, May. Electricity Use in California: Past Trends and Present Usage Patterns. University of California, Berkeley (UCB), Energy analysis Department, Environmental Energy Technologies Division, Ernest Orlando Lawrence Berkeley National Laboratory. lBL-47992. http://enduse.lbl.gov/Projects/CAdata.html.

Energy star appliances Increased Efficiency

	Residential Increase in Efficiency (average multi & single family)	Average Appliance Life Expectancy	Residential Turnover in the next 10 years	Residential Turnover in the next 27 years
Refrigerators	1.99%	14 years	70%	100%
Clothes washer	0.58%	12 years	60%	100%
Dishwasher	0.14%	12 years	60%	100%

Source: California Air Pollution Control Officers Association (CAPCOA). 2010, August. Quantifying GHG Mitigation Measures. Based on single-family units anticipated in Climate Zone 5 for existing single-family residential in the Town.

Source: Appliance Life Expectancy. http://www.mrappliance.com/expert/life-guide/ Based on the life expectancy of appliances as reported in the 23rd annual portrait of the U.S. appliance industry.

ENERGY STAR Appliances:

	2020		2035	
	kwh	MTons	kwh	MTons
Units:	348,651	47	499,825	67

Existing Lighting

EC-11 Require outdoor lighting fixtures to be energy-efficient. Require parking lot light fixtures and light fixtures on buildings to be on full cut-off fixtures, except emergency exit or safety lighting, and all permanently installed exterior lighting shall be controlled by either a photocell or an astronomical time switch. Prohibit continuous all night outdoor lighting in construction sites unless required for security reasons. Revise the Town Code to include these requirements.

Non-Residential Exterior Lighting: 6% of Total Energy Use

Usage Patterns. University of California, Berkeley (UCB), Energy analysis Department, Environmental Energy

Energy-Efficient exterior lighting is assumed to be LED technology

Efficiency of LED vs. High Pressure Sodium Lighting

	Average Power (Watts)	Power Saving (Watts)	Annual Energy Saving (KWh) Per Luminaire	Lifespan (hours)	Annual Hours
High Pressure Sodium Luminaire	121			30,000	4,100
LED Luminaire	77.7	43	178		
	Percent Reduction	36%	Turnover (years)	7.3	100% in 10 years

Source: U.S. Department of Energy (DOE). 2008, January. Final Report Prepared in Support of the U.S. DOE Solid-State Lighting Technology Demonstration Gateway Program and PG&E Emerging Technologies Program. Prepared by Energy Solutions.

NON-RESIDENTIAL EXTERIOR LIGHT REPLACEMENT

	2020		2035	
	kwh	MTon	kwh	MTon
Energy Saving from Non-Residential	357,923	48	357,923	48

Not Used

Danville Permit History: http://www.ci.danville.ca.us/Permits/Building/ (includes residential and non-residential)

	size of PVs	Average Kw size of PV	PVs or Solar/Month		
April 2012	1.5 Kw, 1.75 Kw, 3.15 Kw, 3.6 Kw, 4.5 Kw, 4.6 Kw, 5.0 Kw, 5.06 Kw, 5.1 Kw, 5.6 Kw, 7.5 Kw	4.3	14		
March 2012	2 Kw, 3.2 Kw, 3.3 Kw, 3.8 Kw, 4.5 Kw, 5 Kw, 5.76 Kw, 5.83 Kw, 6.46 kw, 9.6 Kw	5.1	11		
February 2012	2 kw, 3.1 Kw, 3.7 Kw, 3.8 Kw, 5.8 Kw, 6.37 Kw, 6.3 Kw, 7.0 Kw, 7.3 Kw, 9.9 Kw	5.5	12	annual	over 8 years
	Average	5.0	12	148	1,184

NO POLICY RIGHT NOW

			Power Offset			
Residential	8,218	kwh/unit/year	9,730,112	kwh	1,312	GHG MTons
Non-Residential						

Source: California Energy Commission (CEC). 2012. Clean Power Estimator. http://www.gosolarcalifornia.org/tools/clean_power_estimator.php. Based on a 5,000 Watt-ac PV system (residential or 5.0 kw system) in zip code 94526 (based on Danville 2012 permit average).

CalRecycle. Statewide Alternative Daily Cover (ADC) by Material Type

http://www.calrecycle.ca.gov/LGCentral/Reports/ReportViewer.aspx?ReportName=ReportEdrsAnnualQuarterADC

Total of ADC by Material Type

Year	Ash	Auto Shred	C&D	Compost	Contaminated Sediment	Green Material	Mixed	Other	Sludge	Tires	Total
2006	2,255	683,064	383,619	0	77	2,656,850	28,145	126,052	298,998	40,931	4,219,992
2007	1,566	632,495	358,784	3,379	40,960	2,307,255	12,588	172,311	326,680	66,042	3,922,060
2008	5,282	622,055	746,300	679	63,232	2,195,876	17,894	256,033	235,743	49,638	4,192,731

Percent of ADC by Material Type

	Ash	Auto Shred	C&D	Compost	Contaminated Sediment	Green Material	Mixed	Other	Sludge	Tires	Total
2006	0.05%	16.19%	9.09%	0.00%	0.00%	62.96%	0.67%	2.99%	7.09%	0.97%	100.00%
2007	0.04%	16.13%	9.15%	0.09%	1.04%	58.83%	0.32%	4.39%	8.33%	1.68%	100.00%
2008	0.13%	14.84%	17.80%	0.02%	1.51%	52.37%	0.43%	6.11%	5.62%	1.18%	100.00%
Average	0.07%	15.72%	12.01%	0.03%	0.85%	58.05%	0.47%	4.50%	7.01%	1.28%	100.00%

CalRecycle. 2008 Waste Characterization Study

Material Classes in California's Overall Disposed Waste Stream (Detailed)

	Categories in WARM	Tons	Percent	Percent by Category
Paper				17.3%
Uncoated Corrugated Cardboard	Mixed Paper (general)	1,905,897	4.8%	
Paper Bags	Mixed Paper (general)	155,848	0.4%	
Newspaper	Newspaper	499,960	1.3%	
White Ledger Paper	Office Paper	259,151	0.7%	
Other Office Paper	Office Paper	472,147	1.2%	
Maganizes and Catalogs	Magazines/Third-class Mail	283,069	0.7%	
Phone Books and Directories	Phonebooks	24,149	0.1%	
Other Miscellaneous Paper	Mixed Paper (general)	1,202,354	3.0%	
Remainder/Composite Paper	Mixed Paper (general)	2,056,546	5.2%	
Glass				1.4%
Clear Glass Bottles and Containers	Glass	196,093	0.5%	
Green Glass Bottles and Containers	Glass	79,491	0.2%	
Brown Glass Bottles and Containers	Glass	108,953	0.3%	
Other Colored Glass Bottles and Containers	Glass	40,570	0.1%	
Flat Glas	Glass	33,899	0.1%	
Remainder/Composite Glass	Glass	106,838	0.3%	
Metal				4.6%
Tin/Steel Cans	Steel Cans	236,405	0.6%	
Major Appliances	Steel Cans	17,120	0.0%	
Used Oil Filters	Steel Cans	3,610	0.0%	
Other Ferrous	Copper Wire	801,704	2.0%	
Aluminum Cans	Aluminum Cans	47,829	0.1%	
Other Non-Ferrous	Aluminum Ingot	84,268	0.2%	
Remainder/Composite Metal	Mixed Metals	618,747	1.6%	
Electronics				0.5%
Brown Goods	Personal Computers	76,725	0.2%	
Computer-Related Electronnics	Personal Computers	32,932	0.1%	
Other Small Consumer Electronics	Personal Computers	34,588	0.1%	
Video Display Devices	Personal Computers	72,053	0.2%	
Plastic				9.6%
PETE Containers	PET	199,644	0.5%	
HDPE Containers	HDPE	157,779	0.4%	
Miscellaneous Plastic Containers	Corrugated Containers	163,008	0.4%	
Plastic Trash Bags	LLDPE	361,997	0.9%	
Plastic Grocery and Other Merchandise Bags	LLDPE	123,405	0.3%	
Non-Bag Commercial and Industrial Packaging Film	LDPE	194,863	0.5%	
Film Products	LDPE	113,566	0.3%	
Other Film	LDPE	554,002	1.4%	
Durable Plastic Items	LDPE	834,970	2.1%	
Remainder/Composite Plastic	Mixed Plastics	1,104,719	2.8%	
Other Organic				32.4%
Food	Food Scraps	6,158,120	15.5%	
Leaves and Grass	Grass (assume leaves too)	1,512,832	3.8%	
Prunings and Trimmings	Yard Trimmings	1,058,854	2.7%	
Branches and Stumps	Branches	245,830	0.6%	
Manures	Mixed Organics	20,373	0.1%	
Textiles	Fiberglass Insulation	886,814	2.2%	
Carpet	Carpet	1,285,473	3.2%	
Remainder/Composite Organic	Mixed Organics	1,719,743	4.3%	
Inerts and Other				29.1%
Concrete	Concrete	483,367	1.2%	
Asphalt Paving	Asphalt Concrete	129,834	0.3%	
Asphalt Roofing	Asphalt Shingles	1,121,945	2.8%	
Lumber	Dimensional Lumber	5,765,482	14.5%	
Gypsum Board	Drywall	642,511	1.6%	
Rock, Soil and Fines	Clay Bricks	1,259,308	3.2%	
Remainder/Composite Inerts and Other	Drywall	2,175,322	5.5%	
Household Hazardous Wastes				0.3%
Paint	Mixed MSW	48,025	0.1%	
Vehicle and Equipment Fuels	Mixed MSW	6,424	0.0%	
Used Oil	Mixed MSW	3,348	0.0%	
Batteries	Mixed MSW	19,082	0.0%	
Remainder/Composite Household Hazardous Waste	Mixed MSW	43,873	0.1%	
Special Waste				3.9%
Ash	Fly Ash	40,736	0.1%	
Treated Medical Waste	Mixed MSW	0	0.0%	
Bulky Itmes	Mixed MSW	1,393,091	3.5%	
Tires	Tires	60,180	0.2%	
Remainder/Composite Special Waste	Mixed MSW	52,463	0.1%	
Mixed Residue				0.8%
Mixed Residue	Mixed MSW	330,891	0.8%	
TOTAL		**39,722,820**	**100.0%**	

GHG Emissions from Baseline Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Estimated Recycling (Tons)	Annual GHG Emissions from Recycling (MTCE)	Estimated Landfilling (Tons)	Annual GHG Emissions from Landfilling (MTCE)	Estimated Combustion (Tons)	Annual GHG Emissions from Combustion (MTCE)	Estimated Composting (Tons)	Annual GHG Emissions from Composting (MTCE)	Total Annual GHG Emissions (MTCE)
Aluminum Cans	44.8	0.0	0.0	44.8	0.5	0.0	0.0	NA	NA	0.5
Aluminum Ingot	78.9	0.0	0.0	78.9	0.8	0.0	0.0	NA	NA	0.8
Steel Cans	240.9	0.0	0.0	240.9	2.5	0.0	0.0	NA	NA	2.5
Copper Wire	750.9	0.0	0.0	750.9	7.9	0.0	0.0	NA	NA	7.9
Glass	530.0	0.0	0.0	530.0	5.6	0.0	0.0	NA	NA	5.6
HDPE	147.8	0.0	0.0	147.8	1.6	0.0	0.0	NA	NA	1.6
LDPE	1,589.9	NA	NA	1,589.9	16.8	0.0	0.0	NA	NA	16.8
PET	187.0	0.0	0.0	187.0	2.0	0.0	0.0	NA	NA	2.0
LLDPE	454.7	NA	NA	454.7	4.8	0.0	0.0	NA	NA	4.8
PP	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	152.7	61.9	0.0	0.0	NA	NA	61.9
Magazines/third-class mail	265.1	0.0	0.0	265.1	10.0	0.0	0.0	NA	NA	10.0
Newspaper	468.3	0.0	0.0	468.3	(61.5)	0.0	0.0	NA	NA	(61.5)
Office Paper	685.0	0.0	0.0	685.0	693.7	0.0	0.0	NA	NA	693.7
Phonebooks	22.6	0.0	0.0	22.6	(3.0)	0.0	0.0	NA	NA	(3.0)
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	5,400.5	109.0	0.0	0.0	NA	NA	109.0
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	NA	NA	5,768.3	2,244.0	0.0	0.0	0.0	0.0	2,244.0
Yard Trimmings	8,224.9	NA	NA	8,224.9	452.2	0.0	0.0	0.0	0.0	452.2
Grass	1,417.1	NA	NA	1,417.1	199.0	0.0	0.0	0.0	0.0	199.0
Leaves	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	NA	NA	230.3	4.6	0.0	0.0	0.0	0.0	4.6
Mixed Paper (general)	4,983.8	0.0	0.0	4,983.8	1,837.2	0.0	0.0	NA	NA	1,837.2
Mixed Paper (primarily residential)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	0.0	0.0	2,536.6	26.9	0.0	0.0	NA	NA	26.9
Mixed Plastics	1,034.8	0.0	0.0	1,034.8	11.0	0.0	0.0	NA	NA	11.0
Mixed Recyclables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	3,169.0	714.1	0.0	0.0	0.0	0.0	714.1
Mixed MSW	1,835.8	NA	NA	1,835.8	1,549.9	0.0	0.0	NA	NA	1,549.9
Carpet	1,204.1	0.0	0.0	1,204.1	12.7	0.0	0.0	NA	NA	12.7
Personal Computers	202.6	0.0	0.0	202.6	2.1	0.0	0.0	NA	NA	2.1
Clay Bricks	1,179.6	NA	NA	1,179.6	12.5	NA	NA	NA	NA	12.5
Concrete	452.8	0.0	0.0	452.8	4.8	NA	NA	NA	NA	4.8
Fly Ash	47.3	0.0	0.0	47.3	0.5	NA	NA	NA	NA	0.5
Tires	215.7	0.0	0.0	215.7	2.3	0.0	0.0	NA	NA	2.3
Asphalt Concrete	1,617.4	0.0	0.0	1,617.4	17.1	NA	NA	NA	NA	17.1
Asphalt Shingles	1,050.9	0.0	0.0	1,050.9	11.1	0.0	0.0	NA	NA	11.1
Drywall	2,639.4	0.0	0.0	2,639.4	91.1	NA	NA	NA	NA	91.1
Fiberglass Insulation	830.7	NA	NA	830.7	8.8	NA	NA	NA	NA	8.8
Vinyl Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	49,660.0	8,054.7	0.0	0.0	0.0	0.0	8,054.7

GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Projected Source Reduction (Tons)	Annual GHG Emissions from Source Reduction (MTCE)	Projected Recycling (Tons)	Annual GHG Emissions from Recycling (MTCE)	Projected Landfilling (Tons)	Annual GHG Emissions from Landfilling (MTCE)	Projected Combustion (Tons)	Annual GHG Emissions from Combustion (MTCE)	Projected Composting (Tons)	Annual GHG Emissions from Composting (MTCE)	Total Annual GHG Emissions (MTCE)
Aluminum Cans	44.8	0.0	0.0	0.0	0.0	44.8	0.5	0.0	0.0	NA	NA	0.5
Aluminum Ingot	78.9	0.0	0.0	0.0	0.0	78.9	0.8	0.0	0.0	NA	NA	0.8
Steel Cans	240.9	0.0	0.0	0.0	0.0	240.9	2.5	0.0	0.0	NA	NA	2.5
Copper Wire	750.9	0.0	0.0	0.0	0.0	750.9	7.9	0.0	0.0	NA	NA	7.9
Glass	530.0	0.0	0.0	0.0	0.0	530.0	5.6	0.0	0.0	NA	NA	5.6
HDPE	147.8	0.0	0.0	0.0	0.0	147.8	1.6	0.0	0.0	NA	NA	1.6
LDPE	1,589.9	0.0	0.0	NA	NA	1,589.9	16.8	0.0	0.0	NA	NA	16.8
PET	187.0	0.0	0.0	0.0	0.0	187.0	2.0	0.0	0.0	NA	NA	2.0
LLDPE	454.7	0.0	0.0	NA	NA	454.7	4.8	0.0	0.0	NA	NA	4.8
PP	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	0.0	0.0	152.7	61.9	0.0	0.0	NA	NA	61.9
Magazines/third-class mail	265.1	0.0	0.0	0.0	0.0	265.1	10.0	0.0	0.0	NA	NA	10.0
Newspaper	468.3	0.0	0.0	0.0	0.0	468.3	(61.5)	0.0	0.0	NA	NA	(61.5)
Office Paper	685.0	0.0	0.0	0.0	0.0	685.0	693.7	0.0	0.0	NA	NA	693.7
Phonebooks	22.6	0.0	0.0	0.0	0.0	22.6	(3.0)	0.0	0.0	NA	NA	(3.0)
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	0.0	0.0	5,400.5	109.0	0.0	0.0	NA	NA	109.0
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	0.0	0.0	NA	NA	5,768.3	2,244.0	0.0	0.0	0.0	0.0	2,244.0
Yard Trimmings	8,224.9	0.0	0.0	NA	NA	8,224.9	452.2	0.0	0.0	0.0	0.0	452.2
Grass	1,417.1	0.0	0.0	NA	NA	1,417.1	199.0	0.0	0.0	0.0	0.0	199.0
Leaves	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	0.0	0.0	NA	NA	230.3	4.6	0.0	0.0	0.0	0.0	4.6
Mixed Paper (general)	4,983.8	NA	NA	0.0	0.0	4,983.8	1,837.2	0.0	0.0	NA	NA	1,837.2
Mixed Paper (primarily residential)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	NA	NA	0.0	0.0	2,536.6	26.9	0.0	0.0	NA	NA	26.9
Mixed Plastics	1,034.8	NA	NA	0.0	0.0	1,034.8	11.0	0.0	0.0	NA	NA	11.0
Mixed Recyclables	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	NA	NA	3,169.0	714.1	0.0	0.0	0.0	0.0	714.1
Mixed MSW	1,835.8	NA	NA	NA	NA	1,835.8	1,549.9	0.0	0.0	NA	NA	1,549.9
Carpet	1,204.1	0.0	0.0	0.0	0.0	1,204.1	12.7	0.0	0.0	NA	NA	12.7
Personal Computers	202.6	0.0	0.0	0.0	0.0	202.6	2.1	0.0	0.0	NA	NA	2.1
Clay Bricks	1,179.6	0.0	0.0	NA	NA	1,179.6	12.5	NA	NA	NA	NA	12.5
Concrete	452.8	NA	NA	0.0	0.0	452.8	4.8	NA	NA	NA	NA	4.8
Fly Ash	47.3	NA	NA	0.0	0.0	47.3	0.5	NA	NA	NA	NA	0.5
Tires	215.7	0.0	0.0	0.0	0.0	215.7	2.3	0.0	0.0	NA	NA	2.3
Asphalt Concrete	1,617.4	0.0	0.0	0.0	0.0	1,617.4	17.1	NA	NA	NA	NA	17.1
Asphalt Shingles	1,050.9	0.0	0.0	0.0	0.0	1,050.9	11.1	0.0	0.0	NA	NA	11.1
Drywall	2,639.4	0.0	0.0	0.0	0.0	2,639.4	91.1	NA	NA	NA	NA	91.1
Fiberglass Insulation	830.7	0.0	0.0	NA	NA	830.7	8.8	NA	NA	NA	NA	8.8
Vinyl Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	0.0	0.0	49,660.0	8,054.7	0.0	0.0	0.0	0.0	8,054.7

Incremental GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

Material	Source Reduction (Tons)	Incremental GHG Emissions from Source Reduction (MTCE)	Incremental Recycling (Tons)	Incremental GHG Emissions from Recycling (MTCE)	Incremental Landfilling (Tons)	Incremental GHG Emissions from Landfilling (MTCE)	Incremental Combustion (Tons)	Incremental GHG Emissions from Combustion (MTCE)	Incremental Composting (Tons)	Incremental GHG Emissions from Composting (MTCE)	Total Incremental GHG Emissions (MTCE)
Aluminum Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Aluminum Ingot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Steel Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Copper Wire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Glass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
HDPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LLDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PP	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Magazines/third-class mail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Newspaper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Office Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Phonebooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yard Trimmings	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grass	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leaves	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed Paper (general)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily residential)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Plastics	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Recyclables	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed MSW	NA	NA	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Carpet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Personal Computers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Clay Bricks	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Concrete	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fly Ash	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Tires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Asphalt Concrete	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Asphalt Shingles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Drywall	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fiberglass Insulation	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Vinyl Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement

Waste Reduction Model (WARM) -- Results

Total GHG Emissions from Baseline MSW Generation and Management (MTCE):	8,055
Total GHG Emissions from Alternative MSW Generation and Management (MTCE):	8,055
Incremental GHG Emissions (MTCE):	-

MTCE = metric tons of carbon equivalent

Per Ton Estimates of GHG Emissions for Alternative Management Scenarios

Material	GHG Emissions per Ton of Material Source Reduced (MTCE)	GHG Emissions per Ton of Material Recycled (MTCE)	GHG Emissions per Ton of Material Landfilled (MTCE)	GHG Emissions per Ton of Material Combusted (MTCE)	GHG Emissions per Ton of Material Composted (MTCE)
Aluminum Cans	(1.35)	(2.42)	0.01	0.01	NA
Aluminum Ingot	(1.98)	(1.90)	0.01	0.01	NA
Steel Cans	(0.87)	(0.49)	0.01	(0.42)	NA
Copper Wire	(1.98)	(1.33)	0.01	0.01	NA
Glass	(0.14)	(0.08)	0.01	0.01	NA
HDPE	(0.40)	(0.23)	0.01	0.46	NA
LDPE	(0.49)	NA	0.01	0.46	NA
PET	(0.61)	(0.30)	0.01	0.40	NA
LLDPE	(0.43)	NA	0.01	0.46	NA
PP	(0.42)	NA	0.01	0.46	NA
PS	(0.68)	NA	0.01	0.55	NA
PVC	(0.54)	NA	0.01	0.23	NA
PLA	(0.59)	NA	(0.44)	(0.12)	(0.05)
Corrugated Containers	(1.53)	(0.85)	0.41	(0.09)	NA
Magazines/third-class mail	(2.36)	(0.84)	0.04	(0.06)	NA
Newspaper	(1.32)	(0.76)	(0.13)	(0.10)	NA
Office Paper	(2.18)	(0.78)	1.01	(0.09)	NA
Phonebooks	(1.71)	(0.72)	(0.13)	(0.10)	NA
Textbooks	(2.49)	(0.85)	1.01	(0.09)	NA
Dimensional Lumber	(0.55)	(0.67)	0.02	(0.11)	NA
Medium-density Fiberboard	(0.61)	(0.67)	0.02	(0.11)	NA
Food Scraps	0.00	NA	0.39	(0.02)	(0.05)
Yard Trimmings	0.00	NA	0.05	(0.03)	(0.05)
Grass	0.00	NA	0.14	(0.03)	(0.05)
Leaves	0.00	NA	(0.08)	(0.03)	(0.05)
Branches	0.00	NA	0.02	(0.03)	(0.05)
Mixed Paper (general)	NA	(0.96)	0.37	(0.09)	NA
Mixed Paper (primarily residential)	NA	(0.96)	0.33	(0.09)	NA
Mixed Paper (primarily from offices)	NA	(0.98)	0.39	(0.08)	NA
Mixed Metals	NA	(1.08)	0.01	(0.29)	NA
Mixed Plastics	NA	(0.27)	0.01	0.43	NA
Mixed Recyclables	NA	(0.76)	0.28	(0.08)	NA
Mixed Organics	NA	NA	0.23	(0.02)	(0.05)
Mixed MSW	NA	NA	0.84	0.02	NA
Carpet	(1.08)	(0.65)	0.01	0.34	NA
Personal Computers	(14.77)	(0.64)	0.01	(0.04)	NA
Clay Bricks	(0.08)	NA	0.01	NA	NA
Concrete	NA	(0.00)	0.01	NA	NA
Fly Ash	NA	(0.24)	0.01	NA	NA
Tires	(1.18)	(0.11)	0.01	0.14	NA
Asphalt Concrete	(0.03)	(0.02)	0.01	NA	NA
Asphalt Shingles	(0.05)	(0.02)	0.01	(0.09)	NA
Drywall	(0.06)	0.01	0.03	NA	NA
Fiberglass Insulation	(0.11)	NA	0.01	NA	NA
Vinyl Flooring	(0.17)	NA	0.01	(0.04)	NA
Wood Flooring	(1.11)	NA	0.02	(0.14)	NA

