

# Appendix A

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## Community emissions inventories and projections (AMEC 2012)

- A1 Assumptions and methodologies for greenhouse gas (GHG) inventory and projections
- A2 Inputs and coefficients used in inventory and projections
- A3 Detailed assumptions and calculations for climate plan measures
- A4 Technical memorandum: projection of development and vehicle miles travelled for 2020
- A5 Technical memorandum: emissions from aircraft traffic at Santa Barbara airport



# Appendix A1

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Assumptions and Methodologies for GHG Inventory and Projections



## Assumptions and Methodologies for GHG Sectors

### Introduction

This document presents the methodology, data, and assumptions that support inventories and projections in the Climate Plan.

Greenhouse gas (GHG) emission inventories are rarely, if ever, based on direct measurement of emissions. Instead, emissions are estimated based on accepted models and methodologies. This inventory prioritizes emissions estimates based on data pertaining to actual activities in the City of Santa Barbara (e.g., utility records for electricity consumed) over modeled data. However, in some cases, the results of modeling are the only option upon which to base a calculation (for example, determining emissions from on-road vehicle transportation requires modeling the number of vehicle miles traveled [VMT]). This inventory draws on well-reviewed and accepted methodologies from ISO14064-1, The Climate Registry (TCR), the Intergovernmental Panel on Climate Change (IPCC), the Environmental Protection Agency (EPA), and methodologies implemented in ICLEI - Local Governments for Sustainability's Clean Air and Climate Protection (CACAP) software.

The GHGs for which inventories and projections were developed included carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). Coefficients for the other three so-called "Kyoto gases" sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) were not available for most emission sources and are a very small fraction of total GHG emissions. Units of carbon dioxide equivalent (CO<sub>2</sub>e) are used to normalize the global warming potential of the various GHGs. For example, the emission of 1 ton of N<sub>2</sub>O has a global warming potential (GWP) 298 times larger than that of the emission of 1 ton of CO<sub>2</sub>. Similarly, the emission of 1 ton of CH<sub>4</sub> has a GWP 21 times that of CO<sub>2</sub>. To avoid confusion between emissions of the different types of gases and their respective GWPs, all emissions are converted to the common unit of CO<sub>2</sub>e, or "carbon dioxide equivalent". All units presented in the body of this report are metric tons (1 metric ton = 2,204.6 pounds) unless otherwise noted.

### Differences from the GHG Inventory Conducted for the Plan SB EIR

Differences in the GHG inventories and projections identified for this climate plan from those in the Plan SB Environmental Impact Report (EIR) reflect ongoing evolution in statewide efforts to improve and standardize methodologies and techniques.

For on-road vehicle emissions, methodology changes in the refined climate plan work included:

- Counting only 50% of GHG emissions from commute trips and other trips that had an origin or a destination within the City, but not both.
- Incorporating updated fleet fuel mileage estimates that have only recently been released by Caltrans

Off-road vehicle and equipment emissions were not included in the Plan SB EIR, but are included in the CAP inventories and projections in an effort to provide more comprehensive estimates.

The methodology for calculating GHG emissions from natural gas consumption is roughly the same as in the Plan SB EIR. However, projections for future consumption account for reduced

energy consumption for new structures and remodels under State Title 24 building standards, which the Plan SB EIR GHG calculations did not account for.

Landfill decomposition was calculated for the Tajiguas landfill in the Plan SB EIR, but the emissions for the inactive Las Positas Landfill (now Elings Park) were not. The methodology for calculating landfill emissions from Tajiguas landfill is roughly the same as for the Plan SB EIR, but includes a different and more current waste disposal profile for 2005, 2007, 2010, 2020, 2030, and 2050 that was not available for use for Plan SB.

The methodology for calculating GHG emissions from electricity consumption is similar to that used for the Plan SB EIR. However, projections for future consumption account for reduced energy consumption for new structures and remodels under State Title 24 building standards, which the Plan SB EIR GHG calculations did not account for. The inventory for 2010 and projections for 2020, 2030, and 2050 also account for the State Renewable Portfolio Standard (RPS) that was not considered in the Plan SB EIR.

GHG emissions associated with pumping of the City's allotment of State Water Project water were calculated using similar methodology to that used in the Plan SB EIR.

The inventory and projections include only those sources which are within City boundaries or over which the City has financial or operational control. The selection of emission sources quantified in this inventory is based on guidance from the California Air Resources Board (CARB), the California Air Pollution Control Officers Association (CAPCOA), and the Bay Area Air Quality Management District (BAAQMD), which has been active in developing inventory guidance. Based on this guidance and taking into account the City's level of control over the emission sources, the following emissions are not included in the inventory for the City:

- Aircraft emissions (these are separately considered in the Airport's own inventory and carbon footprint reduction plan [Santa Barbara Airport 2008])
- Train emissions as they travel through town (these are accounted for within the Statewide inventory)
- Watercraft emissions while transiting Santa Barbara Harbor and outside the harbor (electricity consumption from boats docked at the harbor are included).
- Lifecycle emissions of products used in the City

### Emissions Categories

The categories that are included in these inventories and projections include the following:

#### *Scope 1 Emissions*

- On-Road Vehicle Emissions
  - Internal City Trips - all emissions are within the City
  - Commute Trips - some emissions are within the City, but most outside the City
  - Other Non-Internal Trips (includes all trips that have an origin or a destination within the City, but not both [e.g., a shopping trip to Goleta]) – some emissions are within the City and some outside

On-road vehicle emissions are further broken down into gasoline and diesel fuels.

- Off-Road Vehicle Emissions (all emissions are within the City)
  - Construction
  - Industrial/Commercial Equipment

- Lawn & Garden
- Miscellaneous Equipment (e.g, transport refrigeration systems, entertainment equipment)
- Natural Gas Consumption (all emissions are within the City)
  - Residential
  - Commercial
  - Industrial
- Landfill Decomposition
  - Las Positas Landfill – closed, emissions from decomposition of previously generated waste (all emissions within the City)

#### *Scope 2 Emissions*

- Electricity Consumption (all emissions occur outside City)
  - Residential
  - Commercial
  - Industrial (includes large City operations)
  - Water Pumping
  - Street Lighting
- State Water Project Electricity Consumption (all emissions occur outside City)

#### *Scope 3 Emissions*

- Landfill Decomposition
  - Tajiguas landfill – open, emissions from decomposition of City’s annual waste contribution to landfill (all emissions outside the City)

#### Projections

The development scenario for both the Business as Usual (BAU) and State Policies cases were the same, and included projected buildout assumptions from the City’s General Plan Update (GPU), as described below. Travel-related projection used trip generation analysis from the GPU EIR modeling for both the BAU and State Policies projections. The State Policies projection added in legislative and regulatory actions that apply statewide, including the updates to Title 24 building energy efficiency regulations, increases in utility Renewable Energy Portfolio requirements, and mandated improvements in on-road vehicle fuel efficiency. GHG emission reductions associated with climate plan policies are presented separately for each policy and in a “With Plan” projection. The one City action that is carried forward in the State Policies case but not the BAU case is the installation of the landfill gas collection and flare system recently installed at the Las Positas landfill. Other actions identified in the Climate Plan are typically captured through extension of projections from 2010 emissions, or are components of State actions such as implementation of Title 24 standards.

#### Development Assumptions

*Population:* When possible, population numbers were taken from the US Census. For those years where Census data was not available (e.g., 2005, 2007), California Department of Finance (DOF) estimates were used. Future population projections for the year 2020 and 2030

were projected from the 2010 Census data, accounting for the 6,700-person population growth that was forecast in the *Plan SB* General Plan Update (GPU) EIR to occur by the year 2030. For the year 2020, this projection is within 64 persons of the projection in the 2007 Santa Barbara County Association of Governments (SBCAG) Regional Growth Forecast. A new Regional Growth Forecast is currently being prepared by the SBCAG that will account for growth expected under *Plan SB* policies, and is expected to be adopted by Summer 2012. These development assumptions were the same for the State Policies cases and the BAU cases.

| <b>Population Data and Projections</b>   |                   |                                |
|--|-------------------|--------------------------------|
| <i>Year</i>  | <i>Population</i> | <i>Source</i>                  |
| 1990   | 85,571            | US Census                      |
| 2005   | 90,160            | California DOF                 |
| 2007   | 89,234            | California DOF                 |
| 2010   | 88,410            | US Census                      |
| 2020   | 92,064            | 2010 US Census + Plan SB       |
| 2030   | 95,110            | 2010 US Census + Plan SB       |
| 2050   | 97,190            | AMEC extension of RGF forecast |
| <i>Sources: US Census 1990, 2011; California Department of Finance 2012; SBCAG 2007.</i> |                   |                                |

*Past Renovation/Rebuilds:* The City’s permit database was queried for those building permits that have been completed between April 2003 and March 2012 with a valuation of \$50,000 or more. Permits with that level of valuation were assumed to correspond to a level of redevelopment that would include incorporating Title 24-compliant methods and equipment. An annual rate of redevelopment was derived for residential (88.7 per year) and non-residential (8.8 per year) development based on the totals for this output.

*Projected Development:* Net new residential development was assumed to be consistent with General Plan Update policies and the assumptions described in the *Plan Santa Barbara* EIR. Details for non-residential development were developed using City geographic information system (GIS) data base information, projecting the types and locations of future development under the caps identified in the General Plan Update. Development was assumed to occur at a constant rate, with full buildout occurring at the year 2030. Development to the year 2050 (which would be under a new General Plan) was assumed to occur at the same rate as under the current approved General Plan, so the rate of development was simply extended by AMEC for an additional twenty years. As a result, the development projections listed in the following table were used:

| <b>Development Within the City Under the General Plan Update Policies</b> |                          |             |             |
|---|--------------------------|-------------|-------------|
| <i>Category</i>   | <i>2020</i>              | <i>2030</i> | <i>2050</i> |
| Single Family Residential   | 163 units                | 358 units   | 553 units   |
| Multi Family Residential and Second Units                                 | 1108 units               | 2437 units  | 3766 units  |
| Office  | 152,581 square feet (sf) | 279,732 sf  | 406,883 sf  |



|   |            |            |            |
|---|------------|------------|------------|
| Service Commercial  | 178,274 sf | 326,835 sf | 475,396 sf |
| Institutional   | 315,576 sf | 578,557 sf | 841,538 sf |
| Retail  | 133,501 sf | 244,753 sf | 356,005 sf |
| Hotel   | 131,225 sf | 240,578 sf | 349,931 sf |
| Industrial  | 98,157 sf  | 179,954 sf | 261,751 sf |
| <i>Notes: Excludes development in the City's sphere of influence (e.g., outside official City boundaries) that might be influenced by City policies. These areas are included in inventories and projections for the Climate Action Plan under preparation by the County of Santa Barbara. These areas might be considered for GHG inventory and projection during future updates to the Climate Plan, in coordination with the County.</i> |            |            |            |
| <i>Sources: City of Santa Barbara 2011, 2012</i>  |            |            |            |

Sector-Specific Inventory Methodologies and Assumptions

**1. Automobile and truck emissions (on-road)**

Vehicle miles traveled (VMT) were based on the mean of the No Project and Plan Santa Barbara model runs (which were developed based on 2007 traffic counts). This was done to best reflect the potentially lower amount of Transportation Demand Management (TDM) measures and less emphasis on development in the dense Downtown core reflected by the final adopted General Plan Update policies. Consistent with State recommendations and countywide practices (SBCAG, County of Santa Barbara, etc.), this inventory apportions 50% of VMT from commute trips and other trips that have an origin or destination in the City (but not both) – this results in the following VMT distribution:

| <b>Projected Vehicle Miles Traveled for GHG Inventory and Projection Years</b> |                 |                |                           |               |
|--|-----------------|----------------|---------------------------|---------------|
| <i>Year</i>  | <i>Internal</i> | <i>Commute</i> | <i>Other Non-Internal</i> | <i>Total</i>  |
| 2005   | 309,573,570     | 157,756,377    | 355,178,191               | 822,508,138   |
| 2007   | 312,346,015     | 160,978,686    | 374,090,722               | 847,415,423   |
| 2010   | 315,118,461     | 164,200,995    | 393,003,253               | 872,322,709   |
| 2020   | 326,562,231     | 178,279,174    | 477,363,239               | 982,204,645   |
| 2030   | 338,006,002     | 192,357,352    | 561,723,225               | 1,092,086,580 |
| 2050   | 360,893,544     | 220,513,710    | 730,443,197               | 1,311,850,451 |
| <i>Data and projections for 1990 VMT not available.</i>                        |                 |                |                           |               |

No data was available for citywide VMT in 1990, and no reliable assumptions could be identified to determine what the VMT should be. Therefore, based on CARB guidance, per capita values for transportation GHG emissions in 1990 were considered to be 15% lower than 2007 values, then the per capita figure was extended with the Census figure for the 1990 City population. This method is considered conservative.

Vehicle fleet fuel efficiency for the scenarios with State Policies were based on most recent State projections in Motor Vehicle Stock, Travel and Fuel Forecast (MVSTAFF) 2010; this model has not yet been released for full public use but AMEC was able to obtain a draft version. This new model includes updates to fuel efficiency for the vehicle fleet beginning in model year 2004. These changes in the vehicle fleet for future years account for the Pavley fuel efficiency standards. No reduction is applied for the Low Carbon Fuel Standard as implementation has become uncertain. For the BAU case, the default fleet fuel efficiency factors incorporated in the CACP 2009 software were used. These factors do not include the increased fleetwide fuel

economy expected under the Pavley standards, as those were part of the AB32 Scoping Plan and are therefore by practice excluded from a BAU case.

## 2. Off-road vehicle and equipment emissions

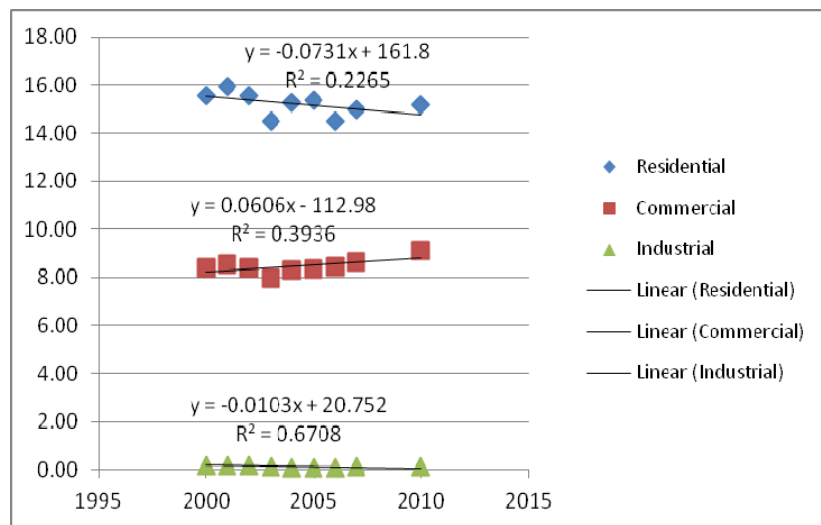
AMEC developed an OFFROAD 2007 model (CARB software program) for the county for the years 1990, 2005, 2007 and 2010. The model included construction equipment (e.g., pavers, cranes, backhoes, concrete saws, etc.), lawn and garden equipment (e.g., lawnmowers, leafblowers, chippers, wood splitters), industrial equipment (e.g., air compressors, forklifts, generators, pumps), and miscellaneous equipment (e.g., entertainment equipment, transport refrigeration units).