Energy Use from Baseline Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Estimated Recycling (Tons)	Annual Energy Consumption from Recycling (million BTU)	Estimated Landfilling (Tons)	Annual Energy Consumption from Landfilling (million BTU)	Estimated Combustion (Tons)	Annual Energy Consumption from Combustion (million BTU)	Estimated Composting (Tons)	Annual Energy Consumption from Composting (million BTU)	Total Annual Energy Consumption (million BTU)
Aluminum Cans	44.8	0.0	0.0	44.8	23.6	0.0	0.0	NA	NA	23.6
Aluminum Ingot	78.9	0.0	0.0	78.9	41.6	0.0	0.0	NA	NA	41.6
Steel Cans	240.9	0.0	0.0	240.9	127.0	0.0	0.0	NA	NA	127.0
Copper Wire	750.9	0.0	0.0	750.9	396.1	0.0	0.0	NA	NA	396.1
Glass	530.0	0.0	0.0	530.0	279.5	0.0	0.0	NA	NA	279.5
HDPE	147.8	0.0	0.0	147.8	77.9	0.0	0.0	NA	NA	77.9
LDPE	1,589.9	NA	NA	1,589.9	838.5	0.0	0.0	NA	NA	838.5
PET	187.0	0.0	0.0	187.0	98.6	0.0	0.0	NA	NA	98.6
LLDPE	454.7	NA	NA	454.7	239.8	0.0	0.0	NA	NA	239.8
PP	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	152.7	80.5	0.0	0.0	NA	NA	80.5
Magazines/third-class mail	265.1	0.0	0.0	265.1	139.8	0.0	0.0	NA	NA	139.8
Newspaper	468.3	0.0	0.0	468.3	247.0	0.0	0.0	NA	NA	247.0
Office Paper	685.0	0.0	0.0	685.0	361.3	0.0	0.0	NA	NA	361.3
Phonebooks	22.6	0.0	0.0	22.6	11.9	0.0	0.0	NA	NA	11.9
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	5,400.5	2,848.2	0.0	0.0	NA	NA	2,848.2
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	NA	NA	5,768.3	3,042.2	0.0	0.0	0.0	0.0	3,042.2
Yard Trimmings	8,224.9	NA	NA	8,224.9	4,337.8	0.0	0.0	0.0	0.0	4,337.8
Grass	1,417.1	NA	NA	1,417.1	747.4	0.0	0.0	0.0	0.0	747.4
Leaves	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	NA	NA	230.3	121.4	0.0	0.0	0.0	0.0	121.4
Mixed Paper (general)	4,983.8	0.0	0.0	4,983.8	2,628.5	0.0	0.0	NA	NA	2,628.5
Mixed Paper (primarily residential)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	0.0	0.0	2,536.6	1,337.8	0.0	0.0	NA	NA	1,337.8
Mixed Plastics	1,034.8	0.0	0.0	1,034.8	545.7	0.0	0.0	NA	NA	545.7
Mixed Recyclables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	3,169.0	1,671.3	0.0	0.0	0.0	0.0	1,671.3
Mixed MSW	1,835.8	NA	NA	1,835.8	968.2	0.0	0.0	NA	NA	968.2
Carpet	1,204.1	0.0	0.0	1,204.1	635.0	0.0	0.0	NA	NA	635.0
Personal Computers	202.6	0.0	0.0	202.6	106.9	0.0	0.0	NA	NA	106.9
Clay Bricks	1,179.6	NA	NA	1,179.6	622.1	NA	NA	NA	NA	622.1
Concrete	452.8	0.0	0.0	452.8	238.8	NA	NA	NA	NA	238.8
Fly Ash	47.3	0.0	0.0	47.3	24.9	NA	NA	NA	NA	24.9
Tires	215.7	0.0	0.0	215.7	113.7	0.0	0.0	NA	NA	113.7
Asphalt Concrete	1,617.4	0.0	0.0	1,617.4	853.0	NA	NA	NA	NA	853.0
Asphalt Shingles	1,050.9	0.0	0.0	1,050.9	554.3	0.0	0.0	NA	NA	554.3
Drywall	2,639.4	0.0	0.0	2,639.4	1,392.0	NA	NA	NA	NA	1,392.0
Fiberglass Insulation	830.7	NA	NA	830.7	438.1	NA	NA	NA	NA	438.1
Vinyl Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	49,660.0	26,190.7	0.0	0.0	0.0	0.0	26,190.7

Energy Use from Projected Alternative Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Projected Source Reduction (Tons)	Annual Energy Consumption from Source Reduction (million BTU)	Projected Recycling (Tons)	Annual Energy Consumption from Recycling (million BTU)	Projected Landfilling (Tons)	Annual Energy Consumption from Landfilling (million BTU)	Projected Combustion (Tons)	Annual Energy Consumption from Combustion (million BTU)	Projected Composting (Tons)	Annual Energy Consumption from Composting (million BTU)	Total Annual Energy Consumption (million BTU)
Aluminum Cans	44.8	0.0	0.0	0.0	0.0	44.8	23.6	0.0	0.0	NA	NA	23.6
Aluminum Ingot	78.9	0.0	0.0	0.0	0.0	78.9	41.6	0.0	0.0	NA	NA	41.6
Steel Cans	240.9	0.0	0.0	0.0	0.0	240.9	127.0	0.0	0.0	NA	NA	127.0
Copper Wire	750.9	0.0	0.0	0.0	0.0	750.9	396.1	0.0	0.0	NA	NA	396.1
Glass	530.0	0.0	0.0	0.0	0.0	530.0	279.5	0.0	0.0	NA	NA	279.5
HDPE	147.8	0.0	0.0	0.0	0.0	147.8	77.9	0.0	0.0	NA	NA	77.9
LDPE	1,589.9	0.0	0.0	NA	NA	1,589.9	838.5	0.0	0.0	NA	NA	838.5
PET	187.0	0.0	0.0	0.0	0.0	187.0	98.6	0.0	0.0	NA	NA	98.6
LLDPE	454.7	0.0	0.0	NA	NA	454.7	239.8	0.0	0.0	NA	NA	239.8
PP	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	0.0	0.0	152.7	80.5	0.0	0.0	NA	NA	80.5
Magazines/third-class mail	265.1	0.0	0.0	0.0	0.0	265.1	139.8	0.0	0.0	NA	NA	139.8
Newspaper	468.3	0.0	0.0	0.0	0.0	468.3	247.0	0.0	0.0	NA	NA	247.0
Office Paper	685.0	0.0	0.0	0.0	0.0	685.0	361.3	0.0	0.0	NA	NA	361.3
Phonebooks	22.6	0.0	0.0	0.0	0.0	22.6	11.9	0.0	0.0	NA	NA	11.9
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	0.0	0.0	5,400.5	2,848.2	0.0	0.0	NA	NA	2,848.2
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	0.0	0.0	NA	NA	5,768.3	3,042.2	0.0	0.0	0.0	0.0	3,042.2
Yard Trimmings	8,224.9	0.0	0.0	NA	NA	8,224.9	4,337.8	0.0	0.0	0.0	0.0	4,337.8
Grass	1,417.1	0.0	0.0	NA	NA	1,417.1	747.4	0.0	0.0	0.0	0.0	747.4
Leaves	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	0.0	0.0	NA	NA	230.3	121.4	0.0	0.0	0.0	0.0	121.4
Mixed Paper (general)	4,983.8	NA	NA	0.0	0.0	4,983.8	2,628.5	0.0	0.0	NA	NA	2,628.5
Mixed Paper (primarily residential)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	NA	NA	0.0	0.0	2,536.6	1,337.8	0.0	0.0	NA	NA	1,337.8
Mixed Plastics	1,034.8	NA	NA	0.0	0.0	1,034.8	545.7	0.0	0.0	NA	NA	545.7
Mixed Recyclables	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	NA	NA	3,169.0	1,671.3	0.0	0.0	0.0	0.0	1,671.3
Mixed MSW	1,835.8	NA	NA	NA	NA	1,835.8	968.2	0.0	0.0	NA	NA	968.2
Carpet	1,204.1	0.0	0.0	0.0	0.0	1,204.1	635.0	0.0	0.0	NA	NA	635.0
Personal Computers	202.6	0.0	0.0	0.0	0.0	202.6	106.9	0.0	0.0	NA	NA	106.9
Clay Bricks	1,179.6	0.0	0.0	NA	NA	1,179.6	622.1	NA	NA	NA	NA	622.1
Concrete	452.8	NA	NA	0.0	0.0	452.8	238.8	NA	NA	NA	NA	238.8
Fly Ash	47.3	NA	NA	0.0	0.0	47.3	24.9	NA	NA	NA	NA	24.9
Tires	215.7	0.0	0.0	0.0	0.0	215.7	113.7	0.0	0.0	NA	NA	113.7
Asphalt Concrete	1,617.4	0.0	0.0	0.0	0.0	1,617.4	853.0	NA	NA	NA	NA	853.0
Asphalt Shingles	1,050.9	0.0	0.0	0.0	0.0	1,050.9	554.3	0.0	0.0	NA	NA	554.3
Drywall	2,639.4	0.0	0.0	0.0	0.0	2,639.4	1,392.0	NA	NA	NA	NA	1,392.0
Fiberglass Insulation	830.7	0.0	0.0	NA	NA	830.7	438.1	NA	NA	NA	NA	438.1
Vinyl Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	0.0	0.0	49,660.0	26,190.7	0.0	0.0	0.0	0.0	26,190.7

Incremental Energy Use from Projected Alternative Management of Municipal Solid Wastes

Material	Source Reduction (Tons)	Incremental Energy Consumption from Source Reduction (million BTU)	Incremental Recycling (Tons)	Incremental Energy Consumption from Recycling (million BTU)	Incremental Landfilling (Tons)	Incremental Energy Consumption from Landfilling (million BTU)	Incremental Combustion (Tons)	Incremental Energy Consumption from Combustion (million BTU)	Incremental Composting (Tons)	Incremental Energy Consumption from Composting (million BTU)	Total Incremental GHG Energy Consumption (million BTU)
Aluminum Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Aluminum Ingot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Steel Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Copper Wire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Glass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
HDPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LLDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PP	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Magazines/third-class mail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Newspaper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Office Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Phonebooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yard Trimmings	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grass	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leaves	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed Paper (general)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily residential)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Plastics	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Recyclables	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed MSW	NA	NA	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Carpet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Personal Computers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Clay Bricks	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Concrete	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fly Ash	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Tires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Asphalt Concrete	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Asphalt Shingles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Drywall	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fiberglass Insulation	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Vinyl Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement

WAste Reduction Model (WARM) -- Results

Total Energy Use from Baseline MSW Generation and Management (million BTU):	26,191
Total Energy Use from Alternative MSW Generation and Management (million BTU):	26,191
Incremental Energy Use (million BTU):	0

BTU = british thermal unit

Per Ton Estimates of Energy Use for Alternative Management Scenarios

Material	Energy Savings per Ton of Material Source Reduced (million BTU)	Energy Savings per Ton of Material Recycled (million BTU)	Energy Savings per Ton of Material Landfilled (million BTU)	Energy Savings per Ton of Material Combusted (million BTU)	Energy Savings per Ton of Material Composted (million BTU)
Aluminum Cans	(89.68)	(152.76)	0.53	0.58	NA
Aluminum Ingot	(126.94)	(113.85)	0.53	0.58	NA
Steel Cans	(30.82)	(19.97)	0.53	(17.13)	NA
Copper Wire	(122.34)	(82.59)	0.53	0.53	NA
Glass	(6.93)	(2.13)	0.53	0.50	NA
HDPE	(61.27)	(50.37)	0.53	(16.82)	NA
LDPE	(71.09)	NA	0.53	(16.73)	NA
PET	(50.39)	(32.07)	0.53	(8.78)	NA
LLDPE	(66.43)	NA	0.53	(16.78)	NA
PP	(66.67)	NA	0.53	(16.79)	NA
PS	(75.05)	NA	0.53	(15.12)	NA
PVC	(48.48)	NA	0.53	(6.45)	NA
PLA	(30.42)	NA	0.53	(6.87)	0.58
Corrugated Containers	(22.01)	(15.06)	0.53	(5.73)	NA
Magazines/third-class mail	(33.22)	(0.69)	0.53	(4.21)	NA
Newspaper	(36.45)	(16.49)	0.53	(6.51)	NA
Office Paper	(36.59)	(10.08)	0.53	(5.53)	NA
Phonebooks	(40.19)	(11.93)	0.53	(6.51)	NA
Textbooks	(35.59)	(1.03)	0.53	(5.53)	NA
Dimensional Lumber	(3.53)	0.59	0.53	(6.81)	NA
Medium-density Fiberboard	(11.61)	0.86	0.53	(6.81)	NA
Food Scraps	0.00	NA	0.53	(1.73)	0.58
Yard Trimmings	0.00	NA	0.53	(2.10)	0.58
Grass	0.00	NA	0.53	(2.10)	0.58
Leaves	0.00	NA	0.53	(2.10)	0.58
Branches	0.00	NA	0.53	(2.10)	0.58
Mixed Paper (general)	NA	(20.40)	0.53	(5.76)	NA
Mixed Paper (primarily residential)	NA	(20.40)	0.53	(5.73)	NA
Mixed Paper (primarily from offices)	NA	(20.85)	0.53	(5.27)	NA
Mixed Metals	NA	(60.64)	0.53	(11.70)	NA
Mixed Plastics	NA	(41.30)	0.53	(12.83)	NA
Mixed Recyclables	NA	(14.99)	0.53	(5.91)	NA
Mixed Organics	NA	NA	0.53	(1.91)	0.58
Mixed MSW	NA	NA	0.53	(3.99)	NA
Carpet	(91.06)	(21.57)	0.53	(6.21)	NA
Personal Computers	(956.74)	(29.69)	0.53	(6.05)	NA
Clay Bricks	(5.13)	NA	0.53	NA	NA
Concrete	NA	(0.11)	0.53	NA	NA
Fly Ash	NA	(4.77)	0.53	NA	NA
Tires	(71.63)	(3.71)	0.53	(28.49)	NA
Asphalt Concrete	(1.68)	(1.22)	0.53	NA	NA
Asphalt Shingles	(3.17)	(2.46)	0.53	(8.50)	NA
Drywall	(3.59)	(2.64)	0.53	NA	NA
Fiberglass Insulation	(4.76)	NA	0.53	NA	NA
Vinyl Flooring	(10.66)	NA	0.53	(6.45)	NA
Wood Flooring	(14.45)	NA	0.53	(9.01)	NA

Energy Analysis -- Summary Report

Version 12

GHG Emissions Waste Management Analysis for TPC/DC&E
Prepared by: Danville 2008
Project Period for this Analysis: 01/00/00 to 01/00/00

Energy Use from Baseline Waste Management (million BTU): 26,191

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total Million BTU
Aluminum Cans	-	44.8	-	NA	24
Aluminum Ingot	-	78.9	-	NA	42
Steel Cans	-	240.9	-	NA	127
Copper Wire	-	750.9	-	NA	396
Glass	-	530.0	-	NA	280
HDPE	-	147.8	-	NA	78
LDPE	NA	1,589.9	-	NA	839
PET	-	187.0	-	NA	99
LLDPE	NA	454.7	-	NA	240
Corrugated Containers	-	152.7	-	NA	81
Magazines/third-class mail	-	265.1	-	NA	140
Newspaper	-	468.3	-	NA	247
Office Paper	-	685.0	-	NA	361
Phonebooks	-	22.6	-	NA	12
Dimensional Lumber	-	5,400.5	-	NA	2,848
Food Scraps	NA	5,768.3	-	-	3,042
Yard Trimmings	NA	8,224.9	-	-	4,338
Grass	NA	1,417.1	-	-	747
Branches	NA	230.3	-	-	121
Mixed Paper (general)	-	4,983.8	-	NA	2,628
Mixed Metals	-	2,536.6	-	NA	1,338
Mixed Plastics	-	1,034.8	-	NA	546
Mixed Organics	NA	3,169.0	-	-	1,671
Mixed MSW	NA	1,835.8	-	NA	968
Carpet	-	1,204.1	-	NA	635
Personal Computers	-	202.6	-	NA	107
Clay Bricks	NA	1,179.6	NA	NA	622
Concrete	-	452.8	NA	NA	239
Fly Ash	-	47.3	NA	NA	25
Tires	-	215.7	-	NA	114
Asphalt Concrete	-	1,617.4	NA	NA	853
Asphalt Shingles	-	1,050.9	-	NA	554
Drywall	-	2,639.4	NA	NA	1,392
Fiberglass Insulation	NA	830.7	NA	NA	438
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0

Energy Use from Alternative Waste Management Scenario (million BTU): 26,191

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total Million BTU	Change (Alt - Base) BTU
Aluminum Cans	-	-	44.8	-	NA	24	0
Aluminum Ingot	-	-	78.9	-	NA	42	0
Steel Cans	-	-	240.9	-	NA	127	0
Copper Wire	-	-	750.9	-	NA	396	0
Glass	-	-	530.0	-	NA	280	0
HDPE	-	-	147.8	-	NA	78	0
LDPE	-	NA	1,589.9	-	NA	839	0
PET	-	-	187.0	-	NA	99	0
LLDPE	-	NA	454.7	-	NA	240	0
Corrugated Containers	-	-	152.7	-	NA	81	0
Magazines/third-class mail	-	-	265.1	-	NA	140	0
Newspaper	-	-	468.3	-	NA	247	0
Office Paper	-	-	685.0	-	NA	361	0
Phonebooks	-	-	22.6	-	NA	12	0
Dimensional Lumber	-	-	5,400.5	-	NA	2,848	0
Food Scraps	-	NA	5,768.3	-	-	3,042	0
Yard Trimmings	-	NA	8,224.9	-	-	4,338	0
Grass	-	NA	1,417.1	-	-	747	0
Branches	-	NA	230.3	-	-	121	0
Mixed Paper (general)	NA	-	4,983.8	-	NA	2,628	0
Mixed Metals	NA	-	2,536.6	-	NA	1,338	0
Mixed Plastics	NA	-	1,034.8	-	NA	546	0
Mixed Organics	NA	NA	3,169.0	-	-	1,671	0
Mixed MSW	NA	NA	1,835.8	-	NA	968	0
Carpet	-	-	1,204.1	-	NA	635	0
Personal Computers	-	-	202.6	-	NA	107	0
Clay Bricks	-	NA	1,179.6	NA	NA	622	0
Concrete	NA	-	452.8	NA	NA	239	0
Fly Ash	NA	-	47.3	NA	NA	25	0
Tires	-	-	215.7	-	NA	114	0
Asphalt Concrete	-	-	1,617.4	NA	NA	853	0
Asphalt Shingles	-	-	1,050.9	-	NA	554	0
Drywall	-	-	2,639.4	NA	NA	1,392	0
Fiberglass Insulation	-	NA	830.7	NA	NA	438	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0

Total Change in Energy Use (million BTU): 0

This is equivalent to…

Conserving	**0**	Households' Annual Energy Consumption
Conserving	**0**	Barrels of Oil
Conserving	**0**	Gallons of Gasoline

Note: a negative value (i.e., a value in parentheses) indicates a reduction in energy consumption; a positive value indicates an increase.