The model excluded those sources which are not present within the City which included oil production, recreational vehicles, military equipment, and agricultural equipment. The model also excluded train equipment as the City does not control Amtrak and Union Pacific Railroad (UPRR) train facilities, and small watercraft although some limited use does occur within the City's Marina. After eliminating these categories, a per capita factor for the county for each year was calculated; this was then applied to the population in the City for the relevant year.

Future year projections within OFFROAD 2007 proved to be of dubious quality due to a lack of sufficient information on which to base emissions coefficients and other assumptions, so a per capita rate was obtained for the year 2010 and projected forward to the years 2020, 2030 and 2050 based on population growth.

## 3. Natural Gas Consumption

AMEC Obtained 2005, 2007, and 2010 data through Joe Petrini at the Santa Barbara County Air Pollution Control District (SBCAPCD), which were separated into single-family residential, multi-family residential, commercial and industrial. Southern California Gas Company (SCG) will no longer release any additional level of detail due to 15/15 confidentiality restrictions<sup>1</sup>. 1990 natural gas consumption rates were



backcasted from available data, which was for the years 2000-2010. Backcasting involved applying a trend line to per capita usage rates for this period and calculating 1990 usage based on the equation of those trend lines. Although the correlation factors for the lines were not very high for residential or commercial use, the outputs appear consistent with expected per capita

<sup>1</sup> The California Energy Commission has established the 15/15 rule for disclosure of energy consumption data. Under this rule, if a rate class has fewer than 15 accounts or if one account composes more than 15% of one rate class' consumption, that data must be aggregated before it can be publicly released.

usage at that time. The fuel CO<sub>2</sub> coefficients used were the default values in the CACP 2009 software.

Projections for future consumption in the State Policies scenarios include an assumption that Title 24 required energy efficiency standards would continue to be revised in the future. The CARB Climate Change Scoping Plan for implementing State AB 32 climate planning objectives calls for triennial updates to Title 24 residential standards (but not non-residential). To be conservative, AMEC estimated that updated Title 24 standards will become effective every four years in 2014, 2018, and 2022, and that each update will have an additional increment of 50% of the effectiveness of the preceding update because fewer new sources of new reduction will be available. Some other documents which have attempted to account for future updates to Title 24 have assumed greater reductions from future updates (e.g., San Mateo County assumed 70% effectiveness from one update to the next), but this results in a change from baseline that appears to exceed a realistic rate of technological change. This analysis does not consider updates past 2022 due to uncertainty. The impacts of the 2008 update from 2005 were analyzed in a California Energy Commission (CEC) document, which are shown in the table below for 2008 and used to estimate future effectiveness (CEC 2007):

| <b>Cumulative Reductions in Gas Consumption of New Structures based on Programmed Updates to Title 24 Standards</b> |                                  |                                 |                        |
|---|----------------------------------|---------------------------------|------------------------|
| <i>Year</i>   | <i>Single Family Residential</i> | <i>Multi Family Residential</i> | <i>Non-Residential</i> |
| 2005  | Baseline                         | Baseline                        | Baseline               |
| 2008  | -10.0%                           | -7.0%                           | -9.4%                  |
| 2010  | -15.0%                           | -10.5%                          | -14.1%                 |
| 2014  | -17.5%                           | -12.25%                         | -16.45%                |
| 2018  | -18.75%                          | -13.125%                        | -17.625%               |
| 2022  | -19.375%                         | -13.56%                         | -18.2125%              |
| <i>Sources: CEC 2007, San Mateo County 2011</i>   |                                  |                                 |                        |

The projected new development was then distributed over the time period to 2020 and 2030, and the proportion of new development occurring under the various Title 24 standards was identified. This was then used to produce weighted consumption reduction factors that would apply to the total quantity of development to the years 2020 and 2030.

To account for changes in energy efficiency of the existing building stock in projections of future natural gas consumption, a report was generated from the City’s permit database looking at the number of major renovations/rebuilds of existing structures between 2003 and 2012. This report was limited to only those projects with valuation of greater than \$50,000, which was chosen as a threshold beyond which the work would be sufficiently extensive as to be affected by updated Title 24 standards. These reductions were applied to the State Policies cases, but were not applied to the BAU cases.

#### **4. Landfill Decomposition**

##### *Las Positas Landfill (Within the City)*

Historic landfilled quantity at Las Positas Landfill was obtained from Joe Petrini at SBCAPCD, who had a record of 839,000 tons landfilled. Based on California Integrated Waste Management Board (CIWMB) records, AMEC assumed that landfill was operational from 1941 until 1970, a period of 30 years. It was assumed that waste was evenly distributed on an annual

basis over that time. Values were input into the U.S. Environmental Protection Agency’s (USEPA’s) Landfill Gas Emissions Model (LANDGEM) version 3.02, using default values for waste composition and methane generation rate. Methane emissions corrected to CO<sub>2</sub>e based on accepted global warming potential value for CH<sub>4</sub> of 21 (IPCC).

*Tajiguas Landfill (Outside the City)*

Total landfill deposits at Tajiguas Landfill and those exported to other regional landfills were obtained from CIWMB’s Electronic Disposal Reporting System (<http://www.ciwmb.ca.gov/LGCentral/DRS/>) for the years 1990, 2005, 2007, and 2010. Waste stream characterization for 2005, 2007, and 2010 were assumed to be consistent with that described in the 2008 City-sponsored waste characterization study for Tajiguas Landfill. 1990 was unavailable so data were used from fiscal year 1997/1998 (County of Santa Barbara 2001). This is considered to provide a conservative estimate of GHG emissions.

These values were input into the CACP software program for the profile of a “Managed Landfill”. The outputs were then further modified based on whether a methane capture system was present for the inventory year (true for all years other than 1990).

Methane capture: In 2002 a landfill flare/internal combustion generator was installed at Tajiguas, so after that time much of the CH<sub>4</sub> emissions are converted to CO<sub>2</sub> emissions with lower global warming potential (and lower CO<sub>2</sub>e). Based on the Permit to Operate for the flare system, approximately 75% of the methane generated by the landfill is captured and combusted. The inventory for years after 2002 was thus modified by applying the global warming potential for CO<sub>2</sub> (1) rather than CH<sub>4</sub> (21) to 75% of the projected CH<sub>4</sub> emissions for City-generated solid waste.

Emissions for future cases assumed that operations would continue as they currently do, with the same rate of diversion for organics and the same capture of methane. A constant per-capita CO<sub>2</sub>e generation for decomposition of landfill waste at Tajiguas was extrapolated to future population levels.

**5. Electricity Consumption**

Consumption data was received from the Southern California Edison Company (SCE) for the years 2005, 2007, and 2010, which is broken down by rate group. The equivalence used in the GHG analysis is as follows:

| <b>Conversion of SCE Rate Classes into Sectors for CAP Analysis</b> |   |  |
|---|---|--|
| <i>SCE Rate Class</i>   | <i>SCE Description of Rate Class</i>  | <i>Assigned CAP Sector</i>                       |
| <i>AG TOU</i>   | Where 70% or more of demand is for agricultural or water pumping purposes   | <i>Water Pumping</i>                             |
| <i>Domestic</i>   | All residential service   | <i>Residential</i>                               |
| <i>GS-1, GS-2</i>   | General service whose monthly maximum demand is expected to exceed 20 kW (GS-1) or between 200 kilowatts (kW) and 500 kW (GS-2) | <i>Commercial</i>                                |
| <i>TOU-8</i>  | General service whose monthly maximum demand exceeds 500 kW   | <i>Industrial and Large City Infrastructure*</i> |

|  |  |  |
|--|--|--|
| <i>Street Lighting, TC-1</i>   | Lighting of streets, highways and publicly-owned and publicly-operated parking lots where SCE owns and maintains the equipment (Street Lighting); Traffic signal systems and some thoroughfare lighting (TC-1) | <i>Street Lighting and Traffic Control</i> |
| <ul style="list-style-type: none"> <li>• <i>Large City Infrastructure includes mostly consumption from the Cater Water Treatment Plant (2,366,264 kWh in 2010) and the El Estero Wastewater Treatment Facility (6,400,859 kWh in 2010)).</i></li> </ul> <p><i>Source: SCE 2012</i></p> |  |  |

Consumption data for 2005 and 2010 years combined the GS-2 rate class with the TOU-8 class, due to the 15/15 rule that prohibits release of data for classes with fewer than 15 accounts. In order to split this class out and re-combine with the GS-1 group, it was assumed that the GS-2 class composed a similar portion of the combined GS-2/TOU-8 class as for 2007 (66.75%). Data for the 2007 consumption year was obtained in 2009 before the 15/15 rule went into effect. Consumption data for the year 1990 was only available as total consumption within the City. A split into the SCE rate classes was done as follows starting with the breakdown from the 2007 data:

| <b>1990 Electricity Consumption by Sector</b>  |   |  |  |
|--|---|--|--|
| <i>Category</i>  | <i>2007 Consumption (kWh)<br/>(fraction of total)</i> | <i>Extended 1990 Consumption<sup>1</sup></i> | <i>Corrected<sup>2</sup> (kWh)<br/>(fraction of total)</i> |
| <i>Residential</i>   | 169,071,579<br>(33.4%)                                | 145,967,865                                  | 145,967,865<br>(33.4%)                                     |
| <i>Commercial</i>  | 240,080,580<br>(47.5%)                                | 207,273,949                                  | 151,526,075<br>(34.7%)                                     |
| <i>Industrial (includes large City ops)</i>  | 86,752,362<br>(17.2%)                                 | 74,898,998                                   | 130,646,872<br>(30.0%)                                     |
| <i>Water Pumping</i>   | 5,048,698<br>(1.0%)                                   | 4,358,011                                    | 4,358,011<br>(1.0%)  |
| <i>Street Lighting</i>   | 4,395,133<br>(0.9%)                                   | 3,794,139                                    | 3,794,139<br>(0.9%)  |
| <p><sup>1</sup> Assuming similar consumption split and SCE reported total consumption of 436,292,962 kWh<br/> <sup>2</sup> Modified Based on Natural Gas Consumption Differences between 1990 and 2007 and Difference in Industrial/Commercial Land Use<br/> <i>Source: SCE 2012</i></p> |   |  |  |

In order to get from consumption of electricity (in kWh) to emissions of GHGs (in metric tons CO<sub>2</sub>e), emission coefficients were used. These coefficients are specific to SCE’s mix of energy generation from sources such natural gas fired powerplants, nuclear power, and renewable energy. These coefficients identify the amount of CO<sub>2</sub>, N<sub>2</sub>O, and other GHGs that are emitted at a remote location when generating the electricity that is consumed within the City. Emission coefficients used for electricity generation for the years 2005 and 2007 were taken from SCE data that are included in the CACP program, and were verified as being correct based on other SCE documents. The emission coefficient for SCE for the year 1990 was not available, so a factor provided by CEC that includes the entire State electric grid was used (CARB CEC California Grid Average, included in the CACP software package). The emission coefficient for 2010 was developed by reducing the coefficient to account for the use of 19.4% renewable energy in 2010 as compared to 15.5% renewable energy in 2007. These coefficients allow calculation of the GHGs remotely produced at SCE’s powerplant when producing a certain quantity of electricity.

| <b>SCE Progress in Meeting Renewable Portfolio Standard Targets</b> |             |             |             |             |             |             |             |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|   | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> | <b>2008</b> | <b>2009</b> | <b>2010</b> |
| <b>Target (GWh)</b>   | 11,254      | 11,960      | 12,690      | 13,440      | 14,228      | 15,023      | 15,833      | 15,028      |
| <b>RPS-Eligible Procurement (GWh)</b>                               | 12,421      | 13,182      | 12,822      | 12,486      | 12,261      | 12,574      | 13,622      | 14,548      |
| <b>RPS GWh as % of Bundled Sales</b>                                | 16.6%       | 18.7%       | 17.6%       | 16.6%       | 15.5%       | 15.8%       | 16.8%       | 19.4%       |
| <i>Source: California Public Utilities Commission 2011</i>          |             |             |             |             |             |             |             |             |

As described for natural gas consumption, projections account for revised State Title 24 energy efficiency standards. Again, to be conservative, AMEC estimated that updated Title 24 standards will become effective every four years in 2014, 2018, and 2022, and that each update will have an additional increment of 50% of the effectiveness of the preceding update because fewer new sources of new reduction will be available.

| <b>Cumulative Reductions in Electricity Consumption of New Structures based on Programmed Updates to Title 24 Standards</b> |                                  |                                 |                        |
|---|----------------------------------|---------------------------------|------------------------|
| <i>Year</i>   | <i>Single Family Residential</i> | <i>Multi Family Residential</i> | <i>Non-Residential</i> |
| 2005  | Baseline                         | Baseline                        | Baseline               |
| 2008  | -22.7%                           | -19.7%                          | -4.9%                  |
| 2010  | -38.6%                           | -33.5%                          | -8.3%                  |
| 2014  | -48.2%                           | -43.1%                          | -10.7%                 |
| 2018  | -55.0%                           | -49.9%                          | -12.4%                 |
| 2022  | -59.7%                           | -54.6%                          | -13.6%                 |
| <i>Sources: CEC 2007, San Mateo County 2011</i>   |                                  |                                 |                        |

Some other documents which have attempted to account for future updates to Title 24 have assumed greater reductions from future updates (e.g., San Mateo County assumed 70% effectiveness from one update to the next), but this results in a change from baseline that appears to exceed a realistic rate of technological change.

This analysis does not consider updates past 2022, due to uncertainty, so any development that occurs after that time is assumed to have energy consumption consistent with 2022 levels. Revised standards for non-residential buildings after the 2008 update are not included in this analysis as there is no program for regular update of non-residential standards, unlike the situation for residential buildings under Title 24.

## **6. Water Pumping and State Water Project**

Because the energy used to pump water within the City and treat wastewater at El Estero Wastewater Treatment Plant are included in the City electricity and natural gas figures, only energy used to transport water to the City boundaries are included in this calculation. Specifically, the GHG emissions from the energy used to transport the City’s share of State Water Project water were calculated. To convey water to Southern California from the Sacramento-San Joaquin Delta, the State Water Project (SWP) must pump it 2,000 feet over the Tehachapi Mountains, the highest lift of any water system in the world.

- a. Deliveries in 2005, 2007, and 2010 were taken from reports to City Council. No SWP deliveries occurred in 1990 as the SWP did not exist. Projection for future usage assumed to be consistent with the average from 2002-2008 (1,069 acre feet per year [AFY]), which included drought years and normal years.

- b. Electricity consumption factor from Table 7 in Appendix B of Bulletin 132-07: 2,826 kWh per acre-foot cumulative consumption by at the point water exits the Polonio Pass Pumping Plant, which is the last pumping plant before Lake Cachuma.
- c. GHG emissions then determined by inputting extended electricity consumption into CACP 2009, with the appropriate SCE emission factors for each year (see Electricity Consumption above).

## 7. Airport

The Santa Barbara Airport conducted an emissions inventory and projections using a base year of 2005, which was last updated in 2008. AMEC used calculations for emissions from airport vehicle, Auxiliary Power Units/ Ground Support Equipment (APU/GSE) and aircraft landing and takeoff (LTO) cycles from the inventory and scaled to 1990, 2007, and 2010 flight data from the FAA’s Air Traffic Activity Data System (ATADS).

Projections were then developed for the years 2020, 2030, and 2050, assuming a constant per capita aircraft usage from the 2010 year. Due to federal preemption of local control over aircraft emissions, and consistent with inventory guidance direction of CARB, CAPCOA, and BAAQMD, aircraft emissions estimates are presented separately for information purposes only, not as part of the citywide inventory.

| <b>Estimated GHG Emissions For Aircraft Operations at Santa Barbara Airport</b> |       |       |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|
|   | 1990  | 2005  | 2007  | 2010  | 2020  | 2030  | 2050  |
| Aircraft LTO Cycle  | 9,493 | 7745  | 6,036 | 5329  | 5,549 | 5,733 | 5,858 |
| GSE/APUs  | 313   | 255   | 199   | 176   | 183   | 189   | 193   |
| Motor Vehicles  | 150   | 198   | 154   | 136   | 142   | 146   | 149   |
| <i>Total</i>  | 9,956 | 8,198 | 6,389 | 5641  | 5,874 | 6,068 | 6,201 |
| <i>Per Capita</i>   | 0.116 | 0.091 | 0.072 | 0.064 | 0.064 | 0.064 | 0.064 |

### Gap Analysis

After calculating the emissions for the year 2020 under the State Policies case, the GHG emissions for the City were compared with the two existing regulatory emissions targets:

- AB32 (Statewide goal) – Total community GHG emissions in 2020 should be equal to or less than GHG emissions in 1990
- SB375 (set by SBCAG and approved by CARB) – Per capita vehicular emissions in 2020 should be equal to or less than the per capita vehicular emissions for 2005

|   | <b>2020 Projection</b> | <b>Target</b>  |
|---|------------------------|----------------|
| 2020 AB32 Target (Total 1990 Emissions)                 | <b>681,746</b>         | <b>724,389</b> |
| 2020 SB375 Target (2005 per Capita vehicular emissions) | <b>4.272</b>           | <b>4.413</b>   |
| Consistent?   | <b>YES</b>             | <b>YES</b>     |





# Appendix A2

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Inputs and Coefficients Used in Inventory and Projections

**Vehicle Fleet Efficiency***Inventory and State Policies Case, MVSTAFF 2010 values, miles per gallon*

|      | Passenger<br>Vehicle - Gas | Light Truck -<br>Gas | Heavy Duty -<br>Gas | Passenger<br>Vehicle -<br>Diesel | Light Truck -<br>Diesel | Heavy Duty -<br>Diesel |
|------|----------------------------|----------------------|---------------------|----------------------------------|-------------------------|------------------------|
| 1990 | 15.944505                  | 10.851014            | 4.2038413           | 17.250732                        | 15.185006               | 5.2384214              |
| 2005 | 20.2                       | 20.2                 | 5.2                 | 20.2                             | 20.2                    | 8.3                    |
| 2007 | 20.4                       | 20.4                 | 5.1                 | 20.4                             | 20.4                    | 8.2                    |
| 2010 | 21                         | 21                   | 5.4                 | 21                               | 21                      | 8.5                    |
| 2020 | 25.1                       | 25.1                 | 5.4                 | 25.1                             | 25.1                    | 8.5                    |
| 2030 | 30.1                       | 30.1                 | 5.4                 | 30.1                             | 30.1                    | 8.5                    |
| 2050 | 34.3                       | 34.3                 | 5.4                 | 34.3                             | 34.3                    | 8.5                    |

*Business as Usual Case, CACP 2009 Default Values, miles per gallon*

|      | Passenger<br>Vehicle - Gas | Light Truck -<br>Gas | Heavy Duty -<br>Gas | Passenger<br>Vehicle -<br>Diesel | Light Truck -<br>Diesel | Heavy Duty -<br>Diesel |
|------|----------------------------|----------------------|---------------------|----------------------------------|-------------------------|------------------------|
| 2020 | 21.27509                   | 14.113411            | 4.879912            | 19.378365                        | 16.9344                 | 5.643671               |
| 2030 | 21.27509                   | 14.113411            | 4.879912            | 19.378365                        | 16.9344                 | 5.643671               |
| 2050 | 21.27509                   | 14.113411            | 4.879912            | 19.378365                        | 16.9344                 | 5.643671               |

**Fuel Coefficients***Default values, CACP 2009*CO<sub>2</sub>, metric tons per US gallon

|          |         |
|----------|---------|
| Gasoline | 0.00878 |
| Diesel   | 0.01021 |

**Southern California Edison Coefficients**

*Business As Usual Case, only the RPS standard of 15% renewable by 2010 in place*

|      | CO2      | N2O     | CH4      |  |
|------|----------|---------|----------|--|
| 1990 | 1031.14  | 0.014   | 0.04     | CARB CEC California Grid Average used, as no SCE-specific data available |
| 2005 | 665.72   | 0.011   | 0.03     |  |
| 2007 | 630.89   | 0.01    | 0.029    |  |
| 2010 | 606.2949 | 0.00961 | 0.027869 |  |
| 2020 | 606.2949 | 0.00961 | 0.027869 |  |
| 2030 | 606.2949 | 0.00961 | 0.027869 |  |
| 2050 | 606.2949 | 0.00961 | 0.027869 |  |

*State Policies case, additional 33% by 2020 RPS requirement in place*

|      | CO2      | N2O     | CH4      |  |
|------|----------|---------|----------|--|
| 1990 | 1031.14  | 0.014   | 0.04     | CARB CEC California Grid Average used, as no SCE-specific data available |
| 2005 | 665.72   | 0.011   | 0.03     |  |
| 2007 | 630.89   | 0.01    | 0.029    |  |
| 2010 | 606.2949 | 0.00961 | 0.027869 |  |
| 2020 | 523.8    | 0.008   | 0.024    |  |
| 2030 | 523.8    | 0.008   | 0.024    |  |
| 2050 | 523.8    | 0.008   | 0.024    |  |

**Natural Gas Coefficient**

*CACP Default Values*

tons CO2 per thousand cf  
0.054505

**Waste Stream Characterization**

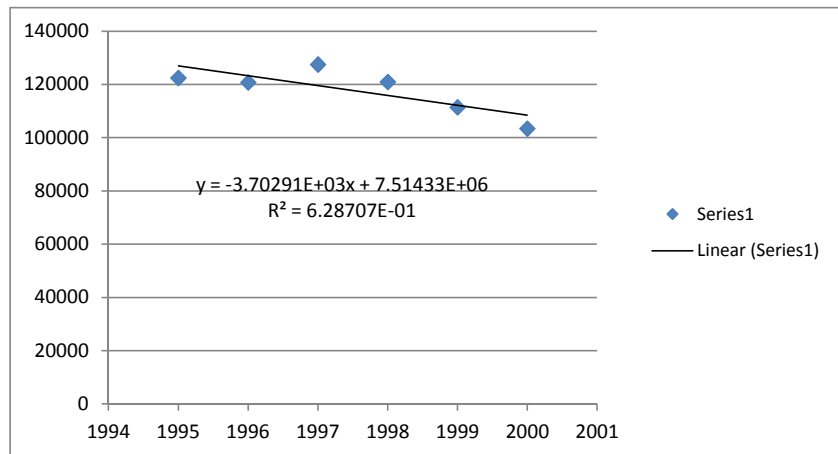
Waste stream for 1990 taken from Santa Barbara County Multi-Jurisdictional Task Force for 1997/1998 (Santa Barbara County 2001). Waste characterization from 2008 wastestream characterization for Tajiguas, and reflects the waste stream typical for the South Coast as a whole. It is expected that 2010 had enhanced diversion of recyclables, but the quantity of organics would have remained similar.

|      | Paper Products | Food Waste | Plant Debris | Wood or Textiles | All Other Waste |
|------|----------------|------------|--------------|------------------|-----------------|
| 1990 | 30.20%         | 19.20%     | 10.10%       | 10.10%           | 30.40%          |
| 2005 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |
| 2007 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |
| 2010 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |
| 2020 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |
| 2030 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |
| 2050 | 17.00%         | 19.20%     | 10.10%       | 10.10%           | 43.60%          |

**Total Waste Disposal for 1990**

1990 total disposal was generated from EDRS data

| Year       | tons    |  |
|------------|---------|--|
| 1995       | 122,446 |  |
| 1996       | 120,768 |  |
| 1997       | 127,511 |  |
| 1998       | 120,981 |  |
| 1999       | 111,409 |  |
| 2000       | 103,447 |  |
| Projection | tons    |  |
| 1990       | 145,539 |  |



**Waste Disposal**

Years 2005-2010 from CalRecycle EDRS reports, 2020-2050 based on static per capita disposal rates from 2010.

| Year | tons      | Notes   |
|------|-----------|---|
| 1990 | 145,539   | See above for derivation of 1990 total disposal |
| 2005 | 107,687   |   |
| 2007 | 94182     | per capita                                      |
| 2010 | 80,663    | 0.91  |
| 2020 | 83,996.82 |   |
| 2030 | 86,775.91 |   |
| 2050 | 88,673.65 |   |

**Waste Decomposition Coefficients**

Default values from CACP 2009 used for "Managed Landfill" type.

CH4 (metric tons per metric ton waste)

|                  |             |
|------------------|-------------|
| Paper Products   | 2.138262868 |
| Food Waste       | 1.210337473 |
| Plant Debris     | 0.685857901 |
| Wood or Textiles | 0.605168736 |
| All Other Waste  | 0           |

## Las Positas Landfill Disposal Calculations

Opened 1940

Closed to Solid Waste in approximately 1970

Per Joe Petrini at APCD, total disposal at landfill was 839,000 short tons

Assume that waste deposited equally over the 30 year span from 1941-1970

|   |              |           |            |
|---|--------------|-----------|------------|
| Output from LandGEM model for 2010:                             | CH4          | 319.89    | tonne/year |
|   | CO2          | 874.80    | tonne/year |
|   | CO2e (total) | 7,592.49  |            |
| Output from LandGEM model for 1990:                             | CH4          | 866.70    | tonne/year |
|   | CO2          | 2,377.70  | tonne/year |
|   | CO2e (total) | 20,578.40 |            |
| Output from LandGEM model for 2005:                             | CH4          | 409.40    | tonne/year |
|   | CO2          | 1,123.00  | tonne/year |
|   | CO2e (total) | 9,720.40  |            |
| Output from LandGEM model for 2007:                             | CH4          | 370.40    | tonne/year |
|   | CO2          | 1,016.00  | tonne/year |
|   | CO2e (total) | 8,794.40  |            |
| Output from LandGEM model for 2020 BAU (no oxidizer installed): | CH4          | 193.40    | tonne/year |
|   | CO2          | 530.60    | tonne/year |
|   | CO2e (total) | 4,592.00  |            |
| Output from LandGEM model for 2030 BAU (no oxidizer installed): | CH4          | 117.30    | tonne/year |
|   | CO2          | 321.90    | tonne/year |
|   | CO2e (total) | 2,785.20  |            |
| Output from LandGEM model for 2050 BAU (no oxidizer installed): | CH4          | 43.15     | tonne/year |
|   | CO2          | 118.40    | tonne/year |
|   | CO2e (total) | 1,024.55  |            |
| Modified Output for 2020 with oxidizer installed:               | CH4          | 193.40    | tonne/year |
|   | CO2          | 530.60    | tonne/year |
|   | CO2e (total) | 3,044.80  |            |
| Modified Output for 2030 with oxidizer installed:               | CH4          | 117.30    | tonne/year |
|   | CO2          | 321.90    | tonne/year |
|   | CO2e (total) | 1,846.80  |            |
| Modified Output for 2050 with oxidizer installed:               | CH4          | 43.15     | tonne/year |
|   | CO2          | 118.40    | tonne/year |
|   | CO2e (total) | 679.35    |            |

## State Water Project Electricity Usage

|      | acre-feet | kWh       |
|------|-----------|-----------|
| 2005 | 1255      | 3,546,630 |
| 2007 | 567       | 1,602,342 |
| 2010 | 777       | 2,195,802 |
| 2020 | 1069      | 3,020,994 |