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks
(EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

GHG Emissions from Baseline Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Estimated Recycling (Tons)	Annual GHG Emissions from Recycling ($MTCO_2E$)	Estimated Landfilling (Tons)	Annual GHG Emissions from Landfilling ($MTCO_2E$)	Estimated Combustion (Tons)	Annual GHG Emissions from Combustion ($MTCO_2E$)	Estimated Composting (Tons)	Annual GHG Emissions from Composting ($MTCO_2E$)	Total Annual GHG Emissions ($MTCO_2E$)
Aluminum Cans	44.8	0.0	0.0	44.8	1.7	0.0	0.0	NA	NA	1.7
Aluminum Ingot	78.9	0.0	0.0	78.9	3.1	0.0	0.0	NA	NA	3.1
Steel Cans	240.9	0.0	0.0	240.9	9.3	0.0	0.0	NA	NA	9.3
Copper Wire	750.9	0.0	0.0	750.9	29.1	0.0	0.0	NA	NA	29.1
Glass	530.0	0.0	0.0	530.0	20.6	0.0	0.0	NA	NA	20.6
HDPE	147.8	0.0	0.0	147.8	5.7	0.0	0.0	NA	NA	5.7
LDPE	1,589.9	NA	NA	1,589.9	61.7	0.0	0.0	NA	NA	61.7
PET	187.0	0.0	0.0	187.0	7.3	0.0	0.0	NA	NA	7.3
LLDPE	454.7	NA	NA	454.7	17.6	0.0	0.0	NA	NA	17.6
PP	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	152.7	227.0	0.0	0.0	NA	NA	227.0
Magazines/third-class mail	265.1	0.0	0.0	265.1	36.6	0.0	0.0	NA	NA	36.6
Newspaper	468.3	0.0	0.0	468.3	(225.5)	0.0	0.0	NA	NA	(225.5)
Office Paper	685.0	0.0	0.0	685.0	2,543.7	0.0	0.0	NA	NA	2,543.7
Phonebooks	22.6	0.0	0.0	22.6	(10.9)	0.0	0.0	NA	NA	(10.9)
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	5,400.5	399.7	0.0	0.0	NA	NA	399.7
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	NA	NA	5,768.3	8,228.0	0.0	0.0	0.0	0.0	8,228.0
Yard Trimmings	8,224.9	NA	NA	8,224.9	1,658.1	0.0	0.0	0.0	0.0	1,658.1
Grass	1,417.1	NA	NA	1,417.1	729.7	0.0	0.0	0.0	0.0	729.7
Leaves	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	NA	NA	230.3	17.0	0.0	0.0	0.0	0.0	17.0
Mixed Paper (general)	4,983.8	0.0	0.0	4,983.8	6,736.5	0.0	0.0	NA	NA	6,736.5
Mixed Paper (primarily residential)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	0.0	0.0	2,536.6	98.5	0.0	0.0	NA	NA	98.5
Mixed Plastics	1,034.8	0.0	0.0	1,034.8	40.2	0.0	0.0	NA	NA	40.2
Mixed Recyclables	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	3,169.0	2,618.3	0.0	0.0	0.0	0.0	2,618.3
Mixed MSW	1,835.8	NA	NA	1,835.8	5,682.9	0.0	0.0	NA	NA	5,682.9
Carpet	1,204.1	0.0	0.0	1,204.1	46.7	0.0	0.0	NA	NA	46.7
Personal Computers	202.6	0.0	0.0	202.6	7.9	0.0	0.0	NA	NA	7.9
Clay Bricks	1,179.6	NA	NA	1,179.6	45.8	NA	NA	NA	NA	45.8
Concrete	452.8	0.0	0.0	452.8	17.6	NA	NA	NA	NA	17.6
Fly Ash	47.3	0.0	0.0	47.3	1.8	NA	NA	NA	NA	1.8
Tires	215.7	0.0	0.0	215.7	8.4	0.0	0.0	NA	NA	8.4
Asphalt Concrete	1,617.4	0.0	0.0	1,617.4	62.8	NA	NA	NA	NA	62.8
Asphalt Shingles	1,050.9	0.0	0.0	1,050.9	40.8	0.0	0.0	NA	NA	40.8
Drywall	2,639.4	0.0	0.0	2,639.4	334.1	NA	NA	NA	NA	334.1
Fiberglass Insulation	830.7	NA	NA	830.7	32.2	NA	NA	NA	NA	32.2
Vinyl Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	49,660.0	29,533.9	0.0	0.0	0.0	0.0	29,533.9

GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

Material	Baseline Generation of Material (Tons)	Projected Source Reduction (Tons)	Annual GHG Emissions from Source Reduction ($MTCO_2E$)	Projected Recycling (Tons)	Annual GHG Emissions from Recycling ($MTCO_2E$)	Projected Landfilling (Tons)	Annual GHG Emissions from Landfilling ($MTCO_2E$)	Projected Combustion (Tons)	Annual GHG Emissions from Combustion ($MTCO_2E$)	Projected Composting (Tons)	Annual GHG Emissions from Composting ($MTCO_2E$)	Total Annual GHG Emissions ($MTCO_2E$)
Aluminum Cans	44.8	0.0	0.0	0.0	0.0	44.8	1.7	0.0	0.0	NA	NA	1.7
Aluminum Ingot	78.9	0.0	0.0	0.0	0.0	78.9	3.1	0.0	0.0	NA	NA	3.1
Steel Cans	240.9	0.0	0.0	0.0	0.0	240.9	9.3	0.0	0.0	NA	NA	9.3
Copper Wire	750.9	0.0	0.0	0.0	0.0	750.9	29.1	0.0	0.0	NA	NA	29.1
Glass	530.0	0.0	0.0	0.0	0.0	530.0	20.6	0.0	0.0	NA	NA	20.6
HDPE	147.8	0.0	0.0	0.0	0.0	147.8	5.7	0.0	0.0	NA	NA	5.7
LDPE	1,589.9	0.0	0.0	NA	NA	1,589.9	61.7	0.0	0.0	NA	NA	61.7
PET	187.0	0.0	0.0	0.0	0.0	187.0	7.3	0.0	0.0	NA	NA	7.3
LLDPE	454.7	0.0	0.0	NA	NA	454.7	17.6	0.0	0.0	NA	NA	17.6
PP	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	152.7	0.0	0.0	0.0	0.0	152.7	227.0	0.0	0.0	NA	NA	227.0
Magazines/third-class mail	265.1	0.0	0.0	0.0	0.0	265.1	36.6	0.0	0.0	NA	NA	36.6
Newspaper	468.3	0.0	0.0	0.0	0.0	468.3	(225.5)	0.0	0.0	NA	NA	(225.5)
Office Paper	685.0	0.0	0.0	0.0	0.0	685.0	2,543.7	0.0	0.0	NA	NA	2,543.7
Phonebooks	22.6	0.0	0.0	0.0	0.0	22.6	(10.9)	0.0	0.0	NA	NA	(10.9)
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	5,400.5	0.0	0.0	0.0	0.0	5,400.5	399.7	0.0	0.0	NA	NA	399.7
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	5,768.3	0.0	0.0	NA	NA	5,768.3	8,228.0	0.0	0.0	0.0	0.0	8,228.0
Yard Trimmings	8,224.9	0.0	0.0	NA	NA	8,224.9	1,658.1	0.0	0.0	0.0	0.0	1,658.1
Grass	1,417.1	0.0	0.0	NA	NA	1,417.1	729.7	0.0	0.0	0.0	0.0	729.7
Leaves	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	230.3	0.0	0.0	NA	NA	230.3	17.0	0.0	0.0	0.0	0.0	17.0
Mixed Paper (general)	4,983.8	NA	NA	0.0	0.0	4,983.8	6,736.5	0.0	0.0	NA	NA	6,736.5
Mixed Paper (primarily residential)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	2,536.6	NA	NA	0.0	0.0	2,536.6	98.5	0.0	0.0	NA	NA	98.5
Mixed Plastics	1,034.8	NA	NA	0.0	0.0	1,034.8	40.2	0.0	0.0	NA	NA	40.2
Mixed Recyclables	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	3,169.0	NA	NA	NA	NA	3,169.0	2,618.3	0.0	0.0	0.0	0.0	2,618.3
Mixed MSW	1,835.8	NA	NA	NA	NA	1,835.8	5,682.9	0.0	0.0	NA	NA	5,682.9
Carpet	1,204.1	0.0	0.0	0.0	0.0	1,204.1	46.7	0.0	0.0	NA	NA	46.7
Personal Computers	202.6	0.0	0.0	0.0	0.0	202.6	7.9	0.0	0.0	NA	NA	7.9
Clay Bricks	1,179.6	0.0	0.0	NA	NA	1,179.6	45.8	NA	NA	NA	NA	45.8
Concrete	452.8	NA	NA	0.0	0.0	452.8	17.6	NA	NA	NA	NA	17.6
Fly Ash	47.3	NA	NA	0.0	0.0	47.3	1.8	NA	NA	NA	NA	1.8
Tires	215.7	0.0	0.0	0.0	0.0	215.7	8.4	0.0	0.0	NA	NA	8.4
Asphalt Concrete	1,617.4	0.0	0.0	0.0	0.0	1,617.4	62.8	NA	NA	NA	NA	62.8
Asphalt Shingles	1,050.9	0.0	0.0	0.0	0.0	1,050.9	40.8	0.0	0.0	NA	NA	40.8
Drywall	2,639.4	0.0	0.0	0.0	0.0	2,639.4	334.1	NA	NA	NA	NA	334.1
Fiberglass Insulation	830.7	0.0	0.0	NA	NA	830.7	32.2	NA	NA	NA	NA	32.2
Vinyl Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	49,660.0	0.0	0.0	0.0	0.0	49,660.0	29,533.9	0.0	0.0	0.0	0.0	29,533.9

Incremental GHG Emissions from Projected Alternative Management of Municipal Solid Wastes

Material	Source Reduction (Tons)	Incremental GHG Emissions from Source Reduction ($MTCO_2E$)	Incremental Recycling (Tons)	Incremental GHG Emissions from Recycling ($MTCO_2E$)	Incremental Landfilling (Tons)	Incremental GHG Emissions from Landfilling ($MTCO_2E$)	Incremental Combustion (Tons)	Incremental GHG Emissions from Combustion ($MTCO_2E$)	Incremental Composting (Tons)	Incremental GHG Emissions from Composting ($MTCO_2E$)	Total Incremental GHG Emissions ($MTCO_2E$)
Aluminum Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Aluminum Ingot	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Steel Cans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Copper Wire	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Glass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
HDPE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PET	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
LLDPE	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PP	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PS	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PVC	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
PLA	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corrugated Containers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Magazines/third-class mail	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Newspaper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Office Paper	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Phonebooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Textbooks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Dimensional Lumber	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Medium-density Fiberboard	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Food Scraps	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yard Trimmings	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grass	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Leaves	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Branches	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed Paper (general)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily residential)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Paper (primarily from offices)	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Metals	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Plastics	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Recyclables	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Mixed Organics	NA	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mixed MSW	NA	NA	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Carpet	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Personal Computers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Clay Bricks	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Concrete	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fly Ash	NA	NA	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Tires	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Asphalt Concrete	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Asphalt Shingles	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	0.0
Drywall	0.0	0.0	0.0	0.0	0.0	0.0	NA	NA	NA	NA	0.0
Fiberglass Insulation	0.0	0.0	NA	NA	0.0	0.0	NA	NA	NA	NA	0.0
Vinyl Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Wood Flooring	0.0	0.0	NA	NA	0.0	0.0	0.0	0.0	NA	NA	0.0
Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

Waste Reduction Model (WARM) -- Results

Total GHG Emissions from Baseline MSW Generation and Management ($MTCO_2E$):	29,534
Total GHG Emissions from Alternative MSW Generation and Management ($MTCO_2E$):	29,534
Incremental GHG Emissions ($MTCO_2E$):	-

$MTCO_2E$ = metric tons of carbon dioxide equivalent

Per Ton Estimates of GHG Emissions for Alternative Management Scenarios

Material	GHG Emissions per Ton of Material Source Reduced ($MTCO_2E$)	GHG Emissions per Ton of Material Recycled ($MTCO_2E$)	GHG Emissions per Ton of Material Landfilled ($MTCO_2E$)	GHG Emissions per Ton of Material Combusted ($MTCO_2E$)	GHG Emissions per Ton of Material Composted ($MTCO_2E$)
Aluminum Cans	(4.94)	(8.89)	0.04	0.05	NA
Aluminum Ingot	(7.27)	(6.97)	0.04	0.05	NA
Steel Cans	(3.18)	(1.80)	0.04	(1.55)	NA
Copper Wire	(7.26)	(4.89)	0.04	0.04	NA
Glass	(0.53)	(0.28)	0.04	0.04	NA
HDPE	(1.47)	(0.86)	0.04	1.69	NA
LDPE	(1.79)	NA	0.04	1.70	NA
PET	(2.22)	(1.11)	0.04	1.47	NA
LLDPE	(1.57)	NA	0.04	1.70	NA
PP	(1.55)	NA	0.04	1.70	NA
PS	(2.50)	NA	0.04	2.02	NA
PVC	(1.98)	NA	0.04	0.84	NA
PLA	(2.18)	NA	(1.62)	(0.44)	(0.20)
Corrugated Containers	(5.59)	(3.11)	1.49	(0.33)	NA
Magazines/third-class mail	(8.64)	(3.07)	0.14	(0.23)	NA
Newspaper	(4.85)	(2.78)	(0.48)	(0.38)	NA
Office Paper	(7.99)	(2.85)	3.71	(0.32)	NA
Phonebooks	(6.27)	(2.65)	(0.48)	(0.38)	NA
Textbooks	(9.11)	(3.11)	3.71	(0.32)	NA
Dimensional Lumber	(2.02)	(2.46)	0.07	(0.40)	NA
Medium-density Fiberboard	(2.22)	(2.47)	0.07	(0.40)	NA
Food Scraps	0.00	NA	1.43	(0.07)	(0.20)
Yard Trimmings	0.00	NA	0.20	(0.09)	(0.20)
Grass	0.00	NA	0.51	(0.09)	(0.20)
Leaves	0.00	NA	(0.30)	(0.09)	(0.20)
Branches	0.00	NA	0.07	(0.09)	(0.20)
Mixed Paper (general)	NA	(3.52)	1.35	(0.34)	NA
Mixed Paper (primarily residential)	NA	(3.52)	1.21	(0.33)	NA
Mixed Paper (primarily from offices)	NA	(3.59)	1.43	(0.30)	NA
Mixed Metals	NA	(3.97)	0.04	(1.06)	NA
Mixed Plastics	NA	(0.98)	0.04	1.58	NA
Mixed Recyclables	NA	(2.80)	1.02	(0.29)	NA
Mixed Organics	NA	NA	0.83	(0.08)	(0.20)
Mixed MSW	NA	NA	3.10	0.07	NA
Carpet	(3.96)	(2.37)	0.04	1.26	NA
Personal Computers	(54.15)	(2.35)	0.04	(0.13)	NA
Clay Bricks	(0.28)	NA	0.04	NA	NA
Concrete	NA	(0.01)	0.04	NA	NA
Fly Ash	NA	(0.87)	0.04	NA	NA
Tires	(4.32)	(0.39)	0.04	0.51	NA
Asphalt Concrete	(0.11)	(0.08)	0.04	NA	NA
Asphalt Shingles	(0.20)	(0.09)	0.04	(0.34)	NA
Drywall	(0.22)	0.03	0.13	NA	NA
Fiberglass Insulation	(0.39)	NA	0.04	NA	NA
Vinyl Flooring	(0.62)	NA	0.04	(0.14)	NA
Wood Flooring	(4.06)	NA	0.07	(0.53)	NA

GHG Emissions Analysis -- Summary Report

Version 12

GHG Emissions Waste Management Analysis for TPC/DC&E

Prepared by: Danville 2008

Project Period for this Analysis: 01/00/00 to 01/00/00

Note: If you wish to save these results, rename this file (e.g., WARM-MN1) and save it. Then the "Analysis Inputs" sheet of the "WARM" file will be blank when you are ready to make another model run.

GHG Emissions from Baseline Waste Management ($MTCO_2E$): 29,534

Commodity	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$
Aluminum Cans	-	44.8	-	NA	2
Aluminum Ingot	-	78.9	-	NA	3
Steel Cans	-	240.9	-	NA	9
Copper Wire	-	750.9	-	NA	29
Glass	-	530.0	-	NA	21
HDPE	-	147.8	-	NA	6
LDPE	NA	1,589.9	-	NA	62
PET	-	187.0	-	NA	7
LLDPE	NA	454.7	-	NA	18
Corrugated Containers	-	152.7	-	NA	227
Magazines/third-class mail	-	265.1	-	NA	37
Newspaper	-	468.3	-	NA	(226)
Office Paper	-	685.0	-	NA	2,544
Phonebooks	-	22.6	-	NA	(11)
Dimensional Lumber	-	5,400.5	-	NA	400
Food Scraps	NA	5,768.3	-	-	8,228
Yard Trimmings	NA	8,224.9	-	-	1,658
Grass	NA	1,417.1	-	-	730
Branches	NA	230.3	-	-	17
Mixed Paper (general)	-	4,983.8	-	NA	6,737
Mixed Metals	-	2,536.6	-	NA	98
Mixed Plastics	-	1,034.8	-	NA	40
Mixed Organics	NA	3,169.0	-	-	2,618
Mixed MSW	NA	1,835.8	-	NA	5,683
Carpet	-	1,204.1	-	NA	47
Personal Computers	-	202.6	-	NA	8
Clay Bricks	NA	1,179.6	NA	NA	46
Concrete	-	452.8	NA	NA	18
Fly Ash	-	47.3	NA	NA	2
Tires	-	215.7	-	NA	8
Asphalt Concrete	-	1,617.4	NA	NA	63
Asphalt Shingles	-	1,050.9	-	NA	41
Drywall	-	2,639.4	NA	NA	334
Fiberglass Insulation	NA	830.7	NA	NA	32
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0
					0

GHG Emissions from Alternative Waste Management Scenario ($MTCO_2E$): 29,534

Commodity	Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Total $MTCO_2E$	Change (Alt - Base) $MTCO_2E$
Aluminum Cans	-	-	44.8	-	NA	2	0
Aluminum Ingot	-	-	78.9	-	NA	3	0
Steel Cans	-	-	240.9	-	NA	9	0
Copper Wire	-	-	750.9	-	NA	29	0
Glass	-	-	530.0	-	NA	21	0
HDPE	-	-	147.8	-	NA	6	0
LDPE	-	NA	1,589.9	-	NA	62	0
PET	-	-	187.0	-	NA	7	0
LLDPE	-	NA	454.7	-	NA	18	0
Corrugated Containers	-	-	152.7	-	NA	227	0
Magazines/third-class mail	-	-	265.1	-	NA	37	0
Newspaper	-	-	468.3	-	NA	(226)	0
Office Paper	-	-	685.0	-	NA	2,544	0
Phonebooks	-	-	22.6	-	NA	(11)	0
Dimensional Lumber	-	-	5,400.5	-	NA	400	0
Food Scraps	-	NA	5,768.3	-	-	8,228	0
Yard Trimmings	-	NA	8,224.9	-	-	1,658	0
Grass	-	NA	1,417.1	-	-	730	0
Branches	-	NA	230.3	-	-	17	0
Mixed Paper (general)	NA	-	4,983.8	-	NA	6,737	0
Mixed Metals	NA	-	2,536.6	-	NA	98	0
Mixed Plastics	NA	-	1,034.8	-	NA	40	0
Mixed Organics	NA	NA	3,169.0	-	-	2,618	0
Mixed MSW	NA	NA	1,835.8	-	NA	5,683	0
Carpet	-	-	1,204.1	-	NA	47	0
Personal Computers	-	-	202.6	-	NA	8	0
Clay Bricks	-	NA	1,179.6	NA	NA	46	0
Concrete	NA	-	452.8	NA	NA	18	0
Fly Ash	NA	-	47.3	NA	NA	2	0
Tires	-	-	215.7	-	NA	8	0
Asphalt Concrete	-	-	1,617.4	NA	NA	63	0
Asphalt Shingles	-	-	1,050.9	-	NA	41	0
Drywall	-	-	2,639.4	NA	NA	334	0
Fiberglass Insulation	-	NA	830.7	NA	NA	32	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0
						0	0

Total Change in GHG Emissions ($MTCO_2E$): -

Note: a negative value (i.e., a value in parentheses) indicates an emission reduction; a positive value indicates an emission increase.

a) For explanation of methodology, see the EPA report:
Solid Waste Management and Greenhouse Gases: A Life-Cycle Assessment of Emissions and Sinks (EPA530-R-06-004)
-- available on the Internet at http://epa.gov/climatechange/wycd/waste/downloads/fullreport.pdf (5.6 Mb PDF file).

b) Emissions estimates provided by this model are intended to support voluntary GHG measurement and reporting initiatives.

c) The GHG emissions results estimated in WARM indicate the full life-cycle benefits waste management alternatives. Due to the timing of the GHG emissions from the waste management pathways, (e.g., avoided landfilling and increased recycling), the actual GHG implications may accrue over the long-term. Therefore, one should not interpret the GHG emissions implications as occurring all in one year, but rather through time.

This is equivalent to…

Removing annual emissions from	-	Passenger Vehicles
Conserving	-	Gallons of Gasoline
Conserving	-	Cylinders of Propane Used for Home Barbeques
Conserving	-	Railway Cars of Coal
	0.00000%	Annual CO_2 emissions from the U.S. transportation sector
	0.00000%	Annual CO_2 emissions from the U.S. electricity sector

ersion 12

Waste Reduction Model (WARM) -- Inputs

Use this worksheet to describe the baseline and alternative MSW management scenarios that you want to compare. The blue shaded areas indicate where you need to enter information.

1. Describe the baseline generation and management for the MSW materials listed below. If the material is not generated in your community or you do not want to analyze it, leave it blank or enter 0. Make sure that the total quantity generated equals the total quantity managed.

Material	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted	Tons Generated
Aluminum Cans		45		NA	44.8
Aluminum Ingot		79		NA	78.9
Steel Cans		241		NA	240.9
Copper Wire		751		NA	750.9
Glass		530		NA	530.0
HDPE		148		NA	147.8
LDPE	NA	1,590		NA	1589.9
PET		187		NA	187.0
LLDPE	NA	455		NA	454.7
PP	NA	-		NA	0.0
PS	NA	-		NA	0.0
PVC	NA	-		NA	0.0
PLA	NA	-			0.0
Corrugated Containers		153		NA	152.7
Magazines/Third-class Mail		265		NA	265.1
Newspaper		468		NA	468.3
Office Paper		685		NA	685.0
Phonebooks		23		NA	22.6
Textbooks		-		NA	0.0
Dimensional Lumber		5,400		NA	5400.5
Medium-density Fiberboard		-		NA	0.0
Food Scraps	NA	5,768			5768.3
Yard Trimmings	NA	8,225			8224.9
Grass	NA	1,417			1417.1
Leaves	NA	-			0.0
Branches	NA	230			230.3
Mixed Paper (general)		4,984		NA	4983.8
Mixed Paper (primarily residential)		-		NA	0.0
Mixed Paper (primarily from offices)		-		NA	0.0
Mixed Metals		2,537		NA	2536.6
Mixed Plastics		1,035		NA	1034.8
Mixed Recyclables		-		NA	0.0
Mixed Organics	NA	3,169			3169.0
Mixed MSW	NA	1,836		NA	1835.8
Carpet		1,204		NA	1204.1
Personal Computers		203		NA	202.6
Clay Bricks	NA	1,180	NA	NA	1179.6
Concrete [1]		453	NA	NA	452.8
Fly Ash [2]		47	NA	NA	47.3
Tires [3]		216		NA	215.7
Asphalt Concrete		1,617	NA	NA	1617.4
Asphalt Shingles		1,051		NA	1050.9
Drywall		2,639	NA	NA	2639.4
Fiberglass Insulation	NA	831	NA	NA	830.7
Vinyl Flooring	NA	-		NA	0.0
Wood Flooring	NA	-		NA	0.0

2. Describe the alternative management scenario for the MSW materials generated in the baseline. Any decrease in generation should be entered in the Source Reduction column. Any increase in generation should be entered in the Source Reduction column as a negative value. (Make sure that the total quantity generated equals the total quantity managed.)

Tons Source Reduced	Tons Recycled	Tons Landfilled	Tons Combusted	Tons Composted
		45		NA
		79		NA
		241		NA
		751		NA
		530		NA
		148		NA
	NA	1,590		NA
		187		NA
	NA	455		NA
	NA	-		NA
	NA	-		NA
	NA	-		NA
	NA	-		
		153		NA
		265		NA
		468		NA
		685		NA
		23		NA
		-		NA
		5,400		NA
		-		NA
	NA	5,768		
	NA	8,225		
	NA	1,417		
	NA	-		
	NA	230		
		4,984		NA
NA		-		NA
NA		-		NA
NA		2,537		NA
NA		1,035		NA
NA		-		NA
NA	NA	3,169		
NA	NA	1,836		NA
		1,204		NA
		203		NA
	NA	1,180	NA	NA
NA		453	NA	NA
NA		47	NA	NA
		216		NA
		1,617	NA	NA
		1,051		NA
		2,639	NA	NA
	NA	831	NA	NA
	NA	-		NA
	NA	-		NA

Please enter data in short tons (1 short ton = 2,000 lbs.)