Electricity Factor from most recent SWP appendix  
2826 kWh per acre foot at Polonio Pass

| Taz Zone                        | Distributed Subtotal Final Project for Climate Action Plan to 2030 in SF | Service Commercial sf 2030 | Service Commercial sf 2020 | Retail SF 2030 | Retail sf 2020 | Office sf 2030 | Office sf 2020 | Industrial sf 2030 | Industrial sf 2020 | Institutional sf 2030 | Institutional sf 2020 | Hotel sf 2030  | Hotel sf 2020  |
|---------------------------------|--|----------------------------|----------------------------|----------------|----------------|----------------|----------------|--------------------|--------------------|-----------------------|-----------------------|----------------|----------------|
| Airport                         | 25,584   | 2,700                      | 1,473                      | 0              | 0              | 15,817         | 8,627          | 3,658              | 1,995              | 3,409                 | 1,859                 | 0              | 0              |
| Coast Village                   | 12,008   | 1,540                      | 840                        | 4,549          | 2,481          | 4,025          | 2,195          | 0                  | 0                  | 0                     | 0                     | 1,894          | 1,033          |
| Cota - Commercial Manufacturing | 107,148  | 15,765                     | 8,599                      | 32,619         | 17,792         | 14,313         | 7,807          | 25,318             | 13,810             | 19,132                | 10,436                | 0              | 0              |
| Cottage                         | 32,926   | 8,350                      | 4,554                      | 0              | 0              | 0              | 0              | 0                  | 0                  | 23,524                | 12,831                | 1,053          | 574            |
| Downtown                        | 39,931   | 10,276                     | 5,605                      | 16,962         | 9,252          | 7,272          | 3,966          | 0                  | 0                  | 3,629                 | 1,980                 | 1,793          | 978            |
| East Beach                      | 10,234   | 502                        | 274                        | 0              | 0              | 249            | 136            | 422                | 230                | 267                   | 145                   | 8,794          | 4,797          |
| East Downtown                   | 68,834   | 5,632                      | 3,072                      | 2,134          | 1,164          | 41,058         | 22,395         | 0                  | 0                  | 20,010                | 10,915                | 0              | 0              |
| Funk Zone                       | 40,315   | 5,571                      | 3,039                      | 19,824         | 10,813         | 2,151          | 1,173          | 10,619             | 5,792              | 0                     | 0                     | 2,151          | 1,173          |
| Gutierrez Manufacturing         | 131,818  | 19,773                     | 10,785                     | 19,773         | 10,785         | 19,773         | 10,785         | 59,318             | 32,355             | 13,182                | 7,190                 | 0              | 0              |
| Mesa                            | 5,117  | 625                        | 341                        | 3,254          | 1,775          | 1,238          | 675            | 0                  | 0                  | 0                     | 0                     | 0              | 0              |
| Milpas                          | 123,817  | 35,907                     | 19,586                     | 48,472         | 26,439         | 14,190         | 7,740          | 18,573             | 10,130             | 6,443                 | 3,515                 | 0              | 0              |
| Mission Street Area             | 71,682   | 11,469                     | 6,256                      | 7,114          | 3,881          | 33,425         | 18,232         | 0                  | 0                  | 10,938                | 5,966                 | 9,039          | 4,930          |
| Ocean Manufacturing             | 43,282   | 2,362                      | 1,289                      | 3,619          | 1,974          | 3,018          | 1,646          | 25,413             | 13,861             | 8,869                 | 4,838                 | 0              | 0              |
| Salinas                         | 7,675  | 2,993                      | 1,633                      | 1,516          | 827            | 3,131          | 1,708          | 0                  | 0                  | 0                     | 0                     | 0              | 0              |
| Upper State East                | 69,077   | 13,815                     | 7,536                      | 32,629         | 17,797         | 11,743         | 6,405          | 0                  | 0                  | 3,808                 | 2,077                 | 6,908          | 3,768          |
| Upper State West                | 22,490   | 5,637                      | 3,075                      | 9,757          | 5,322          | 3,823          | 2,085          | 0                  | 0                  | 1,054                 | 575                   | 2,249          | 1,227          |
| West Beach                      | 12,792   | 1,123                      | 613                        | 1,512          | 825            | 0              | 0              | 0                  | 0                  | 1,160                 | 633                   | 8,996          | 4,907          |
| West Downtown                   | 110,211  | 27,553                     | 15,029                     | 29,757         | 16,231         | 44,084         | 24,046         | 0                  | 0                  | 4,696                 | 2,561                 | 4,388          | 2,393          |
| Westside                        | 17,909   | 5,469                      | 2,983                      | 10,684         | 5,828          | 1,756          | 958            | 0                  | 0                  | 0                     | 0                     | 0              | 0              |
| Distributed Subtotal:           | 952,850  | 177,063                    | 96,580                     | 244,175        | 133,186        | 221,066        | 120,581        | 143,320            | 78,174             | 120,121               | 65,520                | 47,264         | 25,781         |
| Pending Approved BP Subtotal:   | 897,400  | 149,772                    | 81,694                     | 578            |                | 58,666         | 26,666         | 36,634             | 16,652             | 458,436               | 250,056               | 193,314        | 105,444        |
| <b>City Only Total</b>          | <b>1,850,250</b>   | <b>326,835</b>             | <b>178,274</b>             | <b>244,753</b> | <b>133,501</b> | <b>279,732</b> | <b>152,581</b> | <b>179,954</b>     | <b>98,157</b>      | <b>578,557</b>        | <b>315,576</b>        | <b>240,578</b> | <b>131,225</b> |
| Sphere Subtotal                 | 178,202  | 26,939                     | 14,694                     | 0              | 0              | 0              | 0              | 0                  | 0                  | 89,247                | 48,680                | 62,016         | 33,827         |
| <b>Sphere and City Total</b>    | <b>2,028,452</b>   | <b>353,774</b>             | <b>192,968</b>             | <b>244,753</b> | <b>133,501</b> | <b>279,732</b> | <b>152,581</b> | <b>179,954</b>     | <b>98,157</b>      | <b>667,804</b>        | <b>364,257</b>        | <b>302,594</b> | <b>165,052</b> |

**2020 Development Snapshot**

|                                    |         | <i>Proportion of 2020<br/>Development of that Type</i> |
|------------------------------------|---------|--|
| <i>Developed by 2010 Standards</i> |         |  |
| SF Residential (units)             | 65      | 0.40   |
| MF Residential (units)             | 443     | 0.40   |
| Industrial (sf)                    | 32,719  | 0.40   |
| Commercial/Inst. (sf)              | 303,719 | 0.40   |
| <i>Developed by 2014 Standards</i> |         |  |
| SF Residential (units)             | 65.09   | 0.40   |
| MF Residential (units)             | 443     | 0.40   |
| Industrial (sf)                    | 32,719  | 0.40   |
| Commercial/Inst. (sf)              | 303,719 | 0.40   |
| <i>Developed by 2018 Standards</i> |         |  |
| SF Residential (units)             | 32.5    | 0.20   |
| MF Residential (units)             | 222     | 0.20   |
| Industrial (sf)                    | 16,359  | 0.20   |
| Commercial/Inst. (sf)              | 151,860 | 0.20   |

**2030 Development Snapshot**

|                                    |         | <i>Proportion of 2020<br/>Development of that Type</i> |
|------------------------------------|---------|--|
| <i>Developed by 2010 Standards</i> |         |  |
| SF Residential (units)             | 65.09   | 0.18   |
| MF Residential (units)             | 443     | 0.18   |
| Industrial (sf)                    | 32,719  | 0.18   |
| Commercial/Inst. (sf)              | 303,719 | 0.18   |
| <i>Developed by 2014 Standards</i> |         |  |
| SF Residential (units)             | 65.09   | 0.18   |
| MF Residential (units)             | 443     | 0.18   |
| Industrial (sf)                    | 32,719  | 0.18   |
| Commercial/Inst. (sf)              | 303,719 | 0.18   |
| <i>Developed by 2018 Standards</i> |         |  |
| SF Residential (units)             | 65.09   | 0.18   |
| MF Residential (units)             | 443     | 0.18   |
| Industrial (sf)                    | 32,719  | 0.18   |
| Commercial/Inst. (sf)              | 303,719 | 0.18   |

*Developed by 2022 Standards*

|                        |         |      |
|------------------------|---------|------|
| SF Residential (units) | 163     | 0.45 |
| MF Residential (units) | 1108    | 0.45 |
| Industrial (sf)        | 81,797  | 0.45 |
| Commercial/Inst. (sf)  | 759,139 | 0.45 |

**Cumulative Reductions in Energy Consumption of New Structures based on Programmed Updates to Title 24**

| <i>Year of Construction</i> |        | <i>SF Residential</i> | <i>MF Residential</i> | <i>Non-Res</i> |
|-----------------------------|--------|-----------------------|-----------------------|----------------|
| 2005                        | elect. | Baseline              | Baseline              | Baseline       |
|                             | gas    | Baseline              | Baseline              | Baseline       |
| 2008                        | elect. | -22.70%               | -19.70%               | -4.90%         |
|                             | gas    | -10.00%               | -7.00%                | -9.40%         |
| 2010                        | elect. | -34.05%               | -29.23%               | -7.35%         |
|                             | gas    | -15.00%               | -10.50%               | -14.10%        |
| 2014                        | elect. | -39.73%               | -34.15%               | -8.58%         |
|                             | gas    | -17.50%               | -12.25%               | -16.45%        |
| 2018                        | elect. | -42.56%               | -36.61%               | -9.19%         |
|                             | gas    | -18.75%               | -13.13%               | -17.63%        |
| 2022                        | elect. | -43.98%               | -37.85%               | -9.80%         |
|                             | gas    | -19.38%               | -13.56%               | -18.21%        |

Sources: CEC 2007, San Mateo County 2011

| <b>2020 Development Factor</b> | Reduction % Applied Across All New Development |            |
|--------------------------------|--|------------|
|                                | <i>Elect</i>                                   | <i>Gas</i> |
| SF Residential                 | -38%   | -17%       |
| MF Residential                 | -33%   | -12%       |
| Industrial                     | -8%  | -16%       |
| Commercial/Inst.               | -8%  | -16%       |

| <b>2030 Development Factor</b> | Reduction % Applied Across All New Development |            |
|--------------------------------|--|------------|
|                                | <i>Elect</i>                                   | <i>Gas</i> |
| SF Residential                 | -41%   | -18%       |
| MF Residential                 | -35%   | -13%       |
| Industrial                     | -9%  | -17%       |
| Commercial/Inst.               | -9%  | -17%       |

| <b>Projected Development</b> | 2020    | 2030      |
|------------------------------|---------|-----------|
| SF Residential               | 163     | 358       |
| MF Residential               | 1108    | 2,437     |
| Industrial                   | 81,797  | 179,954   |
| Commerical/Inst.             | 759,298 | 1,670,297 |

| <b>Existing Development (from 2010 ACS)</b> |       |
|---|-------|
| SF Residential                              | 21622 |
| MF Residential                              | 16175 |



**Records from 2003-2012 indicate:****88.69158879 major residential remodels or rebuilds/year****8.755451713 major commercial remodels or rebuilds/year****major=\$50,000 valuation or greater**

Assume Average commercial square footage of 9,427 sf - historic level

**Existing Energy Consumption Rates (2010 RASS, 2003 CBECS, 2006 MECS)**

|                    | Elec (kWh/year) | Gas (MCF/year)  |
|--------------------|-----------------|-----------------|
| SF Residential     | 7605            | 50 per unit     |
| MF Residential     | 4030            | 28.5 per unit   |
| Industrial         | 63              | 0.054284 per sf |
| Service Commercial | 7.6             | 0.0448 per sf   |
| Retail             | 13.4            | 0.0114 per sf   |
| Office             | 14.6            | 0.0142 per sf   |
| Institutional      | 15.4            | 0.05175 per sf  |
| Hotel              | 11.9            | 0.0315 per sf   |

Used assumption of 15.5% RPS in 2007 (CPUC 2011)

Used assumption of 19.4% RPS in 2010 (CPUC 2011)

Used assumption of 33% RPS in 2020 (Regulatory requirement)

**2050 Projected Development (increment over 2030)**

|   | Increment over Baseline | Increment over 2030 |
|---|-------------------------|---------------------|
| Single Family Residential (units)                 | 553                     | 195                 |
| Multi Family Residential and Second Units (units) | 3766                    | 1329                |
| Office (sf)                                       | 406,883                 | 127,151             |
| Service Commercial (sf)                           | 475,396                 | 148,561             |
| Institutional (sf)                                | 841,538                 | 262,981             |
| Retail (sf)                                       | 356,005                 | 111,252             |
| Hotel (sf)  | 349,931                 | 109,353             |
| Industrial (sf)                                   | 261,751                 | 81,797              |

**With AB32 Policies****Projected Energy Consumption From New Development (2020)**

|                    | Elec (kWh/year) | Gas (MCF/year) |
|--------------------|-----------------|----------------|
| SF Residential     | 768,277         | 6,785          |
| MF Residential     | 3,006,277       | 27,875         |
| Industrial         | 4,730,262       | 3,741          |
| Service Commercial | 1,243,680       | 6,729          |
| Retail             | 1,642,094       | 1,282          |
| Office             | 2,044,845       | 1,826          |
| Institutional      | 4,461,002       | 13,760         |
| Hotel              | 1,433,407       | 3,483          |

| <b>Projected Energy Consumption From New Development (2030)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| SF Residential  | 1,603,591       | 14,667         |
| MF Residential  | 6,345,994       | 60,643         |
| Industrial  | 10,314,444      | 8,104          |
| Service Commercial  | 2,259,888       | 12,148         |
| Retail  | 2,983,845       | 2,315          |
| Office  | 3,715,684       | 3,295          |
| Institutional   | 8,106,072       | 24,839         |
| Hotel   | 2,604,641       | 6,287          |

| <b>Projected Reduction in Energy Consumption from Remodels (2020)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| Residential   | 2,198,004       | 6,057          |
| Non-Residential   | 1,662,638       | 5,492          |

| <b>Projected Reduction in Energy Consumption from Remodels (2030)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| Residential   | 4,313,453       | 11,871         |
| Non-Residential   | 3,429,191       | 10,698         |

| <b>Projected Energy Consumption From New Development (2050)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| SF Residential  | 3,086,566       | 22,527         |
| MF Residential  | 9,674,668       | 93,384         |
| Industrial  | 14,962,640      | 11,736         |
| Service Commercial  | 3,226,236       | 17,591         |
| Retail  | 4,328,526       | 3,352          |
| Office  | 7,555,207       | 6,350          |
| Institutional   | 11,759,089      | 35,970         |
| Hotel   | 3,778,414       | 9,104          |

| <b>Projected Reduction in Energy Consumption from Remodels (2050)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| Residential   | 8,535,581       | 23,338         |
| Non-Residential   | 6,823,745       | 21,115         |

Without AB 32 Policies

| <b>Projected Energy Consumption From New Development (2020)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| SF Residential  | 1,239,615       | 8,150          |
| MF Residential  | 4,465,240       | 31,578         |
| Industrial  | 5,153,211       | 4,440          |
| Service Commercial  | 1,354,882       | 7,987          |
| Retail  | 1,788,919       | 1,522          |
| Office  | 2,227,682       | 2,167          |
| Institutional   | 4,859,877       | 16,331         |
| Hotel   | 1,561,573       | 4,134          |

| <b>Projected Energy Consumption From New Development (2030)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| SF Residential  | 2,724,643       | 17,914         |
| MF Residential  | 9,821,110       | 69,455         |
| Industrial  | 11,337,102      | 9,769          |
| Service Commercial  | 2,483,950       | 14,642         |
| Retail  | 3,279,685       | 2,790          |
| Office  | 4,084,084       | 3,972          |
| Institutional   | 8,909,774       | 29,940         |
| Hotel   | 2,862,884       | 7,578          |

| <b>Projected Energy Consumption From New Development (2050)</b> |                 |                |
|---|-----------------|----------------|
|   | Elec (kWh/year) | Gas (MCF/year) |
| SF Residential  | 4,207,618       | 27,664         |
| MF Residential  | 15,176,980      | 107,331        |
| Industrial  | 16,490,313      | 14,209         |
| Service Commercial  | 3,613,013       | 21,298         |
| Retail  | 4,770,462       | 4,058          |
| Office  | 7,923,607       | 5,778          |
| Institutional   | 12,959,681      | 43,550         |
| Hotel   | 4,164,185       | 11,023         |

| <b>2010 Existing Electricity Consumption (kWh)</b> |             |            |
|--|-------------|------------|
| Residential  | 165,484,589 |            |
| Industrial   | 81,531,365  |            |
| Commercial   | 225,075,665 | per capita |
| Water Pumping                                      | 5,261,384   | 59.511     |
| Street Lighting                                    | 4,226,064   | 47.801     |

**2020 Electricity Consumption (kWh) with State Policies**

|                 |             |
|-----------------|-------------|
| Residential     | 167,061,140 |
| Industrial      | 86,261,627  |
| Commercial      | 234,238,054 |
| Water Pumping   | 5,478,838   |
| Street Lighting | 4,400,728   |
|                 | 497,440,387 |

**2030 Electricity Consumption (kWh) with State Policies**

|                 |             |
|-----------------|-------------|
| Residential     | 169,120,722 |
| Industrial      | 91,845,809  |
| Commercial      | 241,316,604 |
| Water Pumping   | 5,660,109   |
| Street Lighting | 4,546,329   |

**2050 Electricity Consumption (kWh) with State Policies**

|                 |             |
|-----------------|-------------|
| Residential     | 169,710,242 |
| Industrial      | 96,494,006  |
| Commercial      | 248,899,391 |
| Water Pumping   | 5783892.218 |
| Street Lighting | 4645754.554 |

**2020 Electricity Consumption (kWh) with BAU**

|                 |             |
|-----------------|-------------|
| Residential     | 171,189,444 |
| Industrial      | 86,684,576  |
| Commercial      | 236,868,598 |
| Water Pumping   | 5478837.876 |
| Street Lighting | 4400727.928 |

**2030 Electricity Consumption (kWh) with BAU**

|                 |             |
|-----------------|-------------|
| Residential     | 178,030,342 |
| Industrial      | 92,868,467  |
| Commercial      | 246,696,042 |
| Water Pumping   | 5660108.95  |
| Street Lighting | 4546329.002 |

**2050 Electricity Consumption (kWh) with BAU**

|                 |             |
|-----------------|-------------|
| Residential     | 184,869,187 |
| Industrial      | 98,021,678  |
| Commercial      | 258,506,613 |
| Water Pumping   | 5783892.218 |
| Street Lighting | 4645754.554 |

**Annual Total VMT Excluding Sphere**

|            |             |                                |             |                    | (Includes 50% of IXXI and Commute trip VMT) |                             |            |  |
|------------|-------------|--------------------------------|-------------|--------------------|---|-----------------------------|------------|--|
|            |             | Internal                       | Commute     | Other Non Internal | Corrected Total VMT                         | Annual Rate of VMT Increase |            |  |
| Existing   | 634,303,387 | 312,346,015                    | 321,957,372 | 748,181,444        | 847,415,423                                 |                             |            |  |
| Plan SB    | 634,891,582 | 337,746,597                    | 387,843,782 | 1,150,123,759      | 1,106,730,368                               | 5,156,831                   |            |  |
| No Project | 643,729,700 | 342,842,915                    | 392,848,171 | 1,164,257,131      | 1,121,395,566                               | 5,448,469                   | 145,819    |  |
| Alt 1      | 604,627,821 | 331,337,505                    | 359,665,719 | 1,076,669,703      | 1,049,505,216                               |                             |            |  |
| Alt 2      | 553,523,707 | 331,315,661                    | 301,282,862 | 904,667,879        | 934,291,031                                 |                             |            |  |
|            |             | Final GP Project Annual Change |             |                    |   |                             |            |  |
|            |             | 1,144,377                      | 1,407,818   | 8,435,999          | 259,314,945                                 | 909297398.9                 | 61,881,975 |  |
|            |             |                                |             |                    | 38897241.71                                 |                             |            |  |
|            |             |                                |             |                    | 220,417,703                                 |                             |            |  |
|            |             |                                |             |                    | 1,067,833,126                               |                             |            |  |

**2010 Annual Total VMT Excluding Sphere**

|                |             |             |             |                    | (Includes 50% of IXXI and Commute trip VMT) |                             |           |
|----------------|-------------|-------------|-------------|--------------------|---|-----------------------------|-----------|
|                |             | Internal    | Commute     | Other Non Internal | Corrected Total VMT                         | Annual Rate of VMT Increase |           |
| Existing       | 634,303,387 | 312,346,015 | 321,957,372 | 748,181,444        | 847,415,423                                 |                             |           |
| Corrected 2010 |             | 315,118,461 | 164,200,995 | 393,003,253        |   |                             |           |
| No Project     | 563,263,488 | 342,842,915 | 392,848,171 | 1,164,257,131      | 1,121,395,566                               | 5,448,469                   | 2,724,234 |
|                |             | 1,386,223   | 1,611,155   | 9,456,266          |   |                             |           |

**VMT For Baselines and Projection Years (Includes 50% of IXXI and Commute trip VMT)**

|      | Internal    | Commute     | Other Non Internal | Totals        |
|------|-------------|-------------|--------------------|---------------|
| 2010 | 315,118,461 | 164,200,995 | 393,003,253        | 872,322,709   |
| 2007 | 312,346,015 | 160,978,686 | 374,090,722        | 847,415,423   |
| 2005 | 309,573,570 | 157,756,377 | 355,178,191        | 822,508,138   |
| 2020 | 326,562,231 | 178,279,174 | 477,363,239        | 982,204,645   |
| 2030 | 338,006,002 | 192,357,352 | 561,723,225        | 1,092,086,580 |
| 2050 | 360,893,544 | 220,513,710 | 730,443,197        | 1,311,850,451 |



# OFFROAD Model Outputs

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2010

| CY   | Equipment             | Class                             | Air Dist. | Population | Activity | Consumption | CO2 Exhaust | CH4 Exhaust |
|------|-----------------------|-----------------------------------|-----------|------------|----------|-------------|-------------|-------------|
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 2.23E-01   | 5.01E-01 | 4.26E-01    | 4.67E-03    | 6.27E-07    |
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 1.29E+01   | 2.97E+01 | 3.91E+01    | 4.15E-01    | 2.17E-04    |
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 1.53E+01   | 3.50E+01 | 1.11E+02    | 1.21E+00    | 2.58E-04    |
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 9.49E+00   | 2.17E+01 | 1.27E+02    | 1.39E+00    | 2.01E-04    |
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 1.14E+00   | 2.62E+00 | 2.32E+01    | 2.54E-01    | 2.87E-05    |
| 2010 | Pavers                | Construction and Mining Equipment | SB        | 1.17E+00   | 2.69E+00 | 2.86E+01    | 3.13E-01    | 3.18E-05    |
| 2010 | Plate Compactors      | Construction and Mining Equipment | SB        | 4.78E+00   | 7.86E+00 | 1.55E+00    | 1.69E-02    | 1.79E-06    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 8.98E+00   | 1.71E+01 | 4.94E+00    | 5.40E-02    | 5.68E-06    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 3.76E+00   | 7.16E+00 | 4.35E+00    | 4.77E-02    | 5.29E-06    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 1.17E+01   | 2.25E+01 | 2.73E+01    | 2.92E-01    | 1.29E-04    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 6.27E+01   | 1.21E+02 | 3.26E+02    | 3.56E+00    | 6.53E-04    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 2.52E+01   | 4.85E+01 | 2.40E+02    | 2.62E+00    | 3.23E-04    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 3.58E+00   | 6.88E+00 | 4.78E+01    | 5.26E-01    | 4.78E-05    |
| 2010 | Rollers               | Construction and Mining Equipment | SB        | 2.51E+00   | 4.83E+00 | 4.80E+01    | 5.28E-01    | 4.32E-05    |
| 2010 | Scrapers              | Construction and Mining Equipment | SB        | 5.79E-01   | 1.77E+00 | 7.65E+00    | 8.31E-02    | 1.78E-05    |
| 2010 | Scrapers              | Construction and Mining Equipment | SB        | 5.30E+00   | 1.62E+01 | 1.10E+02    | 1.20E+00    | 1.75E-04    |
| 2010 | Scrapers              | Construction and Mining Equipment | SB        | 5.17E+00   | 1.58E+01 | 1.51E+02    | 1.65E+00    | 1.87E-04    |
| 2010 | Scrapers              | Construction and Mining Equipment | SB        | 1.42E+01   | 4.35E+01 | 6.37E+02    | 6.99E+00    | 7.16E-04    |
| 2010 | Scrapers              | Construction and Mining Equipment | SB        | 5.99E+00   | 1.83E+01 | 4.63E+02    | 5.08E+00    | 5.23E-04    |
| 2010 | Paving Equipment      | Construction and Mining Equipment | SB        | 3.86E-01   | 8.77E-01 | 5.04E-01    | 5.53E-03    | 6.13E-07    |
| 2010 | Paving Equipment      | Construction and Mining Equipment | SB        | 3.27E-01   | 7.50E-01 | 8.44E-01    | 8.96E-03    | 4.68E-06    |
| 2010 | Paving Equipment      | Construction and Mining Equipment | SB        | 4.71E+00   | 1.08E+01 | 2.71E+01    | 2.94E-01    | 6.24E-05    |
| 2010 | Paving Equipment      | Construction and Mining Equipment | SB        | 2.21E+00   | 5.08E+00 | 2.35E+01    | 2.56E-01    | 3.66E-05    |
| 2010 | Paving Equipment      | Construction and Mining Equipment | SB        | 6.23E-01   | 1.43E+00 | 7.96E+00    | 8.74E-02    | 9.72E-06    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 2.97E-01   | 3.69E-01 | 2.42E-01    | 2.60E-03    | 9.79E-07    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 5.94E-02   | 7.38E-02 | 2.15E-01    | 2.35E-03    | 3.96E-07    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 4.45E-02   | 5.53E-02 | 2.16E-01    | 2.37E-03    | 2.67E-07    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 8.91E-02   | 1.11E-01 | 6.77E-01    | 7.45E-03    | 6.26E-07    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 7.42E-01   | 9.22E-01 | 9.26E+00    | 1.02E-01    | 7.71E-06    |
| 2010 | Surfacing Equipment   | Construction and Mining Equipment | SB        | 1.14E+00   | 1.42E+00 | 2.24E+01    | 2.46E-01    | 1.90E-05    |
| 2010 | Signal Boards         | Construction and Mining Equipment | SB        | 4.18E+01   | 8.59E+01 | 2.42E+01    | 2.65E-01    | 2.78E-05    |
| 2010 | Signal Boards         | Construction and Mining Equipment | SB        | 2.08E-01   | 3.05E-01 | 5.13E-01    | 5.51E-03    | 2.05E-06    |
| 2010 | Signal Boards         | Construction and Mining Equipment | SB        | 3.40E+00   | 4.99E+00 | 1.83E+01    | 2.00E-01    | 3.36E-05    |
| 2010 | Signal Boards         | Construction and Mining Equipment | SB        | 2.11E+00   | 3.09E+00 | 2.18E+01    | 2.39E-01    | 2.66E-05    |
| 2010 | Signal Boards         | Construction and Mining Equipment | SB        | 4.45E-01   | 6.53E-01 | 7.56E+00    | 8.33E-02    | 6.03E-06    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 1.11E+00   | 1.89E+00 | 7.29E-01    | 7.98E-03    | 8.38E-07    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 1.17E+00   | 1.99E+00 | 2.98E+00    | 3.27E-02    | 3.59E-06    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 4.46E+01   | 7.75E+01 | 1.20E+02    | 1.27E+00    | 6.41E-04    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 6.05E+01   | 1.05E+02 | 3.13E+02    | 3.40E+00    | 7.14E-04    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 6.62E+00   | 1.15E+01 | 7.56E+01    | 8.26E-01    | 1.17E-04    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 5.94E-01   | 1.03E+00 | 1.04E+01    | 1.15E-01    | 1.29E-05    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 7.57E-01   | 1.31E+00 | 1.86E+01    | 2.04E-01    | 2.06E-05    |
| 2010 | Trenchers             | Construction and Mining Equipment | SB        | 2.29E-01   | 3.97E-01 | 1.06E+01    | 1.16E-01    | 1.18E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 1.48E-01   | 3.30E-01 | 1.56E-01    | 1.71E-03    | 1.79E-07    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 4.45E-01   | 9.90E-01 | 7.21E-01    | 7.91E-03    | 8.77E-07    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 1.94E+00   | 4.49E+00 | 6.39E+00    | 6.96E-02    | 1.10E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 5.97E+00   | 1.38E+01 | 4.84E+01    | 5.31E-01    | 4.48E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 1.38E+00   | 3.19E+00 | 2.04E+01    | 2.25E-01    | 1.33E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 1.19E+00   | 2.74E+00 | 2.33E+01    | 2.58E-01    | 1.18E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 2.64E+00   | 6.10E+00 | 8.58E+01    | 9.48E-01    | 4.09E-05    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 3.55E+00   | 8.19E+00 | 2.28E+02    | 2.52E+00    | 1.10E-04    |
| 2010 | Bore/Drill Rigs       | Construction and Mining Equipment | SB        | 5.95E+00   | 1.37E+01 | 5.76E+02    | 6.36E+00    | 3.31E-04    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 5.49E-01   | 2.10E+00 | 1.57E+00    | 1.73E-02    | 1.88E-06    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 2.07E+01   | 8.08E+01 | 9.45E+01    | 1.01E+00    | 4.12E-04    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 5.62E+01   | 2.19E+02 | 7.41E+02    | 8.07E+00    | 1.38E-03    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 1.08E+02   | 4.23E+02 | 2.17E+03    | 2.37E+01    | 2.79E-03    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 4.41E+01   | 1.72E+02 | 1.24E+03    | 1.37E+01    | 1.13E-03    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 3.18E+01   | 1.24E+02 | 1.32E+03    | 1.45E+01    | 1.11E-03    |
| 2010 | Excavators            | Construction and Mining Equipment | SB        | 1.79E+00   | 7.01E+00 | 1.23E+02    | 1.36E+00    | 1.05E-04    |
| 2010 | Concrete/Industrial S | Construction and Mining Equipment | SB        | 5.94E-02   | 9.64E-02 | 7.23E-02    | 7.93E-04    | 8.71E-08    |
| 2010 | Concrete/Industrial S | Construction and Mining Equipment | SB        | 5.20E-01   | 8.26E-01 | 1.16E+00    | 1.25E-02    | 4.58E-06    |
| 2010 | Concrete/Industrial S | Construction and Mining Equipment | SB        | 9.06E-01   | 1.44E+00 | 4.89E+00    | 5.33E-02    | 8.71E-06    |
| 2010 | Concrete/Industrial S | Construction and Mining Equipment | SB        | 2.97E-02   | 4.72E-02 | 3.45E-01    | 3.78E-03    | 4.10E-07    |
| 2010 | Cement and Mortar N   | Construction and Mining Equipment | SB        | 7.59E+00   | 6.24E+00 | 1.80E+00    | 1.97E-02    | 2.22E-06    |
| 2010 | Cement and Mortar N   | Construction and Mining Equipment | SB        | 6.83E-01   | 5.62E-01 | 4.51E-01    | 4.93E-03    | 8.77E-07    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 5.05E-01   | 1.77E+00 | 1.93E+00    | 2.05E-02    | 1.03E-05    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 5.54E+00   | 1.95E+01 | 4.48E+01    | 4.87E-01    | 9.78E-05    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 5.54E+00   | 1.95E+01 | 7.14E+01    | 7.81E-01    | 1.06E-04    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 1.07E+01   | 3.77E+01 | 1.92E+02    | 2.11E+00    | 2.11E-04    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 3.93E+00   | 1.38E+01 | 1.13E+02    | 1.24E+00    | 1.13E-04    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 7.44E+00   | 2.61E+01 | 3.60E+02    | 3.95E+00    | 3.63E-04    |
| 2010 | Cranes                | Construction and Mining Equipment | SB        | 9.34E+00   | 3.28E+01 | 1.45E+03    | 1.59E+01    | 1.61E-03    |
| 2010 | Graders               | Construction and Mining Equipment | SB        | 2.08E-01   | 5.43E-01 | 7.01E-01    | 7.47E-03    | 3.42E-06    |
| 2010 | Graders               | Construction and Mining Equipment | SB        | 1.39E+01   | 3.62E+01 | 1.25E+02    | 1.36E+00    | 2.53E-04    |
| 2010 | Graders               | Construction and Mining Equipment | SB        | 4.74E+01   | 1.24E+02 | 7.01E+02    | 7.66E+00    | 9.71E-04    |
| 2010 | Graders               | Construction and Mining Equipment | SB        | 2.94E+01   | 7.68E+01 | 6.00E+02    | 6.60E+00    | 6.10E-04    |
| 2010 | Graders               | Construction and Mining Equipment | SB        | 8.31E-01   | 2.17E+00 | 2.26E+01    | 2.49E-01    | 2.10E-05    |