Please refer to the User's Guide if you need assistance completing this table.

[1] Recycled concrete used as aggregate in the production of new concrete

[2] Recycled fly ash is utilized to displace portland cement in concrete production.

[3] Recycling tires is defined in this analysis as using tires for crumb rubber applications and tire-derived aggregate uses in civil engineering applications

3. In order to account for the avoided electricity-related emissions in the landfilling and combustion pathways, EPA assigns the appropriate regional "marginal" electricity grid mix emission factor based on your location. Select state for which you are conducting this analysis.

Please select state or select national average:	California
Region Location:	Pacific

4. To estimate the benefits from source reduction, EPA usually assumes that the material that is source reduced would have been manufactured from the current mix of virgin and recycled inputs. However, you may choose to estimate the emission reductions from source reduction under the assumption that the material would have been manufactured from 100% virgin inputs in order to obtain an upper bound estimate of the benefits from source reduction. Select which assumption you want to use in the analysis. Note that for materials for which information on the share of recycled inputs used in production is unavailable or is not a common practice; EPA assumes that the current mix is comprised of 100% virgin inputs. Consequently, the source reduction benefits of both the "Current mix" and "100% virgin" inputs are the same.

- (●) Current Mix
- ( ) 100% Virgin

5a. The emissions from landfilling depends on whether the landfill where your waste is disposed has a landfill gas (LFG) control system. If you do not know whether your landfill has LFG control, select "National Average" to calculate emissions based on the estimated proportions of landfills with LFG control in 2009 and go to question 7. If your landfill does not have a LFG system, select "No LFG Recovery" and go to question 7. If a LFG system is in place at your landfill, select "LFG Recovery" and click one of the indented buttons in 5b to indicate whether LFG is recovered for energy or flared.

- ( ) National Average
- ( ) LFG Recovery
- (●) No LFG Recovery

5b. If your landfill has gas recovery, does it recover the methane for energy or flare it?

- ( ) Recover for energy
- ( ) Flare
- (●) Not Applicable

6a. Which of the following moisture conditions and associated bulk MSW decay rate (k) most accurately describes the average conditions at the landfill?
The decay rates, also referred to as k values, describe the rate of change per year (yr-1) for the decomposition of organic waste in landfills. A higher average decay rate means that waste decomposes faster in the landfill. Dry landfills typically receive less than 25 inches of rain annually while Average landfills receive more than 25 inches of rain annually. Wet landfills are assumed to represent a landfill that receives relatively high water infiltration. Bioreactor landfills include landfills to which water is added until the moisture content reaches 40 percent moisture on a wet weight basis.

- ( ) Dry (k=0.02)
- (●) Average (k = 0.04) - DEFAULT
- ( ) Wet (k = 0.08)
- ( ) Bioreactor (k = 0.12)

6b. For landfills that recover landfill gas, the landfill gas collection efficiency will vary throughout the life of the landfill. Based on literature and field study measurements for different landfill scenarios, the typical operation landfills represent the current practice at most landfills that capture landfill gas in the United States. The worst-cast collection represent landfills that are just barely in compliance with EPA's New Source Performance Standards (NSPS). The aggressive gas collection best-case recovery scenario for bioreactor landfills, where conditions are controlled in order to achieve decomposition as quickly as possible and to collect gas aggressively.

- (●) Typical operation - DEFAULT
- ( ) Worst-case collection
- ( ) Aggressive gas collection

	Landfill gas collection efficiency (%) assumptions
Typical	*Years 0-2: 0%; Year 3: 50%; Year 4-7: 75%; Years 8-100: 95%*
Worst-case	*Years 0-5: 0%; Years 6-7: 75%; Years 8-100: 95%*
Aggressive	*Year 1: 25%; Years 2-3: 50%; Years 4-7: 75%; Years 8-100: 95%*

7a. Emissions that occur during transport of materials to the management facility are included in this model. You may use default transport distances, indicated in the table below, or provide information on the transport distances for the various MSW management options.

(•) Use Default Distances
( ) Provide Information

7b. If you have chosen to provide information, please fill in the table below. Distances should be from the curb to the landfill, combustor, or material recovery facility (MRF).
***Please note that if you chose to provide information, you must provide distances for both the baseline and the alternative scenarios.**

Management Option	Default Distance (Miles)	Distance (Miles)
Landfill	20	
Combustion	20	
Recycling	20	
Composting	20	

8. If you wish to personalize your results report, input your name & organization, and also specify the project period corresponding to the data you entered above.

Name	Danville 2008
Organization	TPC/DC&E

Project Period	From		to	

Congratulations! You have finished all the inputs.
A summary of your results awaits you on the sheet(s) titled "Summary Report."
For more detailed analyses of GHG emissions, see the sheet(s) titled "Analysis Results."

WARM User's Guide

Calculating Greenhouse Gas Emissions with the Excel© Version of the Waste Reduction Model

WHAT IS THE WASTE REDUCTION MODEL?

The Waste Reduction Model (WARM) was created by the U.S. Environmental Protection Agency (EPA) to help solid waste planners and organizations estimate greenhouse gas (GHG) emission reductions from several different waste management practices. WARM is available in a Web-based calculator format and as a Microsoft Excel© spreadsheet. Both versions of WARM are available on EPA's Web site at http://www.epa.gov/warm.

WARM calculates GHG emissions for baseline and alternative waste management practices, including source reduction, recycling, combustion, composting, and landfilling. The model calculates emissions in metric tons of carbon dioxide equivalent ($MTCO_2E$) and metric tons of carbon equivalent (MTCE) across a wide range of material types commonly found in municipal solid waste (MSW).

The user can construct various scenarios by simply entering data on the amount of waste handled by material type and by management practice. WARM then automatically applies material-specific emission factors for each management practice to calculate the GHG emissions and energy savings of each scenario. Several key inputs, such as landfill gas recovery practices and transportation distances to MSW facilities, can be modified by the user.

The GHG emission factors were developed following a life-cycle assessment methodology using estimation techniques developed for national inventories of GHG emissions. The methodologies used to develop these emission factors are described in detail in the background reports available for download at http://epa.gov/climatechange/wycd/waste/SWMGHGreport.html. This version also reflects revised data on the average recycled content values for materials available in the marketplace, and the EPA's latest MSW characterization report *Municipal Solid Waste in the United States: 2010 Facts and Figures*.

WHO SHOULD USE WARM?

WARM was developed for solid waste managers (from state and local governments and other organizations) who want to calculate the GHG emissions associated with different waste management options. Emissions estimates provided by WARM are intended to support voluntary GHG measurement and reporting initiatives. These initiatives include waste management components of state and local climate change action plans, and other waste management projects for which an understanding of GHG emissions is desired.

USING THE EXCEL© VERSION OF WARM

Before using WARM, you first need to gather data on your baseline waste management practices and an alternative scenario. In order to effectively use the tool, users should know how many tons of waste you manage (or would manage) for a given time period under each scenario by material type and by management practice. Both models allow you to customize your results based on project-specific landfill gas recovery practices and transportation distances. Note that you may use default values if you are unsure of landfill gas recovery practices and/or transportation distances.

Instructions:

-- Click on the "Analysis Inputs" tab at the bottom center of the screen to open the input sheet. Follow the instructions for Steps 1 and 2. This involves filling in the tables describing your baseline and proposed alternative waste management scenarios. The "mixed" material types are defined as the following:

Mixed Metals: Aluminum Cans 39%, Steel Cans 61%
Mixed Plastics: HDPE 51%, PET 49%.
Mixed Recyclables: Aluminum Cans 1.4%, Steel Cans 3.1%, Glass 6.4%, HDPE 1.2%, LDPE 0.9%, PET 1.1%, Corrugated Containers 50.4%, Magazines/Third-class Mail 7.6%, Newspaper 14%, Office Paper 8.1%, Phonebooks 0.5%, Textbooks 0.7%, Dimensional Lumber 4.7%
Mixed Organics: Food Scraps 51%, Yard Trimmings 49%.
Mixed MSW- represents the entire municipal solid waste stream as disposed.

-- Fill in the data requested in Steps 3–7. WARM will use the answers to these questions to customize GHG estimates to reflect your waste management situation and location. For example, you are asked for data on transportation distances and on your landfill gas recovery systems, if applicable. If the requested data is not available, WARM will use the national average defaults.

-- Step 8 allows you to customize your report, with your name, organization, and project period.

-- Once you have completed Steps 1–8 on the “Analysis Inputs” sheet, WARM will calculate the GHG emissions and energy attributable to the baseline and alternative waste management scenarios you have specified. Emissions and energy calculations are presented on separate output sheets, as described below. From the “Analysis Inputs” sheet, click on a tab at the bottom of the screen for the results sheet you want to view first.

-- The “Summary Report” sheet provides a concise report of GHG emissions or energy results from the baseline and alternative waste management scenarios, as well as an estimate of net emissions or energy.

-- The “Analysis Results” sheet shows GHG emissions or energy results for each scenario in the units selected. You can compare the total impact of the baseline and alternative scenarios, or, if you want more detail, you can scroll down to view GHG emissions or energy results by material type and management practice. The bottom table shows the relative emissions or energy difference between the alternative and baseline scenarios for each material type and management pathway.

USING THE ONLINE VERSION OF WARM
The online WARM is a simpler version of this Excel© version, with fewer options for customization (e.g., it does not include options for altering the landfill characteristics or decay rates). You can access the online WARM at the following website: http://www.epa.gov/climatechange/wycd/waste/calculators/Warm_Form.html. The website also includes a User's Guide that gives detailed instructions for using both the online and Excel© version of WARM.

ASSISTANCE
If you need additional assistance with using WARM, please email orcrWARMquestions@epa.gov.

WARM OUTPUTs

2035		TONS MSW		TONS ADC	TOTAL		MTons CO2e
		42,506		14,225	56,731		33,739
	MSW	TONS MSW	ADC	TONS ADC		TOTAL	MTons CO2e With 75% Landfill Recovery
Inputs For WARM	%	42,506	%	14,225	56,731	%	8,435
Aluminum Cans	0.1%	51		0	51	0.1%	
Aluminum Ingot	0.2%	90		0	90	0.2%	
Steel Cans	0.6%	275		0	275	0.5%	
Copper Wire	2.0%	858		0	858	1.5%	
Glass	1.4%	605		0	605	1.1%	
HDPE	0.4%	169		0	169	0.3%	
LDPE	4.3%	1,816		0	1,816	3.2%	
PET	0.5%	214		0	214	0.4%	
LLDPE	1.2%	519		0	519	0.9%	
PP	0.0%	0		0	0	0.0%	
PS	0.0%	0		0	0	0.0%	
PVC	0.0%	0		0	0	0.0%	
PLA	0.0%	0		0	0	0.0%	
Corrugated Containers	0.4%	174		0	174	0.3%	
Magazines/Third-class Mail	0.7%	303		0	303	0.5%	
Newspaper	1.3%	535		0	535	0.9%	
Office Paper	1.8%	783		0	783	1.4%	
Phonebooks	0.1%	26		0	26	0.0%	
Textbooks	0.0%	0		0	0	0.0%	
Dimensional Lumber	14.5%	6,169		0	6,169	10.9%	
Medium-density Fiberboard	0.0%	0		0	0	0.0%	
Food Scraps	15.5%	6,590		0	6,590	11.6%	
Yard Trimmings	2.7%	1,133	58.1%	8,263	9,396	16.6%	
Grass	3.8%	1,619		0	1,619	2.9%	
Leaves	0.0%	0		0	0	0.0%	
Branches	0.6%	263		0	263	0.5%	
Mixed Paper (general)	13.4%	5,693		0	5,693	10.0%	
Mixed Paper (primarily residential)	0.0%	0		0	0	0.0%	
Mixed Paper (primarily from offices)	0.0%	0		0	0	0.0%	
Mixed Metals	1.6%	662	15.7%	2,236	2,898	5.1%	
Mixed Plastics	2.8%	1,182		0	1,182	2.1%	
Mixed Recyclables	0.0%	0		0	0	0.0%	
Mixed Organics	4.4%	1,862	12.4%	1,758	3,620	6.4%	
Mixed MSW	4.8%	2,030	0.5%	67	2,097	3.7%	
Carpet	3.2%	1,376		0	1,376	2.4%	
Personal Computers	0.5%	231		0	231	0.4%	
Clay Bricks	3.2%	1,348		0	1,348	2.4%	
Concrete	1.2%	517		0	517	0.9%	
Fly Ash	0.1%	44	0.1%	10	54	0.1%	
Tires	0.2%	64	1.3%	182	246	0.4%	
Asphalt Concrete	0.3%	139	12.0%	1,709	1,848	3.3%	
Asphalt Shingles	2.8%	1,201		0	1,201	2.1%	
Drywall	7.1%	3,015		0	3,015	5.3%	
Fiberglass Insulation	2.2%	949		0	949	1.7%	
Vinyl Flooring	0.0%	0		0	0	0.0%	
Wood Flooring	0.0%	0		0	0	0.0%	
	100%	42,506	100.0%	14,225	56,731	100.0%	

Assumes a 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.1. Because the landfill gas captured is not under the jurisdiction of Danville, the landfill gas emissions from the capture system are not included in Danville's inventory. Only fugitive sources of GHG emissions from landfill are included.

Does not include tonnage from alternative daily cover (ADC) disposed of in Danville.

WARM OUTPUTs

2035		TONS MSW		TONS ADC	TOTAL		MTons CO2e
		22,442		5,356	27,798		17,285
	MSW	TONS MSW	ADC	TONS ADC		TOTAL	MTons CO2e With 75% Landfill Recovery
Inputs For WARM	%	22,442	%	5,356	27,798	%	4,321
Aluminum Cans	0.1%	27		0	27	0.1%	
Aluminum Ingot	0.2%	48		0	48	0.2%	
Steel Cans	0.6%	145		0	145	0.5%	
Copper Wire	2.0%	453		0	453	1.6%	
Glass	1.4%	320		0	320	1.2%	
HDPE	0.4%	89		0	89	0.3%	
LDPE	4.3%	959		0	959	3.4%	
PET	0.5%	113		0	113	0.4%	
LLDPE	1.2%	274		0	274	1.0%	
PP	0.0%	0		0	0	0.0%	
PS	0.0%	0		0	0	0.0%	
PVC	0.0%	0		0	0	0.0%	
PLA	0.0%	0		0	0	0.0%	
Corrugated Containers	0.4%	92		0	92	0.3%	
Magazines/Third-class Mail	0.7%	160		0	160	0.6%	
Newspaper	1.3%	282		0	282	1.0%	
Office Paper	1.8%	413		0	413	1.5%	
Phonebooks	0.1%	14		0	14	0.0%	
Textbooks	0.0%	0		0	0	0.0%	
Dimensional Lumber	14.5%	3,257		0	3,257	11.7%	
Medium-density Fiberboard	0.0%	0		0	0	0.0%	
Food Scraps	15.5%	3,479		0	3,479	12.5%	
Yard Trimmings	2.7%	598	58.1%	3,111	3,709	13.3%	
Grass	3.8%	855		0	855	3.1%	
Leaves	0.0%	0		0	0	0.0%	
Branches	0.6%	139		0	139	0.5%	
Mixed Paper (general)	13.4%	3,006		0	3,006	10.8%	
Mixed Paper (primarily residential)	0.0%	0		0	0	0.0%	
Mixed Paper (primarily from offices)	0.0%	0		0	0	0.0%	
Mixed Metals	1.6%	350	15.7%	842	1,191	4.3%	
Mixed Plastics	2.8%	624		0	624	2.2%	
Mixed Recyclables	0.0%	0		0	0	0.0%	
Mixed Organics	4.4%	983	12.4%	662	1,645	5.9%	
Mixed MSW	4.8%	1,072	0.5%	25	1,097	3.9%	
Carpet	3.2%	726		0	726	2.6%	
Personal Computers	0.5%	122		0	122	0.4%	
Clay Bricks	3.2%	711		0	711	2.6%	
Concrete	1.2%	273		0	273	1.0%	
Fly Ash	0.1%	23	0.1%	4	27	0.1%	
Tires	0.2%	34	1.3%	69	103	0.4%	
Asphalt Concrete	0.3%	73	12.0%	643	717	2.6%	
Asphalt Shingles	2.8%	634		0	634	2.3%	
Drywall	7.1%	1,592		0	1,592	5.7%	
Fiberglass Insulation	2.2%	501		0	501	1.8%	
Vinyl Flooring	0.0%	0		0	0	0.0%	
Wood Flooring	0.0%	0		0	0	0.0%	
	100%	22,442	100.0%	5,356	27,798	100.0%	

Assumes a 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.1. Because the landfill gas captured is not under the jurisdiction of Danville, the landfill gas emissions from the capture system are not included in Danville's inventory. Only fugitive sources of GHG emissions from landfill are included.

Does not include tonnage from alternative daily cover (ADC) disposed of in Danville.

WARM OUTPUTs

2020		TONS MSW		TONS ADC	TOTAL		MTons CO2e
		39,563		13,240	52,803		31,403
	MSW	TONS MSW	ADC	TONS ADC		TOTAL	MTons CO2e With 75% Landfill Recovery
Inputs For WARM	%	39,563	%	13,240	52,803	%	7,851
Aluminum Cans	0.1%	48		0	48	0.1%	
Aluminum Ingot	0.2%	84		0	84	0.2%	
Steel Cans	0.6%	256		0	256	0.5%	
Copper Wire	2.0%	798		0	798	1.5%	
Glass	1.4%	564		0	564	1.1%	
HDPE	0.4%	157		0	157	0.3%	
LDPE	4.3%	1,691		0	1,691	3.2%	
PET	0.5%	199		0	199	0.4%	
LLDPE	1.2%	483		0	483	0.9%	
PP	0.0%	0		0	0	0.0%	
PS	0.0%	0		0	0	0.0%	
PVC	0.0%	0		0	0	0.0%	
PLA	0.0%	0		0	0	0.0%	
Corrugated Containers	0.4%	162		0	162	0.3%	
Magazines/Third-class Mail	0.7%	282		0	282	0.5%	
Newspaper	1.3%	498		0	498	0.9%	
Office Paper	1.8%	728		0	728	1.4%	
Phonebooks	0.1%	24		0	24	0.0%	
Textbooks	0.0%	0		0	0	0.0%	
Dimensional Lumber	14.5%	5,742		0	5,742	10.9%	
Medium-density Fiberboard	0.0%	0		0	0	0.0%	
Food Scraps	15.5%	6,133		0	6,133	11.6%	
Yard Trimmings	2.7%	1,055	58.1%	7,691	8,745	16.6%	
Grass	3.8%	1,507		0	1,507	2.9%	
Leaves	0.0%	0		0	0	0.0%	
Branches	0.6%	245		0	245	0.5%	
Mixed Paper (general)	13.4%	5,299		0	5,299	10.0%	
Mixed Paper (primarily residential)	0.0%	0		0	0	0.0%	
Mixed Paper (primarily from offices)	0.0%	0		0	0	0.0%	
Mixed Metals	1.6%	616	15.7%	2,081	2,697	5.1%	
Mixed Plastics	2.8%	1,100		0	1,100	2.1%	
Mixed Recyclables	0.0%	0		0	0	0.0%	
Mixed Organics	4.4%	1,733	12.4%	1,636	3,370	6.4%	
Mixed MSW	4.8%	1,890	0.5%	62	1,952	3.7%	
Carpet	3.2%	1,280		0	1,280	2.4%	
Personal Computers	0.5%	215		0	215	0.4%	
Clay Bricks	3.2%	1,254		0	1,254	2.4%	
Concrete	1.2%	481		0	481	0.9%	
Fly Ash	0.1%	41	0.1%	10	50	0.1%	
Tires	0.2%	60	1.3%	169	229	0.4%	
Asphalt Concrete	0.3%	129	12.0%	1,590	1,720	3.3%	
Asphalt Shingles	2.8%	1,117		0	1,117	2.1%	
Drywall	7.1%	2,806		0	2,806	5.3%	
Fiberglass Insulation	2.2%	883		0	883	1.7%	
Vinyl Flooring	0.0%	0		0	0	0.0%	
Wood Flooring	0.0%	0		0	0	0.0%	
	100%	39,563	100.0%	13,240	52,803	100.0%	

Assumes a 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.1. Because the landfill gas captured is not under the jurisdiction of Danville, the landfill gas emissions from the capture system are not included in Danville's inventory. Only fugitive sources of GHG emissions from landfill are included.

Does not include tonnage from alternative daily cover (ADC) disposed of in Danville.

WARM OUTPUTs

2020		TONS MSW		TONS ADC	TOTAL		MTons CO2e
		30,234		8,776	39,010		23,669
	MSW	TONS MSW	ADC	TONS ADC		TOTAL	MTons CO2e With 75% Landfill Recovery
Inputs For WARM	%	30,234	%	8,776	39,010	%	5,917
Aluminum Cans	0.1%	36		0	36	0.1%	
Aluminum Ingot	0.2%	64		0	64	0.2%	
Steel Cans	0.6%	196		0	196	0.5%	
Copper Wire	2.0%	610		0	610	1.6%	
Glass	1.4%	431		0	431	1.1%	
HDPE	0.4%	120		0	120	0.3%	
LDPE	4.3%	1,292		0	1,292	3.3%	
PET	0.5%	152		0	152	0.4%	
LLDPE	1.2%	369		0	369	0.9%	
PP	0.0%	0		0	0	0.0%	
PS	0.0%	0		0	0	0.0%	
PVC	0.0%	0		0	0	0.0%	
PLA	0.0%	0		0	0	0.0%	
Corrugated Containers	0.4%	124		0	124	0.3%	
Magazines/Third-class Mail	0.7%	215		0	215	0.6%	
Newspaper	1.3%	381		0	381	1.0%	
Office Paper	1.8%	557		0	557	1.4%	
Phonebooks	0.1%	18		0	18	0.0%	
Textbooks	0.0%	0		0	0	0.0%	
Dimensional Lumber	14.5%	4,388		0	4,388	11.2%	
Medium-density Fiberboard	0.0%	0		0	0	0.0%	
Food Scraps	15.5%	4,687		0	4,687	12.0%	
Yard Trimmings	2.7%	806	58.1%	5,098	5,904	15.1%	
Grass	3.8%	1,151		0	1,151	3.0%	
Leaves	0.0%	0		0	0	0.0%	
Branches	0.6%	187		0	187	0.5%	
Mixed Paper (general)	13.4%	4,050		0	4,050	10.4%	
Mixed Paper (primarily residential)	0.0%	0		0	0	0.0%	
Mixed Paper (primarily from offices)	0.0%	0		0	0	0.0%	
Mixed Metals	1.6%	471	15.7%	1,379	1,850	4.7%	
Mixed Plastics	2.8%	841		0	841	2.2%	
Mixed Recyclables	0.0%	0		0	0	0.0%	
Mixed Organics	4.4%	1,324	12.4%	1,085	2,409	6.2%	
Mixed MSW	4.8%	1,444	0.5%	41	1,485	3.8%	
Carpet	3.2%	978		0	978	2.5%	
Personal Computers	0.5%	165		0	165	0.4%	
Clay Bricks	3.2%	958		0	958	2.5%	
Concrete	1.2%	368		0	368	0.9%	
Fly Ash	0.1%	31	0.1%	6	37	0.1%	
Tires	0.2%	46	1.3%	112	158	0.4%	
Asphalt Concrete	0.3%	99	12.0%	1,054	1,153	3.0%	
Asphalt Shingles	2.8%	854		0	854	2.2%	
Drywall	7.1%	2,145		0	2,145	5.5%	
Fiberglass Insulation	2.2%	675		0	675	1.7%	
Vinyl Flooring	0.0%	0		0	0	0.0%	
Wood Flooring	0.0%	0		0	0	0.0%	
	100%	30,234	100.0%	8,776	39,010	100.0%	

Assumes a 75 percent of fugitive GHG emissions are captured within the landfill's Landfill Gas Capture System with a landfill gas capture efficiency of 75%. The Landfill gas capture efficiency is based on the California Air Resources Board's (CARB) Local Government Operations Protocol (LGOP), Version 1.1. Because the landfill gas captured is not under the jurisdiction of Danville, the landfill gas emissions from the capture system are not included in Danville's inventory. Only fugitive sources of GHG emissions from landfill are included.