|                            |                                   |    |          |          |          |          |          |
|----------------------------|-----------------------------------|----|----------|----------|----------|----------|----------|
| 2010 Graders               | Construction and Mining Equipment | SB | 1.14E-01 | 2.99E-01 | 6.59E+00 | 7.25E-02 | 6.17E-06 |
| 2010 Off-Highway Trucks    | Construction and Mining Equipment | SB | 9.65E-01 | 5.27E+00 | 3.01E+01 | 3.29E-01 | 4.11E-05 |
| 2010 Off-Highway Trucks    | Construction and Mining Equipment | SB | 7.13E+00 | 3.89E+01 | 2.94E+02 | 3.24E+00 | 2.88E-04 |
| 2010 Off-Highway Trucks    | Construction and Mining Equipment | SB | 1.00E+01 | 5.48E+01 | 6.77E+02 | 7.46E+00 | 6.16E-04 |
| 2010 Off-Highway Trucks    | Construction and Mining Equipment | SB | 2.40E+01 | 1.31E+02 | 2.63E+03 | 2.89E+01 | 2.40E-03 |
| 2010 Off-Highway Trucks    | Construction and Mining Equipment | SB | 1.13E+01 | 6.14E+01 | 1.74E+03 | 1.92E+01 | 1.78E-03 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 1.65E+00 | 5.13E+00 | 8.11E+00 | 8.67E-02 | 3.67E-05 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 7.89E+01 | 2.45E+02 | 7.03E+02 | 7.66E+00 | 1.34E-03 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 1.01E+01 | 3.14E+01 | 1.79E+02 | 1.96E+00 | 2.32E-04 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 5.64E-01 | 1.75E+00 | 1.36E+01 | 1.50E-01 | 1.20E-05 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 3.71E-01 | 1.15E+00 | 1.34E+01 | 1.48E-01 | 1.09E-05 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 2.08E-01 | 5.45E-01 | 4.20E-01 | 4.61E-03 | 5.06E-07 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 4.04E+00 | 1.08E+01 | 1.58E+01 | 1.68E-01 | 7.58E-05 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 1.10E+02 | 2.94E+02 | 7.93E+02 | 8.64E+00 | 1.59E-03 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 6.19E+01 | 1.65E+02 | 8.03E+02 | 8.79E+00 | 1.10E-03 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 6.15E+01 | 1.65E+02 | 1.11E+03 | 1.22E+01 | 1.11E-03 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 2.56E+01 | 6.85E+01 | 7.37E+02 | 8.11E+00 | 6.71E-04 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 4.61E+00 | 1.23E+01 | 2.72E+02 | 2.99E+00 | 2.49E-04 |
| 2010 Rubber Tired Loader   | Construction and Mining Equipment | SB | 4.96E-01 | 1.32E+00 | 3.57E+01 | 3.93E-01 | 3.68E-05 |
| 2010 Rubber Tired Dozers   | Construction and Mining Equipment | SB | 1.48E-01 | 6.65E-01 | 3.94E+00 | 4.30E-02 | 7.18E-06 |
| 2010 Rubber Tired Dozers   | Construction and Mining Equipment | SB | 3.64E+00 | 1.63E+01 | 1.36E+02 | 1.49E+00 | 2.04E-04 |
| 2010 Rubber Tired Dozers   | Construction and Mining Equipment | SB | 5.60E+00 | 2.51E+01 | 3.03E+02 | 3.32E+00 | 4.10E-04 |
| 2010 Rubber Tired Dozers   | Construction and Mining Equipment | SB | 5.07E+00 | 2.27E+01 | 4.14E+02 | 4.53E+00 | 5.61E-04 |
| 2010 Rubber Tired Dozers   | Construction and Mining Equipment | SB | 3.43E-01 | 1.54E+00 | 4.16E+01 | 4.54E-01 | 5.88E-05 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 4.19E+00 | 1.08E+01 | 7.81E+00 | 8.57E-02 | 1.04E-05 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 2.50E+01 | 6.64E+01 | 9.39E+01 | 1.01E+00 | 3.76E-04 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 3.35E+02 | 8.88E+02 | 2.10E+03 | 2.29E+01 | 3.64E-03 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 2.50E+01 | 6.63E+01 | 3.07E+02 | 3.36E+00 | 3.63E-04 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 8.08E+00 | 2.14E+01 | 1.67E+02 | 1.84E+00 | 1.37E-04 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 1.30E+01 | 3.46E+01 | 5.40E+02 | 5.96E+00 | 4.10E-04 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 2.31E+01 | 6.12E+01 | 1.44E+03 | 1.58E+01 | 1.10E-03 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 2.08E-01 | 5.99E-01 | 7.02E-01 | 7.45E-03 | 3.90E-06 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 1.18E+02 | 3.40E+02 | 1.03E+03 | 1.12E+01 | 2.37E-03 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 3.99E+01 | 1.15E+02 | 6.38E+02 | 6.97E+00 | 1.01E-03 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 3.43E+01 | 9.89E+01 | 7.47E+02 | 8.21E+00 | 9.15E-04 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 2.35E+01 | 6.78E+01 | 8.00E+02 | 8.77E+00 | 8.90E-04 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 3.05E+00 | 8.80E+00 | 1.86E+02 | 2.04E+00 | 2.08E-04 |
| 2010 Crawler Tractors      | Construction and Mining Equipment | SB | 3.05E+00 | 8.79E+00 | 2.64E+02 | 2.89E+00 | 3.17E-04 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 2.85E+01 | 6.52E+01 | 4.11E+01 | 4.49E-01 | 7.31E-05 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 2.59E+02 | 6.05E+02 | 7.14E+02 | 7.71E+00 | 2.14E-03 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 1.35E+02 | 3.17E+02 | 6.20E+02 | 6.77E+00 | 8.66E-04 |
| 2010 Off-Highway Tractors  | Construction and Mining Equipment | SB | 1.48E-02 | 4.56E-02 | 1.97E-01 | 2.13E-03 | 5.05E-07 |
| 2010 Off-Highway Tractors  | Construction and Mining Equipment | SB | 1.82E+01 | 5.57E+01 | 3.33E+02 | 3.63E+00 | 5.84E-04 |
| 2010 Off-Highway Tractors  | Construction and Mining Equipment | SB | 1.72E+01 | 5.27E+01 | 3.13E+02 | 3.43E+00 | 4.47E-04 |
| 2010 Off-Highway Tractors  | Construction and Mining Equipment | SB | 1.91E+01 | 5.88E+01 | 1.53E+03 | 1.67E+01 | 1.97E-03 |
| 2010 Off-Highway Tractors  | Construction and Mining Equipment | SB | 2.02E+00 | 6.20E+00 | 2.31E+02 | 2.52E+00 | 3.14E-04 |
| 2010 Dumpers/Tenders       | Construction and Mining Equipment | SB | 3.56E-01 | 6.47E-01 | 2.25E-01 | 2.46E-03 | 3.15E-07 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 4.91E+00 | 9.30E+00 | 4.29E+00 | 4.69E-02 | 4.93E-06 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 8.31E-01 | 1.57E+00 | 9.46E-01 | 1.04E-02 | 1.15E-06 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 1.28E+00 | 2.47E+00 | 3.20E+00 | 3.45E-02 | 1.15E-05 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 2.11E+00 | 4.07E+00 | 1.51E+01 | 1.64E-01 | 2.42E-05 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 2.91E+00 | 5.62E+00 | 2.73E+01 | 2.99E-01 | 2.96E-05 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 6.75E+00 | 1.30E+01 | 1.50E+02 | 1.66E+00 | 1.00E-04 |
| 2010 Tampers/Rammers       | Construction and Mining Equipment | SB | 4.25E+01 | 2.12E+01 | 4.27E+00 | 2.21E-02 | 1.67E-05 |
| 2010 Plate Compactors      | Construction and Mining Equipment | SB | 3.64E+00 | 2.06E+00 | 4.15E-01 | 2.14E-03 | 1.62E-06 |
| 2010 Asphalt Pavers        | Construction and Mining Equipment | SB | 9.26E-01 | 1.01E+00 | 6.00E-01 | 2.83E-03 | 2.49E-06 |
| 2010 Asphalt Pavers        | Construction and Mining Equipment | SB | 1.58E+00 | 1.72E+00 | 2.59E+00 | 1.18E-02 | 1.10E-05 |
| 2010 Asphalt Pavers        | Construction and Mining Equipment | SB | 8.84E-01 | 9.50E-01 | 2.24E+00 | 1.73E-02 | 5.21E-06 |
| 2010 Asphalt Pavers        | Construction and Mining Equipment | SB | 4.85E-01 | 5.22E-01 | 2.07E+00 | 1.79E-02 | 3.64E-06 |
| 2010 Tampers/Rammers       | Construction and Mining Equipment | SB | 1.96E+00 | 9.78E-01 | 4.96E-01 | 2.29E-03 | 2.23E-06 |
| 2010 Plate Compactors      | Construction and Mining Equipment | SB | 7.19E+01 | 3.55E+01 | 6.60E+00 | 3.70E-02 | 5.14E-05 |
| 2010 Plate Compactors      | Construction and Mining Equipment | SB | 7.63E+01 | 4.31E+01 | 1.93E+01 | 8.98E-02 | 8.35E-05 |
| 2010 Rollers               | Construction and Mining Equipment | SB | 8.01E+00 | 1.82E+00 | 5.06E-01 | 2.68E-03 | 3.35E-06 |
| 2010 Rollers               | Construction and Mining Equipment | SB | 1.30E+01 | 1.10E+01 | 6.17E+00 | 2.91E-02 | 2.54E-05 |
| 2010 Rollers               | Construction and Mining Equipment | SB | 8.75E+00 | 7.44E+00 | 9.07E+00 | 4.15E-02 | 3.82E-05 |
| 2010 Rollers               | Construction and Mining Equipment | SB | 6.22E-01 | 1.06E+00 | 2.82E+00 | 2.10E-02 | 7.59E-06 |
| 2010 Rollers               | Construction and Mining Equipment | SB | 1.17E+00 | 1.99E+00 | 9.30E+00 | 7.91E-02 | 1.93E-05 |
| 2010 Paving Equipment      | Construction and Mining Equipment | SB | 1.01E+02 | 4.69E+01 | 9.40E+00 | 5.24E-02 | 7.24E-05 |
| 2010 Paving Equipment      | Construction and Mining Equipment | SB | 1.70E+02 | 9.34E+01 | 5.59E+01 | 2.61E-01 | 2.42E-04 |
| 2010 Paving Equipment      | Construction and Mining Equipment | SB | 3.78E+00 | 2.08E+00 | 2.81E+00 | 1.28E-02 | 1.22E-05 |
| 2010 Paving Equipment      | Construction and Mining Equipment | SB | 2.41E+00 | 1.16E+00 | 2.68E+00 | 2.18E-02 | 4.25E-06 |
| 2010 Paving Equipment      | Construction and Mining Equipment | SB | 6.22E-01 | 2.99E-01 | 1.11E+00 | 9.93E-03 | 1.25E-06 |
| 2010 Surfacing Equipment   | Construction and Mining Equipment | SB | 1.85E+01 | 1.01E+01 | 2.08E+00 | 1.18E-02 | 1.66E-05 |
| 2010 Surfacing Equipment   | Construction and Mining Equipment | SB | 5.49E+01 | 7.58E+01 | 2.99E+01 | 1.41E-01 | 1.29E-04 |
| 2010 Surfacing Equipment   | Construction and Mining Equipment | SB | 7.52E-01 | 1.04E+00 | 1.00E+00 | 4.57E-03 | 4.41E-06 |
| 2010 Signal Boards         | Construction and Mining Equipment | SB | 2.28E-01 | 8.13E-02 | 2.71E-02 | 1.46E-04 | 1.91E-07 |
| 2010 Signal Boards         | Construction and Mining Equipment | SB | 1.62E+00 | 1.26E+00 | 7.72E-01 | 3.64E-03 | 3.15E-06 |
| 2010 Trenchers             | Construction and Mining Equipment | SB | 1.50E+01 | 1.79E+01 | 1.19E+01 | 5.58E-02 | 4.99E-05 |