Does not include tonnage from alternative daily cover (ADC) disposed of in Danville.

Water and Wastewater

	2008 avg	2020	2035	2008 avg	2020	2035
	Cubic Feet Per Day			Million Gallons Per Year		
Water	7,061,933	7,508,783	8,067,346	19,282	20,502	22,027
Wastewater	3,177,870	3,378,952	3,630,306	8,677	9,226	9,912

	2008 avg	2020	2035	2008 avg	2020	2035
	Acre-Feet/Year			Liters Per/Year		
Water	59,174	62,918	67,598	72,981,716,156	77,599,698,210	83,372,180,946
Wastewater	26,628	28,313	30,419	32,841,772,270	34,919,864,195	37,517,481,426

Wastewater use is estimated based on total water use. All indoor water useage is assumed to be treated as wastewater. Assumes 55% of water use is indoor water use and 45% is outdoor water use. Indoor/Outdoor ratios based on the California Department of Water Resources's 20x2020 Water Conservation Plan for the San Francisco Bay Hydrologic Region.

	2008	2020	2035	Adjusted 2020	Adjusted 2035
GHG Emissions	MTons/Year				
Energy	22,179	23,582	25,337	12,051	12,948
Fugitive	2,036	2,165	2,326	2,165	2,326
Total Water/Wastewater	24,215	25,747	27,663	14,216	15,274

General Conversion Factors

Cubic Feet to Gallons	7.480519	
killowatt hrs to megawatt hrs	0.001	
million gallons to AF	0.3259	325851.429
gallons to Liters	3.785	
lbs to Tons	2000	
Tons to Mton	0.9071847	

Source: California Air Resources Board (CARB). 2010. Local Government Operations Protocol. Version 1.1. Appendix F, Standard Conversion Factors

Wastewater - Fugitive Emissions

WASTEWATER: Wastewater in Danville is collected, transported, and treated by the Central Contra Costa Sanitary District (CCCSD). The Martinez CCCSD Treatment Plan is powered by a cogeneration facility and treats and average of 45 million gallons of wastewater per day (16,425 mgy). The majority of wastewater is treated to secondary levels and then discharged into Suison Bay. Approximately 600 million gallons per year (3.7%) are treated to tertiary levels and redistributed as recycled water.

Fugitive Emissions from Wastewater Associated with Aerobic and Anaerobic Process

CH4 - Microorganisms can biodegrade soluble organic material in wastewater under aerobic (presense of oxygen) or anaerobic (absense of oxygen) conditions. Aneorbic conditions result in the production of CH4.

N2O - Treatment of domestc wastwater during both nitrification and denitrification of the nitrogen present leads to the formation of N2O, usually in the form of urea, ammonia, and proteins. These compounds are converted to nitrate through the aerobic process of nitrification. Denitrification occus under anoxic conditions (without free oxygen), and incolves the biological conversion of nitrate into dinitrogen. N2O can be an intermediate product of both processes, but more often is associated with denitrification.

Notes: Waste Discharge facilities in compliance with the United States Environmental Protection Agency's Clean Water Standards do not typically result in CH4 emissions. However, poorly-operated aerobic wastewater treatment systems can result in the generation of CH4. Because wastewater treatment systems are assumed to operate in compliance with state and federal laws pertaining to water quality, CH4 emissions from centralized aerobic treatments are not included in the inventory.

Fugitive Emissions - Process Emissions from WWTP with Nitrification/Denitrification

LGOP Version 1.1. Equation 10.9.

N2O = Wastewater x 10^-6 x Nload x EF effluent x 10^3

	2008	2020	2035
wastewater (Liters)=	32,841,772,270	34,919,864,195	37,517,481,426
10^-6 =	1.00E-06	conversion factor; kg/mg	
N Load	40.00	mg/L of wastewater	USEPA 2008
EF effluent	0.01	kg//N2O/kg N	
10^-3 =	1.00E-03	conversion factor: MTons/kg	

	2008	2020	2035
		MTons	
N2O	6.568	6.984	7.503
CO2e =	2,036	2,165	2,326

Source: California Air Resources Board (CARB). 2010, May. Local Government Operations Protocol (LGOP), Version 1.1. The LGOP protocol provides default values for all the terms except the Nitrogen Load, which is assumed to be 40 mg of N per Liter of wastewater effluent based on USEPA methodology outlined in the CalEEMod program manual. South Coast Air Quality Management District (SCAQMD). 2011. California Emissions Estimator Model (CalEEMod), Version 2011.1.1. User's Manual. USEPA. 2008. Page 8-12. USEPA cites Metcalf & Eddy, Inc., 1991, “Wastewater Engineering: Treatment Disposal, and Reuse,” 3rd Ed. McGraw Hill Publishing.

Water and Wastewater - Embodied Energy (electricity)

East Bay Municipal Utility District (EBMUD)

Water Supply and Conveyance	Water Treatement	Water Distribution	Total Water	Wastewater Treatment
		kWhr/million gallons		
2,117	111	1,272	3,500	1,911

Source: California Energy Commission (CEC). 2006, December. Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118. Prepared by Navigant Consulting, Inc. Based on the electricity use for Northern California

Pacific Gas & Electric - Emission Factors

	Intensity factor				CO_2e
	lbs CO_2/MWH	MTons CO_2/MWh	CH4 MTons/MWH	N2O MTons/MWH	MTons/MWh
2005	489	0.222	0.000013	0.000005	0.224
2006	456	0.207	0.000013	0.000005	0.209
2007	636	0.288	0.000013	0.000005	0.290
2008	641	0.291	0.000013	0.000005	0.293
2009	575	0.261	0.000013	0.000005	0.263
2010	559	0.254	0.000013	0.000005	0.256
rage (2006-2008) based on PG&E	578	0.262	0.000013	0.000005	**0.264**
2020 (CO_2)	290	0.133	0.000013	0.000005	**0.135**
Source: Pacific Gas & Electric (PG&E). 2011, April. Greenhouse Gas Emissions Factors Info Sheet. *CO2 intentsiy for 2010 and earlier is based on PG&E's third-party-verified GHG inventory submitted to the California Climate Action Registry (CCAR) (2003-2008) or The Climate Registry (TCR).			Source: CH_4 and N_2O intensity based on California E-Grid data (CH_4 = 0.029 lbs/MWH; N_2O = 0.011 lbs/MWH)		

Note: The 2020 emissions rate is estimated by PG&E. It includes reductions from 33% Renewable Portfolio Standard (RPS), Cap-and-Trade, and other regulatory reductions for High Global Warming Potential (HGWP) gases such as reductions of SF_6.

2011 GHG Emissions from Water Use - Purchased Energy

Energy Associated with Water Use	2008 MwH/Year	2020	2035
Water	67,486	71,757	77,094
Wastewater	16,581	17,631	18,942
Total Water/Wastewater	84,068	89,387	96,037

Indirect GHG Emissions from Energy Associated with Water	2008 MTons/Year	2020	2035
Water	17,804	18,931	20,339
Wastewater	4,375	4,651	4,997
Total Water/Wastewater	22,179	23,582	25,337

Adjusted Forecast - 2020 PG&E CO2 Intensity

Under the RPS, certain retail sellers of electricity were required to increase the amount of renewable energy each year by at least 1 percent in order to reach at least 20 percent by December 30, 2010. The California Air Resources Board (CARB) has now approved an even higher goal of 33 percent by 2020. Investor-owned utilities, such as PG&E are also required to participate in CARB's Cap-and-Trade program and reduce High Global Warming Potential (HGWP) gases, such as reductions of SF6.

Source: Pacific Gas & Electric (PG&E). 2011, April 8. Greenhouse Gas Emission Factors Info Sheet.
http://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Indirect GHG Emissions from Energy Associated with Water	2008 MTons/Year	Adjusted 2020	Adjusted 2035
Water	17,804	9,674	10,394
Wastewater	4,375	2,377	2,554
Total Water/Wastewater	22,179	12,051	12,948
	Reductions	11,531	12,389

Local Water/Wastewater Measures

Local Measures that are Required Pursuant to the Water Efficient Landscape Ordinance (WELO) or California Building Code

WW-1 Require new development to use native plants or other appropriate non-invasive plants that are drought-tolerant.

WW-2 Implement a Water Efficient Landscape Ordinance with improved conservation programs and incentives for non-residential customers.

GHG reduction estimates are not quantified for these measures

Local Measures that Support EBMUD's Urban Water Management Plan to Achieve 20% Per Capita Water reductions.

The California Department of Water Resources adopted a plan to reduce per capita water use by 20 percent by 2020 in accordance with the Final 20X2020 Water Conservation Plan. New development is required to comply with the new Title 24 California Green Building Code (CALGreen) water efficiency provisions that mandate an improvement over existing plumbing and irrigation water efficiency. This efficiency corresponds with the 20X2020 goal to reduce per-capita water use by 20 percent.
Reductions from these measures are capped at the 20 percent per capita goal.

WW-3 For new development, require all water use and efficiency measures identified as voluntary in the California Green Building Standards Code, and consider more stringent targets. California Green Building Standards Code requirements include: 1) reduce indoor potable water use by 20 percent after meeting the Energy Policy Act of 1992 fixture performance requirements, and 2) reduce outdoor potable water use by 50 percent from a calibrated mid-summer baseline case, for example through irrigation efficiency, plant species, recycled wastewater, and captured rainwater. Establish Town requirements for discretionary projects regarding watering timing, water-efficient irrigation equipment, water-efficient fixtures, and offsetting demand so that there is no net increase in imported water use. Include clear parameters for integrating water conservation infrastructure and technologies, including low-flush toilets and low-flow showerheads. As appropriate, partner with local water conservation companies on the development and implementation of this measure.

WW-4 Adopt a water efficiency retrofit ordinance that requires upgrades as a condition of issuing permits for renovations or additions. Work with local water purveyors to achieve consistent standards and review and approval procedures for implementation.

WW-5 Work with EBMUD to adopt water conservation pricing, such as tiered rate structures, to encourage efficient water use. As part of this measure, the water districts would conduct the following: 1) Provide notices in each billing to accounts with water use budgets showing the relationship between the budget and actual consumption. 2) Encourage wholesale water suppliers to provide financial incentives to their retail water agency customers that encourage water conservation efforts. 2) Work with EBMUD to meter with commodity rates for all new connections, and retrofit existing connections. 3) To help monitor landscaping water use, create accounts with dedicated irrigation meters, or develop and implement a strategy targeting and marketing large landscape water use surveys to commercial/industrial/ institutional accounts with mixed-use meters.

WW-6 In collaboration with EBMUD, promote water audit programs that offer free water audits to single-family, multi-family, large landscape accounts, and commercial customers. Collaborate with purveyors to enact conservation programs for commercial, industrial, and institutional (CII) accounts and create programs to install ultra-low-flush toilets in facilities.

WW-7 Promote the use of reclaimed water (i.e., treated wastewater) and gray water for irrigation purposes consistent with the appropriate provisions of Title 22 and approval of the State Health Department. As part of this measure, conduct the following:
• Inventory potential non-potable uses of water for potential substitution by recycled and/or gray water.
• Collaborate with responsible agencies to encourage the use of recycled water where cost and energy efficiencies for its production, distribution and use are favorable.

WW-8 Develop a Non-Potable Water Master Plan, which covers the use of recycled water for non-potable uses. 1) Inventory potential non-potable uses of water for potential substitution by recycled water. 2) Assess associated energy/GHG tradeoffs versus non-recycled water supply. 3) Collaborate with responsible agencies to encourage the use of recycled water where cost and energy efficiencies for its production, distribution and use are favorable.

WW-9 Implement a public information and school education program to promote water conservation and its benefits in coordination with efforts of local water purveyors. Conduct public education and outreach to reduce watering of non-vegetated surfaces and promote the use of pervious paving materials.

	2020 w/20% Reduction	2035 w/20% Reduction	2020 w/20% Reduction	2035 w/20% Reduction
	Cubic Feet Per Day		Million Gallons Per Year	
Water	6,007,026	6,453,877	16,402	17,622
Wastewater	2,703,162	2,904,245	7,381	7,930

	2020 w/20% Reduction	2035 w/20% Reduction	2020 w/20% Reduction	2035 w/20% Reduction
	Acre-Feet/Year		Liters Per/Year	
Water	50,334	54,079	62,079,758,568	66,697,744,757
Wastewater	22,650	24,335	27,935,891,356	30,013,985,141

Wastewater use is estimated based on total water use. All indoor water useage is assumed to be treated as wastewater. Assumes 55% of water use is indoor water use and 45% is outdoor water use.
Indoor/Outdoor ratios based on the California Department of Water Resources's 20x2020 Water Conservation Plan for the San Francisco Bay Hydrologic Region.

Energy

Energy Associated with Water Use	2020	2035
	MwH/Year	
Water	57,405	61,676
Wastewater	14,104	15,154
Total Water/Wastewater	71,510	76,829

Indirect GHG Emissions from Energy Associated with Water Use	2020	2035	Reduction from Adjusted 2020	Reduction 2035
	MTons/Year		MTons/Year	
Water	7,740	8,315	-1,935	-2,079
Wastewater	1,902	2,043	-475	-511
Total Water/Wastewater	9,641	10,358	-2,410	-2,590

Energy

LGOP Version 1.1. Equation 10.9.

N2O = Wastewater x 10^-6 x Nload x EF effluent x 10^3

	2020	2035	Reduction 2020	Reduction 2035
	MTons/Year		MTons/Year	
N2O	5.587	6.003	-1.397	-1.501
CO2e =	1,732	1,861	-433	-465

Source: California Air Resources Board (CARB). 2010, May. Local Government Operations Protocol (LGOP), Version 1.1. The LGOP protocol provides default values for all the terms except the Nitrogen Load, which is assumed to be 40 mg of N per Liter of wastewater effluent based on USEPA methodology outlined in the CalEEMod program manual. South Coast Air Quality Management District (SCAQMD). 2011. California Emissions Estimator Model (CalEEMod), Version 2011.1.1. User's Manual. USEPA. 2008. Page 8-12. USEPA cites Metcalf & Eddy, Inc., 1991, "Wastewater Engineering: Treatment Disposal, and Reuse," 3rd Ed. McGraw Hill Publishing.

Total

	2020	2035	Reduction from Adjusted 2020	Reduction 2035
	MTons/Year		MTons/Year	
Total Water/Wastewater	11,373	12,219	-2,843	-3,055

Agriculture

Table 4.2-2 **Acreages of Important Farmland (2010)**

Type	Acres	Percentage
Within Town Limit		
Grazing Land	2,123.37	18.30%
Farmland of Local Importance	494.58	4.30%
Unique Farmland	21.44	0.19%
Non-Farmland	8,929.21	77.20%
Total Land Acreage Within Town Limit	**11,568.60**	**100%**
Within Planning Area (including Town Limit)		
Grazing Land	3,051.45	21.70%
Farmland of Local Importance	1,020.16	7.30%
Unique Farmland	21.44	0.15%
Non-Farmland	9,977.15	70.90%
Total Land Acreage Within Planning Area	**14,070.20**	**100%**

Source: Town of Danville, 2011; California Farmland and Mapping Monitoring Program, 2010.

Table 4.2-3 **Acreages of Land under Williamson Act Contracts (2010)**

Type	Acres	Percentage
Within Town Limit		
Active, Non-Prime Farmland	205.8	1.80%
Total Land Acreage Within Town Limit	**11,568.60**	**100%**
Within Planning Area (including Town Limit)		
Active, Non-Prime Farmland	532.1	3.80%
Total Acreage Within Town Planning Area	**14,070.20**	**100%**

Source: Town of Danville, 2011; California Farmland and Mapping Monitoring Program, 2010, updated to note the Nonrenewal status of the Borel site

	Acres	
Total Orchards	2,296	Offroad Equipment assumed
Total Grazing	5,175	No offroad Equipment
Cattle		

	Harvested Acreage 2010
Field Crops	193,350
Vegetable & Seed Crops	7,019
Nut Crops	3,459
Nursary Products	220,600
Acres of Crop Land	424,428
Head of Cattle	27,000
Liveweight	196,000 Cwt

Source: County of Contra Costa, Department of Agriculture. 2011. 2010 Contra Costa County Crop Report.

	Agricultural and Grazing Land as a Percent of the County
Total Orchards	0.5%
Total Grazing	

2008 data for the Town is unavailable. Therefore, percentage is based on 2010 data for the agricultural sector.

										Tons/Day				MTons/Year
CY	Season	Equipment	Class	County	Air Basin	Air Dist.	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust	CO2e	CO2e
2008	Annual	2-Wheel Tractors	Agricultural Equipment	Contra Costa	SF	BA	7.72E+00	3.39E+00	7.11E-01	3.98E-03	5.90E-06	5.45E-06	5.92E-03	2
2008	Annual	2-Wheel Tractors	Agricultural Equipment	Contra Costa	SF	BA	8.99E+00	8.19E+00	4.04E+00	1.92E-02	2.12E-05	1.69E-05	2.62E-02	9
2008	Annual	2-Wheel Tractors	Agricultural Equipment	Contra Costa	SF	BA	2.41E-01	2.20E-01	2.23E-01	1.03E-03	7.90E-07	9.55E-07	1.30E-03	0
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	3.03E+00	4.58E+00	2.32E+01	1.99E-01	5.43E-05	4.78E-05	2.17E-01	72
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	4.16E-01	6.27E-01	4.46E+00	4.04E-02	9.92E-06	4.40E-06	4.35E-02	14
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	7.60E-01	2.61E-01	1.89E+00	1.70E-02	3.06E-06	2.08E-06	1.80E-02	6
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	4.22E-01	1.45E-01	1.60E+00	1.46E-02	2.29E-06	1.06E-06	1.53E-02	5
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	7.79E-02	2.67E-02	3.39E-01	3.10E-03	4.44E-07	1.92E-07	3.24E-03	1
2008	Annual	Balers	Agricultural Equipment	Contra Costa	SF	BA	1.11E+01	2.07E+00	4.23E+00	3.43E-02	1.19E-05	7.86E-06	3.82E-02	13
2008	Annual	Balers	Agricultural Equipment	Contra Costa	SF	BA	5.66E+00	1.06E+00	3.58E+00	3.18E-02	1.00E-05	4.92E-06	3.50E-02	12
2008	Annual	Agricultural Mowers	Agricultural Equipment	Contra Costa	SF	BA	8.02E+00	3.96E+00	1.62E+00	7.20E-03	8.34E-06	9.04E-06	9.98E-03	3
2008	Annual	Agricultural Mowers	Agricultural Equipment	Contra Costa	SF	BA	6.56E+00	3.24E+00	3.01E+00	1.33E-02	9.94E-06	1.58E-05	1.67E-02	6
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	3.04E+01	8.18E+00	1.40E+00	7.75E-03	1.26E-05	1.05E-05	1.19E-02	4
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	9.47E+00	2.55E+00	1.01E+00	4.22E-03	4.84E-06	6.59E-06	5.86E-03	2
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	2.45E+01	6.59E+00	6.28E+00	2.65E-02	1.89E-05	3.75E-05	3.31E-02	11
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	2.08E+00	4.58E-01	8.04E-01	6.52E-03	2.42E-06	1.51E-06	7.30E-03	2
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	3.51E+00	7.71E-01	2.53E+00	2.24E-02	7.18E-06	3.52E-06	2.47E-02	8
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	7.92E-01	1.74E-01	1.11E+00	1.01E-02	2.50E-06	9.38E-07	1.09E-02	4
2008	Annual	Tillers	Agricultural Equipment	Contra Costa	SF	BA	1.04E+03	2.02E+02	1.11E+02	4.75E-01	4.56E-04	6.74E-04	6.30E-01	209
2008	Annual	Swathers	Agricultural Equipment	Contra Costa	SF	BA	1.14E+01	2.96E+00	1.31E+01	1.16E-01	3.23E-05	1.85E-05	1.26E-01	42
2008	Annual	Swathers	Agricultural Equipment	Contra Costa	SF	BA	8.70E+00	2.27E+00	1.38E+01	1.26E-01	3.19E-05	1.18E-05	1.37E-01	45
2008	Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.83E+00	8.81E-01	2.07E-01	1.17E-03	1.64E-06	1.62E-06	1.71E-03	1
2008	Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	3.66E+00	4.66E+00	2.08E+00	9.88E-03	1.16E-05	8.92E-06	1.37E-02	5
2008	Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.40E+00	1.78E+00	1.74E+00	8.01E-03	6.36E-06	7.64E-06	1.01E-02	3
2008	Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.04E-01	1.28E-01	2.86E-01	2.36E-03	5.06E-07	2.71E-07	2.52E-03	1
2008	Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.30E-02	1.60E-02	5.44E-02	5.06E-04	6.01E-08	1.50E-08	5.25E-04	0
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	1.28E+00	5.09E-01	9.56E-02	5.30E-04	8.22E-07	7.13E-07	8.00E-04	0
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	1.12E+00	4.45E-01	2.65E-01	1.16E-03	1.11E-06	1.53E-06	1.53E-03	1
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	2.85E-01	1.13E-01	1.69E-01	7.38E-04	4.33E-07	9.15E-07	8.91E-04	0
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	3.44E-01	1.17E-01	2.01E-01	1.61E-03	6.35E-07	4.10E-07	1.82E-03	1
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	1.99E+00	6.78E-01	2.43E+00	2.13E-02	6.87E-06	3.71E-06	2.36E-02	8
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	2.27E-01	7.73E-02	5.27E-01	4.80E-03	1.20E-06	4.82E-07	5.19E-03	2
2008	Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	8.44E-02	2.87E-02	3.44E-01	3.14E-03	5.70E-07	2.81E-07	3.32E-03	1
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	9.40E+01	1.37E+02	6.59E+01	7.22E-01	0.00E+00	7.67E-05	7.23E-01	240
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	1.16E+02	1.69E+02	1.55E+02	1.71E+00	0.00E+00	2.04E-04	1.71E+00	566
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	2.70E+02	3.52E+02	5.62E+02	6.02E+00	0.00E+00	2.56E-03	6.08E+00	2,012
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	3.12E+02	4.07E+02	1.36E+03	1.48E+01	0.00E+00	2.86E-03	1.49E+01	4,928
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	1.76E+02	2.29E+02	1.30E+03	1.43E+01	0.00E+00	1.81E-03	1.43E+01	4,741
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	1.14E+02	1.48E+02	1.20E+03	1.32E+01	0.00E+00	1.15E-03	1.32E+01	4,375
2008	Annual	Agricultural Tractors	Agricultural Equipment	Contra Costa	SF	BA	2.26E+01	2.94E+01	3.89E+02	4.28E+00	0.00E+00	3.35E-04	4.29E+00	1,421
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	6.60E+00	2.71E+00	1.18E+01	1.29E-01	0.00E+00	2.11E-05	1.29E-01	43
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	9.79E+00	4.03E+00	2.29E+01	2.51E-01	0.00E+00	2.70E-05	2.51E-01	83
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	1.05E+01	4.31E+00	3.43E+01	3.78E-01	0.00E+00	2.74E-05	3.78E-01	125
2008	Annual	Combines	Agricultural Equipment	Contra Costa	SF	BA	4.18E-01	1.72E-01	1.88E+00	2.08E-02	0.00E+00	1.38E-06	2.08E-02	7
2008	Annual	Balers	Agricultural Equipment	Contra Costa	SF	BA	1.25E-02	3.25E-03	5.46E-03	5.91E-05	0.00E+00	1.65E-08	5.94E-05	0
2008	Annual	Balers	Agricultural Equipment	Contra Costa	SF	BA	8.79E+00	2.29E+00	5.72E+00	6.24E-02	0.00E+00	9.96E-06	6.26E-02	21
2008	Annual	Agricultural Mowers	Agricultural Equipment	Contra Costa	SF	BA	4.12E-01	4.10E-01	6.59E-01	7.18E-03	0.00E+00	1.32E-06	7.21E-03	2
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	1.93E+00	5.84E-01	3.19E-01	3.47E-03	0.00E+00	8.06E-07	3.49E-03	1
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	4.37E-01	1.08E-01	1.12E-01	1.22E-03	0.00E+00	3.38E-07	1.22E-03	0
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	4.18E+00	1.03E+00	2.70E+00	2.94E-02	0.00E+00	4.69E-06	2.95E-02	10
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	1.76E+00	4.35E-01	1.87E+00	2.06E-02	0.00E+00	2.13E-06	2.06E-02	7
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	1.10E+00	2.71E-01	1.91E+00	2.11E-02	0.00E+00	1.47E-06	2.11E-02	7
2008	Annual	Sprayers	Agricultural Equipment	Contra Costa	SF	BA	1.87E-01	4.62E-02	3.56E-01	3.92E-03	0.00E+00	2.52E-07	3.93E-03	1
2008	Annual	Tillers	Agricultural Equipment	Contra Costa	SF	BA	4.37E-02	3.15E-02	9.85E-03	1.08E-04	0.00E+00	1.18E-08	1.08E-04	0
2008	Annual	Tillers	Agricultural Equipment	Contra Costa	SF	BA	6.24E-03	2.94E-03	3.20E-02	3.53E-04	0.00E+00	2.60E-08	3.53E-04	0
2008	Annual	Tillers	Agricultural Equipment	Contra Costa	SF	BA	1.87E-02	8.83E-03	1.71E-01	1.89E-03	0.00E+00	1.27E-07	1.89E-03	1
2008	Annual	Swathers	Agricultural Equipment	Contra Costa	SF	BA	4.75E+01	1.43E+01	3.53E+01	3.85E-01	0.00E+00	6.20E-05	3.87E-01	128