|                            |                                   |    |          |          |          |          |          |
|----------------------------|-----------------------------------|----|----------|----------|----------|----------|----------|
| 2010 Trenchers             | Construction and Mining Equipment | SB | 1.16E+01 | 1.38E+01 | 1.99E+01 | 9.09E-02 | 8.57E-05 |
| 2010 Trenchers             | Construction and Mining Equipment | SB | 5.66E+00 | 6.24E+00 | 1.39E+01 | 1.07E-01 | 3.24E-05 |
| 2010 Trenchers             | Construction and Mining Equipment | SB | 1.88E+00 | 2.07E+00 | 8.90E+00 | 7.70E-02 | 1.57E-05 |
| 2010 Bore/Drill Rigs       | Construction and Mining Equipment | SB | 4.29E-01 | 1.46E-01 | 1.18E-01 | 5.46E-04 | 5.17E-07 |
| 2010 Bore/Drill Rigs       | Construction and Mining Equipment | SB | 2.13E+00 | 7.26E-01 | 1.08E+00 | 4.88E-03 | 4.70E-06 |
| 2010 Bore/Drill Rigs       | Construction and Mining Equipment | SB | 2.74E-01 | 8.03E-02 | 2.17E-01 | 1.75E-03 | 3.95E-07 |
| 2010 Bore/Drill Rigs       | Construction and Mining Equipment | SB | 1.26E+00 | 3.69E-01 | 2.47E+00 | 2.19E-02 | 3.30E-06 |
| 2010 Bore/Drill Rigs       | Construction and Mining Equipment | SB | 3.11E-01 | 9.13E-02 | 8.28E-01 | 7.54E-03 | 6.56E-07 |
| 2010 Concrete/Industrial S | Construction and Mining Equipment | SB | 7.88E+00 | 2.81E+00 | 7.67E-01 | 4.15E-03 | 5.42E-06 |
| 2010 Concrete/Industrial S | Construction and Mining Equipment | SB | 3.54E+01 | 3.01E+01 | 2.12E+01 | 1.00E-01 | 8.73E-05 |
| 2010 Concrete/Industrial S | Construction and Mining Equipment | SB | 1.11E+01 | 9.42E+00 | 1.29E+01 | 5.92E-02 | 5.45E-05 |
| 2010 Concrete/Industrial S | Construction and Mining Equipment | SB | 1.02E+00 | 1.71E+00 | 4.77E+00 | 4.02E-02 | 2.80E-06 |
| 2010 Concrete/Industrial S | Construction and Mining Equipment | SB | 5.85E-01 | 9.78E-01 | 4.62E+00 | 4.30E-02 | 1.15E-06 |
| 2010 Cement and Mortar M   | Construction and Mining Equipment | SB | 1.43E+02 | 3.61E+01 | 9.40E+00 | 5.04E-02 | 6.47E-05 |
| 2010 Cement and Mortar M   | Construction and Mining Equipment | SB | 2.42E+02 | 6.11E+01 | 3.25E+01 | 1.37E-01 | 2.03E-04 |
| 2010 Cement and Mortar M   | Construction and Mining Equipment | SB | 1.02E+00 | 2.57E-01 | 4.25E-01 | 1.80E-03 | 2.44E-06 |
| 2010 Cranes                | Construction and Mining Equipment | SB | 3.11E-01 | 3.54E-01 | 6.92E-01 | 5.32E-03 | 1.63E-06 |
| 2010 Cranes                | Construction and Mining Equipment | SB | 6.22E-01 | 7.08E-01 | 2.43E+00 | 2.10E-02 | 4.35E-06 |
| 2010 Cranes                | Construction and Mining Equipment | SB | 2.49E-02 | 2.83E-02 | 1.53E-01 | 1.38E-03 | 1.37E-07 |
| 2010 Crushing/Proc. Equip  | Construction and Mining Equipment | SB | 3.89E-01 | 3.08E-01 | 2.37E-01 | 1.12E-03 | 9.69E-07 |
| 2010 Crushing/Proc. Equip  | Construction and Mining Equipment | SB | 2.55E-01 | 2.02E-01 | 2.85E-01 | 1.30E-03 | 1.19E-06 |
| 2010 Crushing/Proc. Equip  | Construction and Mining Equipment | SB | 3.61E-01 | 2.39E-01 | 1.89E+00 | 1.66E-02 | 2.91E-06 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 1.24E-01 | 1.41E-01 | 4.69E-01 | 3.60E-03 | 1.10E-06 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 1.77E+00 | 2.00E+00 | 1.06E+01 | 9.15E-02 | 1.89E-05 |
| 2010 Rough Terrain Forklif | Construction and Mining Equipment | SB | 6.22E-02 | 7.05E-02 | 5.78E-01 | 5.23E-03 | 5.20E-07 |
| 2010 Rubber Tired Loaders  | Construction and Mining Equipment | SB | 3.11E-01 | 4.37E-01 | 1.08E+00 | 8.15E-03 | 2.72E-06 |
| 2010 Rubber Tired Loaders  | Construction and Mining Equipment | SB | 2.07E+00 | 2.90E+00 | 1.12E+01 | 9.63E-02 | 2.17E-05 |
| 2010 Tractors/Loaders/Bac  | Construction and Mining Equipment | SB | 1.10E+00 | 2.61E+00 | 7.79E+00 | 6.75E-02 | 1.18E-05 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 7.65E-01 | 6.69E-01 | 5.46E-01 | 2.57E-03 | 2.27E-06 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 5.11E+01 | 4.47E+01 | 5.11E+01 | 2.33E-01 | 2.18E-04 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 8.49E+00 | 7.21E+00 | 1.40E+01 | 1.16E-01 | 1.31E-05 |
| 2010 Skid Steer Loaders    | Construction and Mining Equipment | SB | 5.08E+00 | 4.32E+00 | 1.87E+01 | 1.71E-01 | 1.03E-05 |
| 2010 Dumpers/Tenders       | Construction and Mining Equipment | SB | 7.30E+00 | 2.98E+00 | 4.11E-01 | 2.32E-03 | 3.26E-06 |
| 2010 Dumpers/Tenders       | Construction and Mining Equipment | SB | 1.56E+01 | 6.36E+00 | 2.62E+00 | 1.11E-02 | 1.60E-05 |
| 2010 Dumpers/Tenders       | Construction and Mining Equipment | SB | 2.89E+00 | 1.18E+00 | 1.02E+00 | 4.35E-03 | 5.78E-06 |
| 2010 Dumpers/Tenders       | Construction and Mining Equipment | SB | 2.24E-01 | 7.80E-02 | 2.04E-01 | 1.80E-03 | 2.78E-07 |
| 2010 Other Construction E  | Construction and Mining Equipment | SB | 8.71E-01 | 8.86E-01 | 4.88E+00 | 4.45E-02 | 1.47E-06 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 5.50E-02 | 5.08E-02 | 1.03E-01 | 1.11E-03 | 3.56E-07 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 1.35E+00 | 1.25E+00 | 5.08E+00 | 5.54E-02 | 8.68E-06 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 1.11E+00 | 1.03E+00 | 7.01E+00 | 7.68E-02 | 7.94E-06 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 1.72E+00 | 1.59E+00 | 1.42E+01 | 1.57E-01 | 1.11E-05 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 2.67E+00 | 2.47E+00 | 3.09E+01 | 3.41E-01 | 2.17E-05 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 4.67E-01 | 4.32E-01 | 1.06E+01 | 1.17E-01 | 7.69E-06 |
| 2010 Generator (Entertainr | Entertainment Equipment           | SB | 6.87E-02 | 6.36E-02 | 2.78E+00 | 3.06E-02 | 2.61E-06 |
| 2010 Compressor (Entertai  | Entertainment Equipment           | SB | 1.37E-02 | 3.06E-02 | 4.91E-02 | 5.35E-04 | 1.01E-07 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 1.99E-01 | 2.04E-01 | 1.64E-01 | 9.09E-04 | 3.18E-06 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 8.53E+00 | 8.77E+00 | 1.04E+01 | 5.70E-02 | 3.08E-04 |
| 2010 Forklifts             | Industrial Equipment              | SB | 8.37E-02 | 2.87E-01 | 2.81E-01 | 1.47E-03 | 1.50E-05 |
| 2010 Forklifts             | Industrial Equipment              | SB | 5.67E+01 | 2.80E+02 | 3.74E+02 | 2.56E+00 | 3.29E-03 |
| 2010 Forklifts             | Industrial Equipment              | SB | 1.99E+02 | 9.82E+02 | 2.34E+03 | 1.53E+01 | 2.03E-02 |
| 2010 Forklifts             | Industrial Equipment              | SB | 7.28E+00 | 3.59E+01 | 1.76E+02 | 1.17E+00 | 1.04E-03 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 4.38E+00 | 4.79E+00 | 1.89E+00 | 2.07E-02 | 2.25E-06 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 7.15E+00 | 7.83E+00 | 3.92E+00 | 4.29E-02 | 7.39E-06 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 2.61E+01 | 2.75E+01 | 2.50E+01 | 2.70E-01 | 9.39E-05 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 2.32E+01 | 2.44E+01 | 4.25E+01 | 4.64E-01 | 7.74E-05 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 2.97E+00 | 3.13E+00 | 3.02E+01 | 3.33E-01 | 2.12E-05 |
| 2010 Aerial Lifts          | Industrial Equipment              | SB | 2.39E-01 | 2.51E-01 | 4.38E+00 | 4.83E-02 | 3.18E-06 |
| 2010 Forklifts             | Industrial Equipment              | SB | 7.92E+00 | 3.91E+01 | 2.68E+01 | 2.87E-01 | 1.18E-04 |
| 2010 Forklifts             | Industrial Equipment              | SB | 1.24E+01 | 6.13E+01 | 8.78E+01 | 9.57E-01 | 1.67E-04 |
| 2010 Forklifts             | Industrial Equipment              | SB | 1.25E+01 | 6.17E+01 | 1.58E+02 | 1.73E+00 | 2.06E-04 |
| 2010 Forklifts             | Industrial Equipment              | SB | 1.24E+01 | 6.12E+01 | 2.14E+02 | 2.36E+00 | 1.80E-04 |
| 2010 Forklifts             | Industrial Equipment              | SB | 5.31E+00 | 2.62E+01 | 1.32E+02 | 1.45E+00 | 1.03E-04 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 5.81E-01 | 1.04E+00 | 5.64E-01 | 6.18E-03 | 5.78E-07 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 5.81E-01 | 1.04E+00 | 9.25E-01 | 1.02E-02 | 1.12E-06 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 1.13E+01 | 3.79E+01 | 5.59E+01 | 5.97E-01 | 2.58E-04 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 1.87E+01 | 6.27E+01 | 2.16E+02 | 2.35E+00 | 4.22E-04 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 8.63E+00 | 2.89E+01 | 1.83E+02 | 2.00E+00 | 2.42E-04 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment              | SB | 1.38E+00 | 4.62E+00 | 3.39E+01 | 3.74E-01 | 2.80E-05 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 1.53E+00 | 5.96E+00 | 1.74E+00 | 1.91E-02 | 1.78E-06 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 2.05E+00 | 7.99E+00 | 5.58E+00 | 6.13E-02 | 6.69E-06 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 2.53E+00 | 9.90E+00 | 1.01E+01 | 1.08E-01 | 5.73E-05 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 1.01E+01 | 3.96E+01 | 1.13E+02 | 1.23E+00 | 2.61E-04 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 1.02E+01 | 3.97E+01 | 1.74E+02 | 1.90E+00 | 2.72E-04 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 1.01E+01 | 3.96E+01 | 2.43E+02 | 2.68E+00 | 2.50E-04 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 1.01E+01 | 3.95E+01 | 4.75E+02 | 5.23E+00 | 4.45E-04 |
| 2010 Other General Indust  | Industrial Equipment              | SB | 2.52E+00 | 9.86E+00 | 1.96E+02 | 2.15E+00 | 1.85E-04 |