2008 Annual	Swathers	Agricultural Equipment	Contra Costa	SF	BA	4.24E-01	1.28E-01	6.04E-01	6.62E-03	0.00E+00	6.96E-07	6.63E-03	2
2008 Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	3.62E-01	8.08E-01	2.22E-01	2.43E-03	0.00E+00	2.58E-07	2.44E-03	1
2008 Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.09E+00	2.44E+00	1.27E+00	1.39E-02	0.00E+00	1.67E-06	1.40E-02	5
2008 Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.22E+00	2.65E+00	2.62E+00	2.79E-02	0.00E+00	1.45E-05	2.82E-02	9
2008 Annual	Hydro Power Units	Agricultural Equipment	Contra Costa	SF	BA	1.12E-01	2.43E-01	4.71E-01	5.12E-03	0.00E+00	1.09E-06	5.15E-03	2
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	1.32E+00	1.62E+00	5.67E-01	6.21E-03	0.00E+00	6.96E-07	6.22E-03	2
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	3.68E+00	4.51E+00	2.90E+00	3.17E-02	0.00E+00	5.67E-06	3.18E-02	11
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	3.22E+00	3.37E+00	4.01E+00	4.30E-02	0.00E+00	1.68E-05	4.34E-02	14
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	1.09E+01	1.14E+01	2.67E+01	2.90E-01	0.00E+00	5.37E-05	2.92E-01	97
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	9.05E-01	9.46E-01	4.00E+00	4.38E-02	0.00E+00	5.32E-06	4.39E-02	15
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	9.05E-01	9.46E-01	5.76E+00	6.35E-02	0.00E+00	5.28E-06	6.36E-02	21
2008 Annual	Other Agricultural Equipment	Agricultural Equipment	Contra Costa	SF	BA	2.18E-01	2.28E-01	2.00E+00	2.20E-02	0.00E+00	1.65E-06	2.21E-02	7
COUNTYWIDE						2,415	1,796	5,416	58	0	0	59	19,394
Danville as Percent of the County's agricultural area - non-grazing			0.5%			13	10	29	0	0	0	0	105

Source: County of Contra Costa, Department of Agriculture. 2011. 2010 Contra Costa County Crop Report (County); and Danville 2012 General Plan EIR (Town).

										Tons/Day				MTons/Year
CY	Season	Equipment	Class	County	Air Basin	Air Dist.	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust	CO2e	CO2e
2008	Annual	Tampers/Rammers	Construction and Mining Equipment	Contra Costa	SF	BA	1.28E+02	6.37E+01	1.29E+01	6.63E-02	9.86E-05	5.14E-05	9.79E-02	32
2008	Annual	Plate Compactors	Construction and Mining Equipment	Contra Costa	SF	BA	1.09E+01	6.18E+00	1.25E+00	6.44E-03	9.61E-06	4.87E-06	9.52E-03	3
2008	Annual	Asphalt Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	2.78E+00	3.02E+00	1.78E+00	8.49E-03	8.64E-06	7.48E-06	1.13E-02	4
2008	Annual	Asphalt Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	4.76E+00	5.17E+00	7.69E+00	3.55E-02	2.28E-05	3.30E-05	4.33E-02	14
2008	Annual	Asphalt Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	2.58E+00	2.77E+00	6.52E+00	5.06E-02	1.78E-05	1.61E-05	5.64E-02	19
2008	Annual	Asphalt Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	1.42E+00	1.52E+00	6.05E+00	5.24E-02	1.63E-05	1.14E-05	5.77E-02	19
2008	Annual	Tampers/Rammers	Construction and Mining Equipment	Contra Costa	SF	BA	5.89E+00	2.94E+00	1.52E+00	6.88E-03	7.19E-06	7.90E-06	9.28E-03	3
2008	Annual	Plate Compactors	Construction and Mining Equipment	Contra Costa	SF	BA	2.16E+02	1.07E+02	1.97E+01	1.11E-01	1.75E-04	1.54E-04	1.69E-01	56
2008	Annual	Plate Compactors	Construction and Mining Equipment	Contra Costa	SF	BA	2.29E+02	1.29E+02	5.83E+01	2.70E-01	3.05E-04	2.76E-04	3.70E-01	122
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	2.41E+01	5.48E+00	1.51E+00	8.04E-03	1.02E-05	1.00E-05	1.14E-02	4
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	3.89E+01	3.31E+01	1.84E+01	8.74E-02	9.11E-05	7.63E-05	1.17E-01	39
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	2.63E+01	2.23E+01	2.70E+01	1.25E-01	8.78E-05	1.15E-04	1.54E-01	51
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	1.82E+00	3.10E+00	8.12E+00	6.13E-02	2.07E-05	2.27E-05	6.82E-02	23
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	3.42E+00	5.82E+00	2.71E+01	2.31E-01	6.61E-05	5.84E-05	2.53E-01	84
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	3.02E+02	1.41E+02	2.80E+01	1.57E-01	2.40E-04	2.17E-04	2.36E-01	78
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	5.12E+02	2.81E+02	1.69E+02	7.84E-01	7.71E-04	8.00E-04	1.04E+00	344
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.14E+01	6.24E+00	8.45E+00	3.83E-02	2.49E-05	3.93E-05	4.68E-02	16
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	7.05E+00	3.38E+00	7.95E+00	6.38E-02	2.06E-05	1.56E-05	7.05E-02	23
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.82E+00	8.72E-01	3.29E+00	2.90E-02	8.52E-06	4.81E-06	3.17E-02	11
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	5.55E+01	3.04E+01	6.20E+00	3.53E-02	5.35E-05	4.98E-05	5.29E-02	18
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.65E+02	2.28E+02	8.89E+01	4.22E-01	5.33E-04	3.86E-04	5.95E-01	197
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	2.26E+00	3.11E+00	2.98E+00	1.37E-02	1.11E-05	1.33E-05	1.74E-02	6
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	6.85E-01	2.44E-01	8.06E-02	4.39E-04	5.20E-07	5.74E-07	6.13E-04	0
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	4.88E+00	3.80E+00	2.30E+00	1.09E-02	1.09E-05	9.47E-06	1.45E-02	5
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	4.51E+01	5.37E+01	3.53E+01	1.68E-01	1.64E-04	1.50E-04	2.22E-01	73
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	3.50E+01	4.16E+01	5.92E+01	2.73E-01	1.81E-04	2.57E-04	3.34E-01	111
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	1.65E+01	1.82E+01	4.01E+01	3.12E-01	1.10E-04	9.80E-05	3.48E-01	115
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	5.49E+00	6.05E+00	2.60E+01	2.25E-01	6.56E-05	4.82E-05	2.46E-01	82
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	1.29E+00	4.39E-01	3.62E-01	1.64E-03	1.35E-06	1.83E-06	2.10E-03	1
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	6.41E+00	2.18E+00	3.28E+00	1.47E-02	8.70E-06	1.59E-05	1.77E-02	6
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	8.00E-01	2.35E-01	6.34E-01	5.12E-03	1.57E-06	1.22E-06	5.63E-03	2
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	3.67E+00	1.08E+00	7.23E+00	6.39E-02	1.47E-05	1.04E-05	6.87E-02	23
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	9.09E-01	2.67E-01	2.42E+00	2.20E-02	4.64E-06	2.07E-06	2.35E-02	8
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	2.37E+01	8.44E+00	2.28E+00	1.25E-02	1.62E-05	1.63E-05	1.78E-02	6
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	1.06E+02	9.05E+01	6.31E+01	3.01E-01	2.81E-04	2.62E-04	3.93E-01	130
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	3.33E+01	2.83E+01	3.85E+01	1.78E-01	1.19E-04	1.64E-04	2.18E-01	72
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	2.98E+00	4.99E+00	1.39E+01	1.18E-01	1.71E-05	8.20E-06	1.23E-01	41
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	1.71E+00	2.86E+00	1.35E+01	1.26E-01	1.08E-05	3.39E-06	1.29E-01	43
2008	Annual	Cement and Mortar Mixers	Construction and Mining Equipment	Contra Costa	SF	BA	4.30E+02	1.08E+02	2.80E+01	1.51E-01	1.99E-04	1.94E-04	2.17E-01	72
2008	Annual	Cement and Mortar Mixers	Construction and Mining Equipment	Contra Costa	SF	BA	7.28E+02	1.84E+02	9.86E+01	4.10E-01	4.03E-04	6.56E-04	5.49E-01	182
2008	Annual	Cement and Mortar Mixers	Construction and Mining Equipment	Contra Costa	SF	BA	3.06E+00	7.73E-01	1.28E+00	5.40E-03	2.92E-06	7.76E-06	6.46E-03	2
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	9.09E-01	1.03E+00	2.00E+00	1.55E-02	5.84E-06	4.93E-06	1.74E-02	6
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	1.82E+00	2.07E+00	7.09E+00	6.14E-02	1.99E-05	1.33E-05	6.79E-02	22
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	7.27E-02	8.27E-02	4.45E-01	4.04E-03	1.12E-06	4.21E-07	4.39E-03	1
2008	Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.17E+00	9.27E-01	7.04E-01	3.36E-03	3.01E-06	2.91E-06	4.35E-03	1
2008	Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	7.66E-01	6.07E-01	8.46E-01	3.91E-03	2.57E-06	3.58E-06	4.78E-03	2
2008	Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.05E+00	6.97E-01	5.54E+00	4.85E-02	1.04E-05	9.01E-06	5.20E-02	17
2008	Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	3.64E-01	4.12E-01	1.36E+00	1.05E-02	3.09E-06	3.34E-06	1.16E-02	4
2008	Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	5.16E+00	5.85E+00	3.09E+01	2.67E-01	7.07E-05	5.78E-05	2.90E-01	96
2008	Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	1.82E-01	2.06E-01	1.68E+00	1.53E-02	3.48E-06	1.60E-06	1.64E-02	5
2008	Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	9.09E-01	1.28E+00	3.11E+00	2.38E-02	8.27E-06	8.21E-06	2.65E-02	9
2008	Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	6.04E+00	8.47E+00	3.27E+01	2.81E-01	8.83E-05	6.64E-05	3.10E-01	103
2008	Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	3.20E+00	7.63E+00	2.30E+01	1.97E-01	6.28E-05	4.60E-05	2.17E-01	72
2008	Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	2.30E+00	2.01E+00	1.63E+00	7.73E-03	6.77E-06	7.06E-06	9.97E-03	3
2008	Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.54E+02	1.34E+02	1.52E+02	7.01E-01	5.10E-04	6.69E-04	8.73E-01	289
2008	Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	2.48E+01	2.11E+01	4.13E+01	3.38E-01	9.35E-05	5.83E-05	3.68E-01	122

2008	Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.48E+01	1.26E+01	5.54E+01	5.00E-01	9.96E-05	5.37E-05	5.31E-01	176
2008	Annual	Dumpers/Tenders	Construction and Mining Equipment	Contra Costa	SF	BA	2.19E+01	8.96E+00	1.22E+00	6.96E-03	1.27E-05	9.78E-06	1.11E-02	4
2008	Annual	Dumpers/Tenders	Construction and Mining Equipment	Contra Costa	SF	BA	4.68E+01	1.91E+01	7.99E+00	3.34E-02	3.72E-05	5.36E-05	4.60E-02	15
2008	Annual	Dumpers/Tenders	Construction and Mining Equipment	Contra Costa	SF	BA	8.67E+00	3.54E+00	3.09E+00	1.31E-02	9.60E-06	1.89E-05	1.64E-02	5
2008	Annual	Dumpers/Tenders	Construction and Mining Equipment	Contra Costa	SF	BA	6.54E-01	2.28E-01	5.96E-01	5.27E-03	1.88E-06	8.71E-07	5.87E-03	2
2008	Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	2.54E+00	2.59E+00	1.42E+01	1.30E-01	2.19E-05	6.60E-06	1.37E-01	45
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	6.30E-01	1.42E+00	1.21E+00	1.32E-02	0.00E+00	2.10E-06	1.33E-02	4
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	3.66E+01	8.41E+01	1.11E+02	1.18E+00	0.00E+00	6.81E-04	1.19E+00	394
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	4.32E+01	9.91E+01	3.16E+02	3.43E+00	0.00E+00	8.14E-04	3.44E+00	1,140
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	2.68E+01	6.16E+01	3.62E+02	3.95E+00	0.00E+00	6.25E-04	3.96E+00	1,312
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	3.23E+00	7.42E+00	6.57E+01	7.21E-01	0.00E+00	9.02E-05	7.23E-01	239
2008	Annual	Pavers	Construction and Mining Equipment	Contra Costa	SF	BA	3.32E+00	7.62E+00	8.11E+01	8.88E-01	0.00E+00	9.89E-05	8.90E-01	295
2008	Annual	Plate Compactors	Construction and Mining Equipment	Contra Costa	SF	BA	1.35E+01	2.22E+01	4.38E+00	4.79E-02	0.00E+00	5.17E-06	4.80E-02	16
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	2.54E+01	4.84E+01	1.40E+01	1.53E-01	0.00E+00	1.62E-05	1.53E-01	51
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	1.06E+01	2.02E+01	1.23E+01	1.35E-01	0.00E+00	1.60E-05	1.35E-01	45
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	3.30E+01	6.36E+01	7.75E+01	8.25E-01	0.00E+00	4.12E-04	8.34E-01	276
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	1.77E+02	3.41E+02	9.25E+02	1.01E+01	0.00E+00	2.10E-03	1.01E+01	3,344
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	7.13E+01	1.37E+02	6.78E+02	7.41E+00	0.00E+00	1.02E-03	7.44E+00	2,462
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	1.01E+01	1.95E+01	1.35E+02	1.49E+00	0.00E+00	1.54E-04	1.49E+00	494
2008	Annual	Rollers	Construction and Mining Equipment	Contra Costa	SF	BA	7.10E+00	1.37E+01	1.36E+02	1.49E+00	0.00E+00	1.38E-04	1.50E+00	496
2008	Annual	Scrapers	Construction and Mining Equipment	Contra Costa	SF	BA	1.64E+00	5.02E+00	2.17E+01	2.36E-01	0.00E+00	5.66E-05	2.37E-01	78
2008	Annual	Scrapers	Construction and Mining Equipment	Contra Costa	SF	BA	1.50E+01	4.60E+01	3.12E+02	3.40E+00	0.00E+00	5.46E-04	3.41E+00	1,130
2008	Annual	Scrapers	Construction and Mining Equipment	Contra Costa	SF	BA	1.46E+01	4.48E+01	4.27E+02	4.69E+00	0.00E+00	5.84E-04	4.70E+00	1,557
2008	Annual	Scrapers	Construction and Mining Equipment	Contra Costa	SF	BA	4.02E+01	1.23E+02	1.81E+03	1.98E+01	0.00E+00	2.21E-03	1.99E+01	6,575
2008	Annual	Scrapers	Construction and Mining Equipment	Contra Costa	SF	BA	2.05E+01	6.30E+01	1.60E+03	1.75E+01	0.00E+00	1.97E-03	1.75E+01	5,802
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.09E+00	2.48E+00	1.43E+00	1.57E-02	0.00E+00	1.85E-06	1.57E-02	5
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	9.24E-01	2.12E+00	2.40E+00	2.54E-02	0.00E+00	1.46E-05	2.57E-02	9
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.33E+01	3.06E+01	7.67E+01	8.33E-01	0.00E+00	1.97E-04	8.37E-01	277
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	6.26E+00	1.44E+01	6.65E+01	7.26E-01	0.00E+00	1.14E-04	7.28E-01	241
2008	Annual	Paving Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.76E+00	4.05E+00	2.26E+01	2.48E-01	0.00E+00	3.07E-05	2.48E-01	82
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	8.40E-01	1.05E+00	6.88E-01	7.36E-03	0.00E+00	3.15E-06	7.43E-03	2
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.68E-01	2.09E-01	6.11E-01	6.66E-03	0.00E+00	1.28E-06	6.68E-03	2
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.26E-01	1.57E-01	6.14E-01	6.72E-03	0.00E+00	8.52E-07	6.73E-03	2
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	2.52E-01	3.14E-01	1.92E+00	2.11E-02	0.00E+00	2.01E-06	2.12E-02	7
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	2.10E+00	2.61E+00	2.63E+01	2.89E-01	0.00E+00	2.46E-05	2.89E-01	96
2008	Annual	Surfacing Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	3.93E+00	4.89E+00	7.71E+01	8.47E-01	0.00E+00	7.37E-05	8.49E-01	281
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	1.18E+02	2.43E+02	6.84E+01	7.49E-01	0.00E+00	7.87E-05	7.51E-01	249
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	5.88E-01	8.62E-01	1.46E+00	1.56E-02	0.00E+00	6.46E-06	1.57E-02	5
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	9.61E+00	1.41E+01	5.19E+01	5.65E-01	0.00E+00	1.07E-04	5.67E-01	188
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	5.96E+00	8.75E+00	6.17E+01	6.75E-01	0.00E+00	8.35E-05	6.77E-01	224
2008	Annual	Signal Boards	Construction and Mining Equipment	Contra Costa	SF	BA	1.26E+00	1.85E+00	2.14E+01	2.36E-01	0.00E+00	1.95E-05	2.36E-01	78
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	3.15E+00	5.34E+00	2.06E+00	2.26E-02	0.00E+00	2.37E-06	2.26E-02	7
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	3.32E+00	5.62E+00	8.42E+00	9.24E-02	0.00E+00	1.04E-05	9.27E-02	31
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	1.26E+02	2.20E+02	3.41E+02	3.61E+00	0.00E+00	2.00E-03	3.65E+00	1,210
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	1.71E+02	2.98E+02	8.89E+02	9.65E+00	0.00E+00	2.25E-03	9.70E+00	3,211
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	1.87E+01	3.26E+01	2.14E+02	2.34E+00	0.00E+00	3.64E-04	2.35E+00	778
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	1.68E+00	2.92E+00	2.97E+01	3.25E-01	0.00E+00	4.05E-05	3.26E-01	108
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	2.14E+00	3.73E+00	5.29E+01	5.79E-01	0.00E+00	6.42E-05	5.81E-01	192
2008	Annual	Trenchers	Construction and Mining Equipment	Contra Costa	SF	BA	7.85E-01	1.37E+00	3.66E+01	4.00E-01	0.00E+00	4.49E-05	4.01E-01	133
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	4.20E-01	9.34E-01	4.41E-01	4.83E-03	0.00E+00	5.12E-07	4.84E-03	2
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	1.26E+00	2.80E+00	2.04E+00	2.24E-02	0.00E+00	2.65E-06	2.24E-02	7
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	5.50E+00	1.28E+01	1.83E+01	1.98E-01	0.00E+00	4.68E-05	1.99E-01	66
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	1.69E+01	3.92E+01	1.38E+02	1.51E+00	0.00E+00	1.80E-04	1.51E+00	501
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	3.90E+00	9.07E+00	5.82E+01	6.39E-01	0.00E+00	4.91E-05	6.40E-01	212
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	3.36E+00	7.80E+00	6.63E+01	7.33E-01	0.00E+00	3.71E-05	7.34E-01	243
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	7.47E+00	1.74E+01	2.44E+02	2.70E+00	0.00E+00	1.22E-04	2.70E+00	894
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	1.22E+01	2.83E+01	7.86E+02	8.68E+00	0.00E+00	4.07E-04	8.69E+00	2,878
2008	Annual	Bore/Drill Rigs	Construction and Mining Equipment	Contra Costa	SF	BA	2.04E+01	4.73E+01	1.99E+03	2.20E+01	0.00E+00	1.34E-03	2.20E+01	7,280
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	1.55E+00	5.95E+00	4.45E+00	4.88E-02	0.00E+00	5.39E-06	4.90E-02	16

2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	5.85E+01	2.28E+02	2.68E+02	2.85E+00	0.00E+00	1.42E-03	2.88E+00	955
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	1.59E+02	6.20E+02	2.10E+03	2.28E+01	0.00E+00	4.61E-03	2.29E+01	7,585
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	3.06E+02	1.20E+03	6.13E+03	6.71E+01	0.00E+00	9.02E-03	6.73E+01	22,272
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	1.25E+02	4.87E+02	3.50E+03	3.86E+01	0.00E+00	3.55E-03	3.86E+01	12,796
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	8.99E+01	3.51E+02	3.72E+03	4.10E+01	0.00E+00	3.44E-03	4.11E+01	13,594
2008	Annual	Excavators	Construction and Mining Equipment	Contra Costa	SF	BA	6.15E+00	2.40E+01	4.22E+02	4.65E+00	0.00E+00	3.94E-04	4.66E+00	1,542
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	1.68E-01	2.73E-01	2.04E-01	2.24E-03	0.00E+00	2.54E-07	2.25E-03	1
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	1.47E+00	2.34E+00	3.29E+00	3.53E-02	0.00E+00	1.49E-05	3.56E-02	12
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	2.56E+00	4.07E+00	1.39E+01	1.51E-01	0.00E+00	2.84E-05	1.51E-01	50
2008	Annual	Concrete/Industrial Saws	Construction and Mining Equipment	Contra Costa	SF	BA	8.40E-02	1.34E-01	9.76E-01	1.07E-02	0.00E+00	1.32E-06	1.07E-02	4
2008	Annual	Cement and Mortar Mixers	Construction and Mining Equipment	Contra Costa	SF	BA	2.15E+01	1.76E+01	5.10E+00	5.57E-02	0.00E+00	6.90E-06	5.59E-02	18
2008	Annual	Cement and Mortar Mixers	Construction and Mining Equipment	Contra Costa	SF	BA	1.93E+00	1.59E+00	1.28E+00	1.39E-02	0.00E+00	2.88E-06	1.40E-02	5
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	1.43E+00	5.01E+00	5.49E+00	5.81E-02	0.00E+00	3.31E-05	5.88E-02	19
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	1.57E+01	5.50E+01	1.27E+02	1.38E+00	0.00E+00	3.12E-04	1.38E+00	458
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	1.57E+01	5.50E+01	2.02E+02	2.21E+00	0.00E+00	3.33E-04	2.21E+00	733
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	3.04E+01	1.07E+02	5.44E+02	5.97E+00	0.00E+00	6.69E-04	5.99E+00	1,982
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	1.11E+01	3.91E+01	3.20E+02	3.52E+00	0.00E+00	3.54E-04	3.52E+00	1,166
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	2.55E+01	8.96E+01	1.24E+03	1.36E+01	0.00E+00	1.38E-03	1.36E+01	4,501
2008	Annual	Cranes	Construction and Mining Equipment	Contra Costa	SF	BA	3.21E+01	1.12E+02	4.97E+03	5.45E+01	0.00E+00	6.15E-03	5.47E+01	18,100
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	5.88E-01	1.54E+00	2.00E+00	2.12E-02	0.00E+00	1.13E-05	2.14E-02	7
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	3.92E+01	1.03E+02	3.54E+02	3.85E+00	0.00E+00	8.25E-04	3.87E+00	1,281
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	1.34E+02	3.51E+02	1.99E+03	2.18E+01	0.00E+00	3.10E-03	2.18E+01	7,225
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	8.31E+01	2.18E+02	1.70E+03	1.87E+01	0.00E+00	1.93E-03	1.88E+01	6,221
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	2.35E+00	6.17E+00	6.43E+01	7.07E-01	0.00E+00	6.56E-05	7.08E-01	235
2008	Annual	Graders	Construction and Mining Equipment	Contra Costa	SF	BA	3.93E-01	1.03E+00	2.27E+01	2.50E-01	0.00E+00	2.34E-05	2.50E-01	83
2008	Annual	Off-Highway Trucks	Construction and Mining Equipment	Contra Costa	SF	BA	2.73E+00	1.49E+01	8.52E+01	9.31E-01	0.00E+00	1.32E-04	9.34E-01	309
2008	Annual	Off-Highway Trucks	Construction and Mining Equipment	Contra Costa	SF	BA	2.02E+01	1.10E+02	8.32E+02	9.15E+00	0.00E+00	9.04E-04	9.17E+00	3,037
2008	Annual	Off-Highway Trucks	Construction and Mining Equipment	Contra Costa	SF	BA	2.84E+01	1.55E+02	1.92E+03	2.11E+01	0.00E+00	1.91E-03	2.11E+01	6,993
2008	Annual	Off-Highway Trucks	Construction and Mining Equipment	Contra Costa	SF	BA	8.23E+01	4.49E+02	9.01E+03	9.92E+01	0.00E+00	9.03E-03	9.93E+01	32,895
2008	Annual	Off-Highway Trucks	Construction and Mining Equipment	Contra Costa	SF	BA	3.86E+01	2.11E+02	5.98E+03	6.57E+01	0.00E+00	6.75E-03	6.58E+01	21,802
2008	Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	6.72E+00	1.76E+01	3.64E+01	3.87E-01	0.00E+00	2.00E-04	3.91E-01	129

2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.89E+01	4.96E+01	1.89E+02	2.06E+00	0.00E+00	4.37E-04	2.07E+00	685
2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	8.02E+00	2.10E+01	1.60E+02	1.75E+00	0.00E+00	2.46E-04	1.76E+00	583
2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	7.98E-01	2.09E+00	2.32E+01	2.55E-01	0.00E+00	2.38E-05	2.56E-01	85
2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	4.49E+00	1.18E+01	2.00E+02	2.20E+00	0.00E+00	1.83E-04	2.20E+00	728
2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	6.54E-01	1.71E+00	4.58E+01	5.04E-01	0.00E+00	4.25E-05	5.05E-01	167
2008 Annual	Crushing/Proc. Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	6.54E-01	1.71E+00	1.02E+02	1.12E+00	0.00E+00	1.18E-04	1.12E+00	371
2008 Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	4.66E+00	1.45E+01	2.31E+01	2.45E-01	0.00E+00	1.22E-04	2.48E-01	82
2008 Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	2.23E+02	6.94E+02	1.99E+03	2.17E+01	0.00E+00	4.39E-03	2.18E+01	7,204
2008 Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	2.86E+01	8.90E+01	5.08E+02	5.55E+00	0.00E+00	7.45E-04	5.57E+00	1,843
2008 Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	1.60E+00	4.96E+00	3.85E+01	4.24E-01	0.00E+00	3.91E-05	4.24E-01	141
2008 Annual	Rough Terrain Forklifts	Construction and Mining Equipment	Contra Costa	SF	BA	1.05E+00	3.27E+00	3.80E+01	4.19E-01	0.00E+00	3.47E-05	4.19E-01	139
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	5.88E-01	1.54E+00	1.19E+00	1.30E-02	0.00E+00	1.47E-06	1.31E-02	4
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.14E+01	3.06E+01	4.48E+01	4.76E-01	0.00E+00	2.50E-04	4.81E-01	159
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	3.10E+02	8.31E+02	2.25E+03	2.45E+01	0.00E+00	5.18E-03	2.46E+01	8,137
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.75E+02	4.69E+02	2.28E+03	2.49E+01	0.00E+00	3.50E-03	2.50E+01	8,264
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.74E+02	4.66E+02	3.15E+03	3.47E+01	0.00E+00	3.52E-03	3.48E+01	11,507
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	7.24E+01	1.94E+02	2.09E+03	2.30E+01	0.00E+00	2.09E-03	2.30E+01	7,617
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.58E+01	4.24E+01	9.35E+02	1.03E+01	0.00E+00	9.48E-04	1.03E+01	3,411
2008 Annual	Rubber Tired Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	1.70E+00	4.55E+00	1.23E+02	1.35E+00	0.00E+00	1.42E-04	1.35E+00	448
2008 Annual	Rubber Tired Dozers	Construction and Mining Equipment	Contra Costa	SF	BA	4.20E-01	1.89E+00	1.12E+01	1.22E-01	0.00E+00	2.21E-05	1.23E-01	41
2008 Annual	Rubber Tired Dozers	Construction and Mining Equipment	Contra Costa	SF	BA	1.03E+01	4.62E+01	3.87E+02	4.24E+00	0.00E+00	6.28E-04	4.25E+00	1,408
2008 Annual	Rubber Tired Dozers	Construction and Mining Equipment	Contra Costa	SF	BA	1.58E+01	7.11E+01	8.63E+02	9.41E+00	0.00E+00	1.25E-03	9.44E+00	3,126
2008 Annual	Rubber Tired Dozers	Construction and Mining Equipment	Contra Costa	SF	BA	1.74E+01	7.82E+01	1.43E+03	1.56E+01	0.00E+00	2.08E-03	1.56E+01	5,174
2008 Annual	Rubber Tired Dozers	Construction and Mining Equipment	Contra Costa	SF	BA	1.18E+00	5.29E+00	1.43E+02	1.56E+00	0.00E+00	2.19E-04	1.57E+00	519
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	1.18E+01	3.06E+01	2.21E+01	2.42E-01	0.00E+00	3.27E-05	2.43E-01	80
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	7.07E+01	1.87E+02	2.66E+02	2.84E+00	0.00E+00	1.30E-03	2.87E+00	950
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	9.46E+02	2.51E+03	5.95E+03	6.48E+01	0.00E+00	1.22E-02	6.50E+01	21,535
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	7.06E+01	1.87E+02	8.66E+02	9.48E+00	0.00E+00	1.18E-03	9.50E+00	3,146
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	2.28E+01	6.05E+01	4.71E+02	5.19E+00	0.00E+00	4.36E-04	5.20E+00	1,722
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	3.69E+01	9.77E+01	1.53E+03	1.68E+01	0.00E+00	1.28E-03	1.69E+01	5,580
2008 Annual	Tractors/Loaders/Backhoes	Construction and Mining Equipment	Contra Costa	SF	BA	7.92E+01	2.10E+02	4.92E+03	5.42E+01	0.00E+00	4.17E-03	5.43E+01	17,974
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	5.88E-01	1.70E+00	2.00E+00	2.11E-02	0.00E+00	1.25E-05	2.14E-02	7
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	3.33E+02	9.65E+02	2.92E+03	3.17E+01	0.00E+00	7.58E-03	3.19E+01	10,562
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	1.13E+02	3.27E+02	1.81E+03	1.98E+01	0.00E+00	3.16E-03	1.98E+01	6,571
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	9.70E+01	2.81E+02	2.12E+03	2.33E+01	0.00E+00	2.87E-03	2.34E+01	7,735
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	6.65E+01	1.92E+02	2.27E+03	2.49E+01	0.00E+00	2.75E-03	2.50E+01	8,269
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	1.05E+01	3.03E+01	6.42E+02	7.03E+00	0.00E+00	7.82E-04	7.05E+00	2,335
2008 Annual	Crawler Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	1.05E+01	3.03E+01	9.10E+02	9.95E+00	0.00E+00	1.20E-03	9.98E+00	3,304
2008 Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	8.06E+01	1.84E+02	1.16E+02	1.27E+00	0.00E+00	2.43E-04	1.28E+00	422
2008 Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	7.31E+02	1.72E+03	2.03E+03	2.19E+01	0.00E+00	7.79E-03	2.20E+01	7,295
2008 Annual	Skid Steer Loaders	Construction and Mining Equipment	Contra Costa	SF	BA	3.83E+02	8.99E+02	1.76E+03	1.92E+01	0.00E+00	3.06E-03	1.93E+01	6,379
2008 Annual	Off-Highway Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	4.20E-02	1.29E-01	5.59E-01	6.06E-03	0.00E+00	1.58E-06	6.09E-03	2
2008 Annual	Off-Highway Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	5.13E+01	1.58E+02	9.45E+02	1.03E+01	0.00E+00	1.80E-03	1.03E+01	3,425
2008 Annual	Off-Highway Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	4.85E+01	1.50E+02	8.89E+02	9.74E+00	0.00E+00	1.38E-03	9.77E+00	3,235
2008 Annual	Off-Highway Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	6.57E+01	2.02E+02	5.26E+03	5.74E+01	0.00E+00	7.32E-03	5.76E+01	19,066
2008 Annual	Off-Highway Tractors	Construction and Mining Equipment	Contra Costa	SF	BA	6.94E+00	2.13E+01	7.96E+02	8.68E+00	0.00E+00	1.18E-03	8.71E+00	2,883
2008 Annual	Dumpers/Tenders	Construction and Mining Equipment	Contra Costa	SF	BA	1.01E+00	1.83E+00	6.36E-01	6.97E-03	0.00E+00	9.96E-07	6.99E-03	2
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.39E+01	2.63E+01	1.21E+01	1.33E-01	0.00E+00	1.41E-05	1.33E-01	44
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	2.35E+00	4.45E+00	2.68E+00	2.94E-02	0.00E+00	3.48E-06	2.94E-02	10
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	3.61E+00	6.98E+00	9.10E+00	9.76E-02	0.00E+00	3.91E-05	9.84E-02	33
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	5.96E+00	1.15E+01	4.27E+01	4.65E-01	0.00E+00	8.15E-05	4.67E-01	155
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	8.23E+00	1.59E+01	7.73E+01	8.46E-01	0.00E+00	9.71E-05	8.48E-01	281
2008 Annual	Other Construction Equipment	Construction and Mining Equipment	Contra Costa	SF	BA	1.91E+01	3.69E+01	4.25E+02	4.69E+00	0.00E+00	3.24E-04	4.70E+00	1,555
COUNTYWIDE						10,354	20,866	113,467	1,235	0	0	1,241	410,776
Building Permits issued for Residential Development in Costra Costa County			2,155										
Building Permits issued in Danville			86										
Percent Land Acreage			3.99%			413	833	4,528	49	0	0	50	16,393

Source: According to the Association of Bay Area Governments (ABAG 2009), Danville had 86 housing (building) permits issued in 2008 compared to 2,155 (3.99%) within Contra Costa County. http://www.abag.ca.gov/pdfs/2009_Housing_Data.pdf. Since data on non-residential permits is not collected by ABAG, it is

										Tons/Day				MTons/Year
CY	Season	Equipment	Class	County	Air Basin	Air Dist.	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust	CO2e	CO2e
2008	Annual	Chainsaws	Lawn and Garden Equipment	Contra Costa	SF	BA	2.30E+03	1.82E+03	1.09E+02	4.45E-01	7.37E-04	5.65E-03	7.92E-01	262
2008	Annual	Chainsaws	Lawn and Garden Equipment	Contra Costa	SF	BA	2.59E+04	3.48E+02	2.49E+01	8.47E-02	1.36E-04	1.11E-03	1.50E-01	50
2008	Annual	Chainsaws	Lawn and Garden Equipment	Contra Costa	SF	BA	1.62E+03	1.29E+03	1.85E+02	7.57E-01	8.32E-04	9.63E-03	1.22E+00	403
2008	Annual	Chainsaws	Lawn and Garden Equipment	Contra Costa	SF	BA	1.82E+04	2.45E+02	3.84E+01	1.44E-01	1.49E-04	1.59E-03	2.24E-01	74
2008	Annual	Chainsaws Preempt	Lawn and Garden Equipment	Contra Costa	SF	BA	2.02E+03	1.60E+03	2.31E+02	9.43E-01	1.04E-03	1.20E-02	1.52E+00	502
2008	Annual	Chainsaws Preempt	Lawn and Garden Equipment	Contra Costa	SF	BA	2.27E+04	3.05E+02	5.50E+01	1.80E-01	1.65E-04	2.52E-03	2.84E-01	94
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	3.62E+00	1.25E+01	1.08E+01	5.08E-02	4.44E-05	4.65E-05	6.55E-02	22
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	6.46E+00	2.92E-01	2.79E-01	1.19E-03	8.41E-07	1.29E-06	1.47E-03	0
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	2.05E+01	7.10E+01	1.03E+02	4.72E-01	3.15E-04	4.56E-04	5.79E-01	192
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	3.66E+01	1.65E+00	2.60E+00	1.10E-02	5.88E-06	1.12E-05	1.30E-02	4
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	2.91E-01	3.70E-01	3.39E-01	3.73E-03	0.00E+00	4.22E-07	3.73E-03	1
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	8.01E+00	1.02E+01	3.56E+01	3.87E-01	0.00E+00	7.33E-05	3.89E-01	129
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	5.49E-01	6.99E-01	4.21E+00	4.61E-02	0.00E+00	5.73E-06	4.62E-02	15
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	1.29E-01	1.65E-01	1.66E+00	1.83E-02	0.00E+00	1.62E-06	1.83E-02	6
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	1.20E+00	1.52E+00	1.71E+01	1.88E-01	0.00E+00	1.50E-05	1.88E-01	62
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	1.36E+00	1.73E+00	4.67E+01	5.14E-01	0.00E+00	4.19E-05	5.15E-01	170
2008	Annual	Chippers/Stump Grinders	Lawn and Garden Equipment	Contra Costa	SF	BA	2.58E+00	3.29E+00	1.27E+02	1.39E+00	0.00E+00	1.40E-04	1.39E+00	462
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.00E+01	6.58E+01	2.71E+01	1.40E-01	1.45E-04	1.01E-04	1.87E-01	62
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.48E+01	3.25E+01	2.91E+01	1.46E-01	1.03E-04	1.10E-04	1.80E-01	60
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	2.71E+02	5.93E+02	3.25E+02	1.54E+00	1.58E-03	1.32E-03	2.06E+00	683
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.33E+02	2.92E+02	2.85E+02	1.31E+00	1.02E-03	1.16E-03	1.65E+00	547
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	5.38E+01	1.08E+02	1.76E+02	1.30E+00	5.28E-04	4.30E-04	1.48E+00	489
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.55E-01	7.13E-01	1.75E+00	1.61E-02	3.03E-06	5.01E-07	1.71E-02	6
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.57E+01	4.59E+01	2.02E+01	2.22E-01	0.00E+00	2.17E-05	2.22E-01	74
2008	Annual	Commercial Turf Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	2.95E+02	8.63E+02	5.69E+02	6.25E+00	0.00E+00	6.90E-04	6.26E+00	2,073
2008	Annual	Front Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.91E+02	1.42E+02	7.63E+01	3.67E-01	3.02E-04	2.07E-04	4.65E-01	154
2008	Annual	Front Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	6.18E+03	4.77E+02	2.70E+02	1.23E+00	1.06E-03	1.06E-03	1.58E+00	525
2008	Annual	Front Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.50E+02	1.11E+02	8.04E+01	3.76E-01	2.72E-04	2.14E-04	4.65E-01	154
2008	Annual	Front Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	4.84E+03	3.74E+02	2.81E+02	1.26E+00	9.06E-04	1.05E-03	1.57E+00	519
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	7.64E+02	2.69E+02	1.74E+02	8.41E-01	5.79E-04	3.99E-04	1.03E+00	341
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	4.96E+03	1.99E+02	1.34E+02	6.20E-01	4.77E-04	4.49E-04	7.78E-01	257
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	3.01E+02	1.06E+02	1.09E+02	5.12E-01	2.82E-04	2.50E-04	6.05E-01	200
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	1.96E+03	7.83E+01	8.35E+01	3.78E-01	2.24E-04	2.72E-04	4.53E-01	150
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	4.36E+00	1.24E+00	1.97E+00	1.61E-02	5.93E-06	3.30E-06	1.80E-02	6
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	6.24E+02	9.29E+02	3.94E+02	4.31E+00	0.00E+00	4.90E-04	4.32E+00	1,432
2008	Annual	Lawn & Garden Tractors	Lawn and Garden Equipment	Contra Costa	SF	BA	4.88E+02	7.27E+02	4.73E+02	5.19E+00	0.00E+00	6.10E-04	5.21E+00	1,724
2008	Annual	Lawn Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.29E+03	8.05E+02	9.10E+01	5.49E-01	7.11E-04	6.40E-04	7.83E-01	259
2008	Annual	Lawn Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	9.65E+03	4.10E+02	6.97E+01	2.79E-01	3.54E-04	1.86E-03	4.28E-01	142
2008	Annual	Lawn Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	7.61E+03	4.77E+03	5.76E+02	3.25E+00	4.21E-03	3.79E-03	4.63E+00	1,535
2008	Annual	Lawn Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.21E+05	5.12E+03	8.16E+02	3.49E+00	5.09E-03	6.25E-03	5.20E+00	1,722
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	1.12E+04	6.03E+03	3.22E+02	1.43E+00	2.40E-03	1.38E-02	2.46E+00	815
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	2.89E+04	3.80E+02	2.65E+01	8.99E-02	1.47E-04	1.18E-03	1.60E-01	53
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	3.54E+02	6.02E+01	4.05E+00	2.05E-02	3.18E-05	1.72E-05	3.07E-02	10
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	3.04E+02	4.00E+00	3.41E-01	1.36E-03	2.55E-06	2.45E-06	2.21E-03	1
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	2.58E-01	8.49E-02	1.17E-02	1.28E-04	0.00E+00	1.39E-08	1.28E-04	0
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	2.26E-01	7.43E-02	1.65E-01	1.81E-03	0.00E+00	2.89E-07	1.81E-03	1
2008	Annual	Leaf Blowers/Vacuums	Lawn and Garden Equipment	Contra Costa	SF	BA	6.46E-02	2.12E-02	9.66E-02	1.06E-03	0.00E+00	7.77E-08	1.07E-03	0
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.27E+01	2.39E+00	1.33E-01	6.55E-04	1.03E-06	4.07E-06	1.06E-03	0
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.89E+02	4.58E+00	3.70E-01	1.26E-03	1.91E-06	1.64E-05	2.20E-03	1
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	5.52E+00	1.04E+00	2.90E-01	1.42E-03	1.05E-06	8.85E-06	1.94E-03	1
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.69E+02	2.00E+00	7.27E-01	2.74E-03	1.91E-06	3.01E-05	3.96E-03	1
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	2.38E+02	4.46E+01	9.33E+00	4.90E-02	5.37E-05	4.98E-05	6.67E-02	22
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	7.28E+03	8.58E+01	2.35E+01	9.42E-02	1.02E-04	1.65E-04	1.29E-01	43
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.06E+02	1.98E+01	9.06E+00	4.35E-02	4.04E-05	2.64E-05	5.66E-02	19
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.23E+03	3.81E+01	1.88E+01	8.37E-02	7.55E-05	6.35E-05	1.08E-01	36
2008	Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	2.23E+00	4.19E-01	4.19E-01	1.95E-03	1.23E-06	1.25E-06	2.36E-03	1

2008 Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	6.87E+01	8.10E-01	8.62E-01	3.78E-03	2.26E-06	2.82E-06	4.54E-03	2
2008 Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	1.62E-01	2.70E-02	5.95E-02	4.87E-04	1.59E-07	1.02E-07	5.38E-04	0
2008 Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.88E-01	6.48E-02	3.67E-01	3.27E-03	7.99E-07	4.60E-07	3.53E-03	1
2008 Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	2.26E-01	2.68E-01	1.50E-01	1.64E-03	0.00E+00	1.70E-07	1.64E-03	1
2008 Annual	Other Lawn & Garden Equipment	Lawn and Garden Equipment	Contra Costa	SF	BA	3.23E-02	3.83E-02	2.84E-02	3.12E-04	0.00E+00	3.51E-08	3.13E-04	0
2008 Annual	Rear Engine Riding Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	4.17E+03	3.10E+03	1.04E+03	5.02E+00	5.13E-03	2.83E-03	6.67E+00	2,207
2008 Annual	Rear Engine Riding Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	3.66E+03	2.82E+02	1.00E+02	4.57E-01	4.89E-04	3.94E-04	6.17E-01	204
2008 Annual	Rear Engine Riding Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.91E+01	1.42E+01	9.27E+00	4.33E-02	3.28E-05	2.47E-05	5.40E-02	18
2008 Annual	Rear Engine Riding Mowers	Lawn and Garden Equipment	Contra Costa	SF	BA	1.64E+01	1.27E+00	8.64E-01	3.88E-03	2.92E-06	3.24E-06	4.86E-03	2
2008 Annual	Shredders	Lawn and Garden Equipment	Contra Costa	SF	BA	5.67E+01	2.11E+01	9.24E+00	4.79E-02	4.67E-05	3.23E-05	6.30E-02	21
2008 Annual	Shredders	Lawn and Garden Equipment	Contra Costa	SF	BA	2.02E+03	4.97E+00	3.06E+00	1.13E-02	7.80E-06	9.86E-05	1.58E-02	5
2008 Annual	Shredders	Lawn and Garden Equipment	Contra Costa	SF	BA	1.50E+02	5.58E+01	1.54E+01	8.45E-02	1.09E-04	1.12E-04	1.21E-01	40
2008 Annual	Shredders	Lawn and Garden Equipment	Contra Costa	SF	BA	5.58E+03	1.38E+01	5.34E+00	2.08E-02	2.01E-05	3.73E-05	2.79E-02	9
2008 Annual	Tillers	Lawn and Garden Equipment	Contra Costa	SF	BA	7.90E+02	1.21E+02	1.75E+01	9.16E-02	1.27E-04	9.74E-05	1.33E-01	44
2008 Annual	Tillers	Lawn and Garden Equipment	Contra Costa	SF	BA	3.07E+03	1.51E+02	2.71E+01	1.15E-01	1.59E-04	2.25E-04	1.69E-01	56
2008 Annual	Trimmers/Edgers/Brush Cutters	Lawn and Garden Equipment	Contra Costa	SF	BA	7.51E+03	2.50E+03	1.11E+02	5.32E-01	9.39E-04	3.71E-03	9.01E-01	298
2008 Annual	Trimmers/Edgers/Brush Cutters	Lawn and Garden Equipment	Contra Costa	SF	BA	8.37E+04	4.93E+03	2.18E+02	1.05E+00	2.00E-03	6.75E-03	1.81E+00	600
2008 Annual	Trimmers/Edgers/Brush Cutters	Lawn and Garden Equipment	Contra Costa	SF	BA	1.39E+03	5.16E+02	1.60E+01	8.80E-02	3.15E-04	1.16E-04	1.88E-01	62
2008 Annual	Trimmers/Edgers/Brush Cutters	Lawn and Garden Equipment	Contra Costa	SF	BA	6.47E+03	3.81E+02	1.65E+01	6.50E-02	1.95E-04	1.73E-04	1.29E-01	43
2008 Annual	Wood Splitters	Lawn and Garden Equipment	Contra Costa	SF	BA	2.57E+02	9.04E+01	2.69E+01	1.48E-01	1.28E-04	1.61E-04	1.91E-01	63
2008 Annual	Wood Splitters	Lawn and Garden Equipment	Contra Costa	SF	BA	6.42E+03	1.93E+01	7.79E+00	3.16E-02	2.78E-05	4.71E-05	4.12E-02	14
COUNTYWIDE						410,889	41,099	8,098	49	0	0	61	20,254
Housing Units in Contra Costa (2008):			399,737										
Housing Units in Danville 2008*			17,160	4.29%		17,639	1,764	348	2	0	0	3	869

County Source: Association of Bay Area Governments (ABAG), 2009. San Francisco Bay Area Housing Data. October. http://www.abag.ca.gov/pdfs/2009_Housing_Data.pdf

.* Danville housing units is based on the General Plan Update

										Tons/Day				MTons/Year
CY	Season	Equipment	Class	County	Air Basin	Air Dist.	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust	CO2e	CO2e
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	5.68E+01	2.09E+01	1.56E+00	6.73E-03	1.57E-05	3.68E-05	1.24E-02	4
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	4.47E+01	1.10E+01	9.10E-01	3.56E-03	7.96E-06	2.62E-05	6.57E-03	2
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	5.73E-01	2.11E-01	1.28E-01	6.11E-04	5.15E-07	1.02E-06	7.92E-04	0
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	4.37E-01	1.08E-01	7.33E-02	3.13E-04	2.39E-07	1.32E-06	4.15E-04	0
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.26E+02	1.60E+02	9.64E+00	5.21E-02	1.29E-04	1.27E-04	9.48E-02	31
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.78E+02	8.43E+01	6.14E+00	2.75E-02	6.45E-05	1.31E-04	5.03E-02	17
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	6.09E+01	4.30E+01	2.28E+01	1.12E-01	1.06E-04	1.28E-04	1.48E-01	49
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	4.79E+01	2.27E+01	1.31E+01	5.94E-02	5.21E-05	1.60E-04	7.89E-02	26
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	7.37E-01	5.21E-01	5.81E-01	2.89E-03	1.89E-06	2.47E-06	3.53E-03	1
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	5.73E-01	2.72E-01	3.20E-01	1.51E-03	9.22E-07	2.44E-06	1.85E-03	1
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	7.46E+02	2.74E+02	8.11E+01	3.53E-01	4.41E-04	9.96E-04	5.11E-01	169
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	5.86E+02	1.45E+02	4.50E+01	1.87E-01	2.28E-04	5.72E-04	2.70E-01	89
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	2.05E+03	7.54E+02	4.95E+02	2.18E+00	1.95E-03	2.77E-03	2.85E+00	943
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.61E+03	3.98E+02	2.73E+02	1.15E+00	9.98E-04	1.76E-03	1.50E+00	497
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.10E+03	4.05E+02	5.64E+02	2.48E+00	1.48E-03	2.95E-03	3.00E+00	992
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	8.65E+02	2.14E+02	3.07E+02	1.31E+00	7.50E-04	1.80E-03	1.58E+00	523
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	3.67E+02	1.15E+02	2.67E+02	2.17E+00	6.95E-04	4.77E-04	2.39E+00	792
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	7.08E+01	2.23E+01	1.21E+02	1.07E+00	2.67E-04	1.59E-04	1.16E+00	384
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	6.69E+00	2.11E+00	1.90E+01	1.74E-01	3.56E-05	1.49E-05	1.85E-01	61
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.65E+02	1.87E+02	3.67E+01	1.83E-01	2.94E-04	4.05E-04	2.83E-01	94
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.08E+02	9.88E+01	2.32E+01	9.68E-02	1.44E-04	3.01E-04	1.48E-01	49
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.87E+02	2.03E+02	1.17E+02	5.30E-01	5.33E-04	6.18E-04	7.08E-01	234
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.25E+02	1.07E+02	6.49E+01	2.80E-01	2.68E-04	3.95E-04	3.71E-01	123
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	7.35E+01	5.19E+01	6.31E+01	2.88E-01	2.01E-04	2.86E-04	3.56E-01	118
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	5.77E+01	2.74E+01	3.46E+01	1.52E-01	9.91E-05	1.81E-04	1.87E-01	62
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.93E+01	1.77E+01	4.08E+01	3.27E-01	1.07E-04	8.32E-05	3.62E-01	120
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	3.71E+01	2.25E+01	1.40E+02	1.23E+00	2.86E-04	2.12E-04	1.32E+00	438
2008	Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.12E+00	6.77E-01	6.12E+00	5.59E-02	1.15E-05	5.23E-06	5.95E-02	20
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	9.56E+01	1.48E+02	3.30E+01	1.96E-01	2.90E-04	2.96E-04	2.92E-01	97
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	7.51E+01	7.82E+01	1.74E+01	1.04E-01	1.53E-04	1.57E-04	1.54E-01	51
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	4.84E+01	7.49E+01	2.93E+01	1.39E-01	1.75E-04	1.27E-04	1.96E-01	65
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	3.80E+01	3.96E+01	1.55E+01	7.34E-02	9.10E-05	6.78E-05	1.03E-01	34
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	6.53E+00	1.01E+01	9.88E+00	4.55E-02	3.64E-05	4.40E-05	5.77E-02	19
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	5.13E+00	5.34E+00	5.28E+00	2.41E-02	1.87E-05	2.43E-05	3.04E-02	10
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.11E+01	1.48E+01	3.24E+01	2.50E-01	8.98E-05	8.46E-05	2.79E-01	92
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	3.61E+01	4.78E+01	1.86E+02	1.60E+00	4.96E-04	3.72E-04	1.76E+00	584
2008	Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	2.43E+00	3.22E+00	2.21E+01	2.01E-01	5.02E-05	2.15E-05	2.17E-01	72
2008	Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	1.87E+02	1.06E+02	6.65E+01	2.83E-01	2.67E-04	4.22E-04	3.74E-01	124
2008	Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	6.76E+02	3.85E+02	3.62E+02	1.58E+00	1.18E-03	1.98E-03	1.99E+00	657
2008	Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	5.82E+01	3.31E+01	8.22E+01	6.57E-01	2.14E-04	1.75E-04	7.27E-01	241
2008	Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	5.94E+01	3.38E+01	1.17E+02	1.03E+00	3.29E-04	1.88E-04	1.14E+00	376
2008	Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	4.10E+00	2.33E+00	1.41E+01	1.28E-01	3.33E-05	1.26E-05	1.39E-01	46
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	2.00E+02	7.37E+01	3.06E+01	1.48E-01	1.53E-04	3.26E-04	2.03E-01	67
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	1.57E+02	3.90E+01	1.85E+01	7.84E-02	7.83E-05	2.31E-04	1.07E-01	36
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	1.79E+02	6.58E+01	4.20E+01	1.85E-01	1.68E-04	2.35E-04	2.42E-01	80
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	1.41E+02	3.48E+01	2.31E+01	9.79E-02	8.58E-05	1.49E-04	1.28E-01	42
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	3.36E+01	1.24E+01	2.01E+01	8.95E-02	5.01E-05	1.00E-04	1.07E-01	35
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	2.64E+01	6.52E+00	1.10E+01	4.73E-02	2.49E-05	6.40E-05	5.63E-02	19
2008	Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	3.28E+00	1.03E+00	2.70E+00	2.19E-02	6.65E-06	5.06E-06	2.41E-02	8
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	5.27E+00	1.66E+00	1.04E+01	6.96E-02	0.00E+00	9.37E-05	7.16E-02	24
2008	Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	4.37E+00	1.37E+00	1.51E+01	1.02E-01	0.00E+00	1.10E-04	1.04E-01	34
2008	Annual	Gas Compressors	Light Commercial Equipment	Contra Costa	SF	BA	8.19E-01	1.91E+01	6.52E+01	4.48E-01	0.00E+00	3.11E-04	4.54E-01	150
2008	Annual	Gas Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.69E+00	3.94E+01	3.82E+02	2.52E+00	0.00E+00	1.70E-03	2.55E+00	845
2008	Annual	Gas Compressors	Light Commercial Equipment	Contra Costa	SF	BA	2.73E-01	6.36E+00	9.80E+01	6.55E-01	0.00E+00	4.73E-04	6.65E-01	220
2008	Annual	Gas Compressors	Light Commercial Equipment	Contra Costa	SF	BA	2.18E-01	5.09E+00	1.01E+02	6.75E-01	0.00E+00	3.64E-04	6.83E-01	226

2008 Annual	Gas Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.91E-01	4.45E+00	1.43E+02	9.51E-01	0.00E+00	6.51E-04	9.64E-01	319
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.38E+02	1.27E+02	5.97E+01	6.50E-01	0.00E+00	1.08E-04	6.52E-01	216
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.01E+02	9.33E+01	7.53E+01	8.21E-01	0.00E+00	1.38E-04	8.24E-01	273
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.23E+02	1.14E+02	1.62E+02	1.74E+00	0.00E+00	6.23E-04	1.76E+00	581
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.87E+02	1.73E+02	6.18E+02	6.74E+00	0.00E+00	1.19E-03	6.76E+00	2,240
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.11E+01	1.02E+01	6.62E+01	7.25E-01	0.00E+00	8.39E-05	7.27E-01	241
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	6.18E+00	5.72E+00	5.51E+01	6.07E-01	0.00E+00	4.70E-05	6.08E-01	201
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	1.37E+01	1.27E+01	1.94E+02	2.14E+00	0.00E+00	1.49E-04	2.14E+00	709
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	8.54E+00	7.90E+00	1.95E+02	2.15E+00	0.00E+00	1.54E-04	2.15E+00	711
2008 Annual	Generator Sets	Light Commercial Equipment	Contra Costa	SF	BA	2.22E+00	2.06E+00	9.80E+01	1.08E+00	0.00E+00	1.03E-04	1.08E+00	357
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.04E+02	1.14E+02	3.89E+01	4.23E-01	0.00E+00	8.20E-05	4.25E-01	141
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	3.09E+01	3.41E+01	3.05E+01	3.32E-01	0.00E+00	7.34E-05	3.34E-01	110
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	5.39E+01	5.94E+01	9.49E+01	1.02E+00	0.00E+00	3.88E-04	1.03E+00	340
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.06E+02	1.17E+02	4.16E+02	4.54E+00	0.00E+00	8.29E-04	4.56E+00	1,509
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.14E+01	1.26E+01	8.06E+01	8.83E-01	0.00E+00	1.05E-04	8.85E-01	293
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	8.24E+00	9.09E+00	8.30E+01	9.14E-01	0.00E+00	7.33E-05	9.16E-01	303
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	1.63E-01	1.79E-01	2.81E+00	3.09E-02	0.00E+00	2.22E-06	3.10E-02	10
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	2.71E-02	2.99E-02	7.74E-01	8.52E-03	0.00E+00	6.30E-07	8.53E-03	3
2008 Annual	Pumps	Light Commercial Equipment	Contra Costa	SF	BA	5.96E-01	6.58E-01	4.05E+01	4.45E-01	0.00E+00	4.34E-05	4.46E-01	148
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.41E+00	3.14E+00	1.04E+00	1.13E-02	0.00E+00	2.20E-06	1.14E-02	4
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	2.79E+00	6.23E+00	4.13E+00	4.49E-02	0.00E+00	9.93E-06	4.51E-02	15
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	2.54E+01	5.66E+01	5.91E+01	6.29E-01	0.00E+00	3.16E-04	6.36E-01	211
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.69E+02	3.77E+02	8.13E+02	8.84E+00	0.00E+00	1.86E-03	8.88E+00	2,939
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	6.40E+00	1.43E+01	5.77E+01	6.31E-01	0.00E+00	8.72E-05	6.32E-01	209
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	9.00E+00	2.01E+01	1.20E+02	1.32E+00	0.00E+00	1.23E-04	1.32E+00	436
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.17E+01	2.62E+01	2.75E+02	3.03E+00	0.00E+00	2.52E-04	3.04E+00	1,005
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	4.39E+00	9.79E+00	1.59E+02	1.75E+00	0.00E+00	1.48E-04	1.76E+00	581
2008 Annual	Air Compressors	Light Commercial Equipment	Contra Costa	SF	BA	1.08E-01	2.42E-01	5.35E+00	5.87E-02	0.00E+00	6.16E-06	5.89E-02	19
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	4.68E+01	8.24E+01	2.35E+01	2.55E-01	0.00E+00	4.94E-05	2.56E-01	85
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	4.12E+01	7.25E+01	3.75E+01	4.09E-01	0.00E+00	9.03E-05	4.11E-01	136
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	1.27E+02	2.23E+02	2.71E+02	2.89E+00	0.00E+00	1.32E-03	2.92E+00	967
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	9.85E+01	1.73E+02	3.14E+02	3.42E+00	0.00E+00	6.83E-04	3.43E+00	1,137
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	4.88E-01	8.58E-01	3.85E+00	4.21E-02	0.00E+00	5.53E-06	4.22E-02	14
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	1.08E-01	1.91E-01	1.03E+00	1.13E-02	0.00E+00	1.01E-06	1.14E-02	4
2008 Annual	Welders	Light Commercial Equipment	Contra Costa	SF	BA	2.71E-01	4.77E-01	3.63E+00	3.99E-02	0.00E+00	3.15E-06	4.00E-02	13
2008 Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	6.40E+00	2.54E+00	5.69E-01	6.20E-03	0.00E+00	1.03E-06	6.22E-03	2
2008 Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	1.49E+00	5.91E-01	1.94E-01	2.11E-03	0.00E+00	3.55E-07	2.12E-03	1
2008 Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	2.95E+00	1.17E+00	7.74E-01	8.37E-03	0.00E+00	2.42E-06	8.42E-03	3
2008 Annual	Pressure Washers	Light Commercial Equipment	Contra Costa	SF	BA	1.22E+00	4.84E-01	5.33E-01	5.82E-03	0.00E+00	9.40E-07	5.84E-03	2
COUNTYWIDE						12,721	6,646	9,171	76	0	0	80	26,585
Employment in Contra Costa County (2010):		376,820											
Employment in Danville (2008)*		15,162	4.02%			512	267	369	3	0	0	3	1,070

County Source: Association of Bay Area Governments. 2009. Population, Housing, and Employment Projections

.* Danville employment is based on the General Plan Update

Other Emissions Sources - Off-road Equipment

	2008 MTons of CO2e	Notes:
Agricultural Equipment	105	Based on the percentage of Farmland & other agricultural (crop) land in Danville compared to the agricultural land in Contra Costa County. (excludes grazing land)
Construction Equipment	16,393	Based on the percentage of building building permits issued in Danville compared to Contra Costa County.
Lawn & Garden Equipment	869	Based on the percentage of residential units in Danville compared to Contra Costa County.
Light Commercial Equipment	1,070	Based on the percentage of employment in Danville compared to Contra Costa County.
TOTAL	18,437	

Source: OFFROAD2007. Based on equipment use in Contra Costa County.

Year 2020 BAU	2020 MTons of CO2e	Notes
Agricultural Equipment	52	Phase out of Agriculture
Construction Equipment	16,393	similar to historic
Lawn & Garden Equipment	930	proportional to population growth
Light Commercial Equipment	1,118	proportional to employment growth
TOTAL	18,493	

Forecast Year (based on increase in jobs and housing)

Year 2035 BAU	2035 MTons of CO2e	Notes
Agricultural Equipment	0	No agriculture
Construction Equipment	16,393	similar to historic
Lawn & Garden Equipment	1,005	proportional to population growth
Light Commercial Equipment	1,178	proportional to employment growth
TOTAL	18,576	

Forecast Year (based on increase in jobs and housing)

State and Federal Low Carbon Fuel Standard (LCFS)

On December 29, 2011, the U.S. District Court for the Eastern District of California issued several rulings in the federal lawsuits challenging the LCFS. One of the court's rulings preliminarily enjoins the CARB from enforcing the regulation during the pendency of the litigation. In January 2012, CARB appealed the decision and on April 23, 2012, the Night Circuit Court granted CARB's motion for a stay of the injunction while it continues to consider CARB's appeal of the lower court's decision.

Year 2020 Adjusted	2020 MTons of CO2e	Notes
Agricultural Equipment	47	With LCFS (10% reduction)
Construction Equipment	14,754	With LCFS (10% reduction)
Lawn&Garden Equipment	837	With LCFS (10% reduction)
Light Commercial Equipment	1,006	With LCFS (10% reduction)
TOTAL	16,644	
reduction	1,849	

Year 2035 Adjusted	2035 MTons of CO2e	Notes
Agricultural Equipment	0	With LCFS (10% reduction)
Construction Equipment	14,754	With LCFS (10% reduction)
Lawn&Garden Equipment	904	With LCFS (10% reduction)
Light Commercial Equipment	1,060	With LCFS (10% reduction)
TOTAL	16,718	
reduction	1,858	

Other Measures - Offroad Equipment

EC-17	Initiate yard equipment exchange program to allow residents to trade in gas-powered machines for electric models.
EC-16	Adopt an ordinance to ban the use of two-stroke engine leaf blowers. As part of this ordinance, establish planting and maintenance guidelines to reduce maintenance needs.
EC-14	Require new developments to have outdoor electrical outlets to support use of electrical yard equipment.

Leaf Blowers and Mowers:		195 MTons (Existing)
	2020	208 MTons
	2035	225 MTons
Percent of Participating Residents that switch to Electric:		0.05%
GHG Reductions		
	2020	0.1 MTons
	2035	0.1 MTons

Other Support Measures

GB-5	Require the use of cement substitutes and recycled building materials for new construction.
P-1	Develop policies, incentives, and design guidelines that encourage the public and private purchase and use of durable and nondurable items, including building materials, made from recycled materials or renewable resources.
OS-1	Identify and inventory potential community garden and urban farm sites on public easements, PG&E easements, right-of-ways, and schoolyards, and develop a program to establish community gardens in appropriate locations.
OS-2	Allow small-scale and pesticide-free food production through the Zoning Ordinance, with an emphasis on local food production.
OS-3	Encourage significant new residential developments over 50 units to include space that can be used to grow food.
OS-4	Establish a process through which a neighborhood can propose and adopt a site as a community garden.
OS-5	Continue to support the Danville Farmers' Market as a source for locally-grown food.
OS-6	Require the Danville farmers' market to accept food stamps and other public food benefits.
CA-1	Develop and implement an outreach plan to engage local businesses in climate change reduction programs.
CA-2	Establish and maintain a "sustainability information center" at Town Hall or Library to inform the public and distribute available brochures, and provide information on sustainability on the Town's website.
CA-3	Create Growing Greener Together Campaign, which provides Town employees and community members with a newsletter featuring green tips and best practices for home and at work.
CA-4	Continue economic vitality programs aimed at supporting local business by encouraging residents to shop locally.