|                            |                           |    |          |          |          |          |          |
|----------------------------|---------------------------|----|----------|----------|----------|----------|----------|
| 2010 Other General Indust  | Industrial Equipment      | SB | 1.54E+00 | 6.00E+00 | 1.53E+02 | 1.68E+00 | 1.72E-04 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 7.27E-02 | 2.63E-01 | 3.75E-01 | 3.98E-03 | 2.10E-06 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 4.36E-01 | 1.58E+00 | 4.39E+00 | 4.78E-02 | 1.01E-05 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 4.67E-01 | 1.69E+00 | 9.42E+00 | 1.03E-01 | 1.46E-05 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 1.11E+00 | 4.02E+00 | 2.64E+01 | 2.91E-01 | 2.68E-05 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 2.08E-01 | 7.51E-01 | 6.53E+00 | 7.18E-02 | 6.03E-06 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 6.23E-02 | 2.25E-01 | 7.59E+00 | 8.34E-02 | 8.52E-06 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 9.21E-01 | 9.47E-01 | 3.72E-01 | 1.94E-03 | 1.05E-06 |
| 2010 Aerial Lifts          | Industrial Equipment      | SB | 1.78E-01 | 1.83E-01 | 1.10E-01 | 5.18E-04 | 4.52E-07 |
| 2010 Aerial Lifts          | Industrial Equipment      | SB | 7.59E+00 | 7.80E+00 | 7.07E+00 | 3.23E-02 | 3.05E-05 |
| 2010 Aerial Lifts          | Industrial Equipment      | SB | 9.27E+00 | 9.18E+00 | 1.48E+01 | 1.20E-01 | 1.77E-05 |
| 2010 Aerial Lifts          | Industrial Equipment      | SB | 9.27E+00 | 9.18E+00 | 2.67E+01 | 2.41E-01 | 2.06E-05 |
| 2010 Forklifts             | Industrial Equipment      | SB | 1.78E-01 | 4.39E-01 | 3.12E-01 | 1.43E-03 | 9.18E-07 |
| 2010 Forklifts             | Industrial Equipment      | SB | 3.09E+01 | 1.53E+02 | 2.49E+02 | 1.62E+00 | 3.43E-04 |
| 2010 Forklifts             | Industrial Equipment      | SB | 1.09E+02 | 5.36E+02 | 1.14E+03 | 9.60E+00 | 1.05E-03 |
| 2010 Forklifts             | Industrial Equipment      | SB | 3.97E+00 | 1.96E+01 | 7.93E+01 | 7.12E-01 | 4.83E-05 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment      | SB | 5.16E+00 | 3.82E+00 | 2.16E+00 | 1.03E-02 | 6.11E-06 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment      | SB | 5.03E+00 | 3.73E+00 | 4.88E+00 | 2.25E-02 | 1.43E-05 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment      | SB | 8.62E+00 | 1.22E+01 | 3.25E+01 | 2.62E-01 | 2.57E-05 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment      | SB | 7.20E+00 | 1.02E+01 | 4.60E+01 | 4.20E-01 | 1.88E-05 |
| 2010 Sweepers/Scrubbers    | Industrial Equipment      | SB | 4.19E-02 | 5.92E-02 | 5.36E-01 | 4.89E-03 | 1.47E-07 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 1.02E+01 | 1.05E+01 | 4.52E+00 | 2.15E-02 | 1.34E-05 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 3.35E+00 | 3.95E+00 | 3.94E+00 | 1.82E-02 | 1.20E-05 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 2.96E+00 | 5.79E+00 | 1.05E+01 | 8.10E-02 | 1.05E-05 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 9.73E-01 | 1.90E+00 | 7.73E+00 | 6.93E-02 | 4.49E-06 |
| 2010 Other General Indust  | Industrial Equipment      | SB | 9.42E-02 | 1.84E-01 | 1.58E+00 | 1.44E-02 | 5.89E-07 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 4.19E-02 | 4.43E-02 | 1.08E-01 | 8.31E-04 | 2.29E-07 |
| 2010 Other Material Handli | Industrial Equipment      | SB | 1.85E+00 | 1.96E+00 | 5.51E+00 | 4.79E-02 | 8.79E-06 |
|                            |                           |    |          |          |          |          |          |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 1.05E-01 | 3.44E-02 | 4.72E-03 | 5.17E-05 | 5.07E-09 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 9.16E-02 | 3.01E-02 | 6.69E-02 | 7.32E-04 | 1.01E-07 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 2.62E-02 | 8.60E-03 | 3.91E-02 | 4.31E-04 | 2.59E-08 |
| 2010 Lawn & Garden Tract   | Lawn and Garden Equipment | SB | 2.53E+02 | 3.76E+02 | 1.60E+02 | 1.75E+00 | 1.80E-04 |
| 2010 Lawn & Garden Tract   | Lawn and Garden Equipment | SB | 1.98E+02 | 2.94E+02 | 1.92E+02 | 2.10E+00 | 2.37E-04 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 1.18E-01 | 1.50E-01 | 1.37E-01 | 1.51E-03 | 1.66E-07 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 3.24E+00 | 4.13E+00 | 1.44E+01 | 1.57E-01 | 2.60E-05 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 2.22E-01 | 2.83E-01 | 1.70E+00 | 1.87E-02 | 2.05E-06 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 5.23E-02 | 6.67E-02 | 6.72E-01 | 7.41E-03 | 5.50E-07 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 4.84E-01 | 6.17E-01 | 6.91E+00 | 7.61E-02 | 5.08E-06 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 5.49E-01 | 7.00E-01 | 1.89E+01 | 2.08E-01 | 1.42E-05 |
| 2010 Chippers/Stump Grin   | Lawn and Garden Equipment | SB | 1.05E+00 | 1.33E+00 | 5.12E+01 | 5.63E-01 | 5.06E-05 |
| 2010 Commercial Turf Equ   | Lawn and Garden Equipment | SB | 6.36E+00 | 1.86E+01 | 8.19E+00 | 8.97E-02 | 8.47E-06 |
| 2010 Commercial Turf Equ   | Lawn and Garden Equipment | SB | 1.20E+02 | 3.50E+02 | 2.30E+02 | 2.53E+00 | 2.76E-04 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 9.16E-02 | 1.09E-01 | 6.06E-02 | 6.63E-04 | 6.38E-08 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 1.31E-02 | 1.55E-02 | 1.15E-02 | 1.26E-04 | 1.39E-08 |
| 2010 Lawn Mowers           | Lawn and Garden Equipment | SB | 5.21E+02 | 3.26E+02 | 3.69E+01 | 2.22E-01 | 2.59E-04 |
| 2010 Lawn Mowers           | Lawn and Garden Equipment | SB | 3.91E+03 | 1.66E+02 | 2.57E+01 | 1.13E-01 | 4.99E-04 |
| 2010 Chainsaws             | Lawn and Garden Equipment | SB | 9.32E+02 | 7.39E+02 | 4.41E+01 | 1.80E-01 | 2.29E-03 |
| 2010 Chainsaws             | Lawn and Garden Equipment | SB | 1.05E+04 | 1.41E+02 | 8.97E+00 | 3.43E-02 | 3.59E-04 |
| 2010 Chainsaws             | Lawn and Garden Equipment | SB | 6.57E+02 | 5.21E+02 | 7.50E+01 | 3.07E-01 | 3.90E-03 |
| 2010 Chainsaws             | Lawn and Garden Equipment | SB | 7.39E+03 | 9.92E+01 | 1.43E+01 | 5.84E-02 | 5.36E-04 |
| 2010 Chainsaws Preempt     | Lawn and Garden Equipment | SB | 8.18E+02 | 6.48E+02 | 9.34E+01 | 3.82E-01 | 4.85E-03 |
| 2010 Chainsaws Preempt     | Lawn and Garden Equipment | SB | 9.20E+03 | 1.23E+02 | 2.05E+01 | 7.28E-02 | 8.74E-04 |
| 2010 Trimmers/Edgers/Bru   | Lawn and Garden Equipment | SB | 3.04E+03 | 1.01E+03 | 4.48E+01 | 2.15E-01 | 1.50E-03 |
| 2010 Trimmers/Edgers/Bru   | Lawn and Garden Equipment | SB | 3.39E+04 | 2.00E+03 | 8.60E+01 | 4.25E-01 | 2.52E-03 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 4.54E+03 | 2.44E+03 | 1.30E+02 | 5.78E-01 | 5.59E-03 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 1.17E+04 | 1.54E+02 | 9.52E+00 | 3.64E-02 | 3.81E-04 |
| 2010 Shredders             | Lawn and Garden Equipment | SB | 2.29E+01 | 8.53E+00 | 3.74E+00 | 1.94E-02 | 1.31E-05 |
| 2010 Shredders             | Lawn and Garden Equipment | SB | 8.17E+02 | 2.01E+00 | 1.13E+00 | 4.58E-03 | 2.76E-05 |
| 2010 Commercial Turf Equ   | Lawn and Garden Equipment | SB | 1.22E+01 | 2.67E+01 | 1.09E+01 | 5.68E-02 | 3.47E-05 |
| 2010 Commercial Turf Equ   | Lawn and Garden Equipment | SB | 6.01E+00 | 1.32E+01 | 1.17E+01 | 5.92E-02 | 3.68E-05 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 5.14E+00 | 9.66E-01 | 5.40E-02 | 2.65E-04 | 1.65E-06 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 1.58E+02 | 1.86E+00 | 1.33E-01 | 5.10E-04 | 5.29E-06 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 2.24E+00 | 4.20E-01 | 1.17E-01 | 5.77E-04 | 3.59E-06 |
| 2010 Other Lawn & Garder   | Lawn and Garden Equipment | SB | 6.86E+01 | 8.08E-01 | 2.70E-01 | 1.11E-03 | 1.01E-05 |
| 2010 Lawn Mowers           | Lawn and Garden Equipment | SB | 3.08E+03 | 1.93E+03 | 2.34E+02 | 1.32E+00 | 1.54E-03 |
| 2010 Lawn Mowers           | Lawn and Garden Equipment | SB | 4.89E+04 | 2.08E+03 | 3.14E+02 | 1.41E+00 | 2.13E-03 |
| 2010 Tillers               | Lawn and Garden Equipment | SB | 3.20E+02 | 4.90E+01 | 7.10E+00 | 3.71E-02 | 3.57E-05 |
| 2010 Tillers               | Lawn and Garden Equipment | SB | 1.24E+03 | 6.13E+01 | 1.05E+01 | 4.64E-02 | 7.75E-05 |
| 2010 Trimmers/Edgers/Bru   | Lawn and Garden Equipment | SB | 5.63E+02 | 2.09E+02 | 6.55E+00 | 3.56E-02 | 4.71E-05 |
| 2010 Trimmers/Edgers/Bru   | Lawn and Garden Equipment | SB | 2.62E+03 | 1.54E+02 | 6.20E+00 | 2.63E-02 | 5.76E-05 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 1.43E+02 | 2.44E+01 | 1.65E+00 | 8.31E-03 | 6.74E-06 |
| 2010 Leaf Blowers/Vacuun   | Lawn and Garden Equipment | SB | 1.23E+02 | 1.62E+00 | 1.33E-01 | 5.52E-04 | 8.19E-07 |
| 2010 Rear Engine Riding    | Lawn and Garden Equipment | SB | 1.69E+03 | 1.25E+03 | 4.26E+02 | 2.03E+00 | 1.09E-03 |
| 2010 Rear Engine Riding    | Lawn and Garden Equipment | SB | 1.48E+03 | 1.14E+02 | 3.98E+01 | 1.85E-01 | 1.33E-04 |
| 2010 Rear Engine Riding    | Lawn and Garden Equipment | SB | 7.72E+00 | 5.74E+00 | 3.79E+00 | 1.75E-02 | 9.35E-06 |

|  |    |          |          |          |          |          |
|--|----|----------|----------|----------|----------|----------|
| 2010 Rear Engine Riding Lawn and Garden Equipment  | SB | 6.66E+00 | 5.14E-01 | 3.46E-01 | 1.57E-03 | 1.13E-06 |
| 2010 Front Mowers Lawn and Garden Equipment        | SB | 7.74E+01 | 5.75E+01 | 3.12E+01 | 1.49E-01 | 7.97E-05 |
| 2010 Front Mowers Lawn and Garden Equipment        | SB | 2.50E+03 | 1.93E+02 | 1.07E+02 | 4.99E-01 | 3.59E-04 |
| 2010 Front Mowers Lawn and Garden Equipment        | SB | 6.06E+01 | 4.51E+01 | 3.29E+01 | 1.52E-01 | 8.11E-05 |
| 2010 Front Mowers Lawn and Garden Equipment        | SB | 1.96E+03 | 1.51E+02 | 1.13E+02 | 5.12E-01 | 3.68E-04 |
| 2010 Shredders Lawn and Garden Equipment           | SB | 6.08E+01 | 2.26E+01 | 6.29E+00 | 3.42E-02 | 4.52E-05 |
| 2010 Shredders Lawn and Garden Equipment           | SB | 2.26E+03 | 5.57E+00 | 2.10E+00 | 8.44E-03 | 1.28E-05 |
| 2010 Lawn & Garden Tract Lawn and Garden Equipment | SB | 3.10E+02 | 1.09E+02 | 7.12E+01 | 3.41E-01 | 1.53E-04 |
| 2010 Lawn & Garden Tract Lawn and Garden Equipment | SB | 2.01E+03 | 8.04E+01 | 5.37E+01 | 2.51E-01 | 1.56E-04 |
| 2010 Lawn & Garden Tract Lawn and Garden Equipment | SB | 1.22E+02 | 4.30E+01 | 4.47E+01 | 2.08E-01 | 9.49E-05 |
| 2010 Lawn & Garden Tract Lawn and Garden Equipment | SB | 7.93E+02 | 3.17E+01 | 3.36E+01 | 1.53E-01 | 9.70E-05 |
| 2010 Lawn & Garden Tract Lawn and Garden Equipment | SB | 1.77E+00 | 5.03E-01 | 7.96E-01 | 6.52E-03 | 1.16E-06 |
| 2010 Wood Splitters Lawn and Garden Equipment      | SB | 1.04E+02 | 3.66E+01 | 1.10E+01 | 5.98E-02 | 6.41E-05 |
| 2010 Wood Splitters Lawn and Garden Equipment      | SB | 2.60E+03 | 7.83E+00 | 3.06E+00 | 1.28E-02 | 1.56E-05 |
| 2010 Chippers/Stump Grin Lawn and Garden Equipment | SB | 1.47E+00 | 5.07E+00 | 4.42E+00 | 2.06E-02 | 1.88E-05 |
| 2010 Chippers/Stump Grin Lawn and Garden Equipment | SB | 2.62E+00 | 1.18E-01 | 1.12E-01 | 4.80E-04 | 4.96E-07 |
| 2010 Chippers/Stump Grin Lawn and Garden Equipment | SB | 8.32E+00 | 2.88E+01 | 4.24E+01 | 1.91E-01 | 1.85E-04 |
| 2010 Chippers/Stump Grin Lawn and Garden Equipment | SB | 1.48E+01 | 6.69E-01 | 1.05E+00 | 4.45E-03 | 4.34E-06 |
| 2010 Commercial Turf Equ Lawn and Garden Equipment | SB | 1.10E+02 | 2.40E+02 | 1.33E+02 | 6.25E-01 | 4.58E-04 |
| 2010 Commercial Turf Equ Lawn and Garden Equipment | SB | 5.40E+00 | 1.18E+02 | 1.16E+02 | 5.32E-01 | 3.91E-04 |
| 2010 Commercial Turf Equ Lawn and Garden Equipment | SB | 2.18E+01 | 4.37E+01 | 7.26E+01 | 5.28E-01 | 1.55E-04 |
| 2010 Commercial Turf Equ Lawn and Garden Equipment | SB | 1.44E-01 | 2.89E-01 | 7.08E-01 | 6.54E-03 | 1.82E-07 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 9.62E+01 | 1.81E+01 | 3.80E+00 | 1.99E-02 | 1.88E-05 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 2.95E+03 | 3.47E+01 | 9.19E+00 | 3.81E-02 | 5.52E-05 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 4.27E+01 | 8.03E+00 | 3.69E+00 | 1.76E-02 | 8.53E-06 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 1.31E+03 | 1.54E+01 | 7.54E+00 | 3.39E-02 | 2.35E-05 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 9.03E-01 | 1.70E-01 | 1.71E-01 | 7.92E-04 | 3.93E-07 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 2.78E+01 | 3.28E-01 | 3.47E-01 | 1.53E-03 | 1.05E-06 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 6.54E-02 | 1.09E-02 | 2.40E-02 | 1.97E-04 | 3.62E-08 |
| 2010 Other Lawn & Garder Lawn and Garden Equipment | SB | 1.57E-01 | 2.62E-02 | 1.48E-01 | 1.32E-03 | 1.60E-07 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 2.86E+00 | 9.00E-01 | 5.65E+00 | 3.78E-02 | 4.64E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 2.37E+00 | 7.46E-01 | 8.17E+00 | 5.51E-02 | 5.38E-05 |
| 2010 Gas Compressors Light Commercial Equipment    | SB | 4.45E-01 | 1.04E+01 | 3.54E+01 | 2.43E-01 | 1.69E-04 |
| 2010 Gas Compressors Light Commercial Equipment    | SB | 9.19E-01 | 2.14E+01 | 2.07E+02 | 1.37E+00 | 9.21E-04 |
| 2010 Gas Compressors Light Commercial Equipment    | SB | 1.48E-01 | 3.45E+00 | 5.32E+01 | 3.55E-01 | 2.57E-04 |
| 2010 Gas Compressors Light Commercial Equipment    | SB | 1.19E-01 | 2.76E+00 | 5.51E+01 | 3.66E-01 | 1.98E-04 |
| 2010 Gas Compressors Light Commercial Equipment    | SB | 1.04E-01 | 2.42E+00 | 7.76E+01 | 5.16E-01 | 2.78E-04 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 7.48E+01 | 6.92E+01 | 3.23E+01 | 3.53E-01 | 5.39E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 5.47E+01 | 5.06E+01 | 4.08E+01 | 4.46E-01 | 6.85E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 6.68E+01 | 6.18E+01 | 8.77E+01 | 9.45E-01 | 3.13E-04 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 1.02E+02 | 9.39E+01 | 3.35E+02 | 3.66E+00 | 5.93E-04 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 6.00E+00 | 5.55E+00 | 3.59E+01 | 3.94E-01 | 4.20E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 3.35E+00 | 3.10E+00 | 2.98E+01 | 3.29E-01 | 2.27E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 7.45E+00 | 6.89E+00 | 1.05E+02 | 1.16E+00 | 7.19E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 4.63E+00 | 4.28E+00 | 1.06E+02 | 1.16E+00 | 7.44E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 1.21E+00 | 1.12E+00 | 5.31E+01 | 5.84E-01 | 5.09E-05 |
| 2010 Pumps Light Commercial Equipment              | SB | 5.62E+01 | 6.19E+01 | 2.11E+01 | 2.30E-01 | 4.15E-05 |
| 2010 Pumps Light Commercial Equipment              | SB | 1.68E+01 | 1.85E+01 | 1.65E+01 | 1.80E-01 | 3.67E-05 |
| 2010 Pumps Light Commercial Equipment              | SB | 2.92E+01 | 3.23E+01 | 5.14E+01 | 5.53E-01 | 1.96E-04 |
| 2010 Pumps Light Commercial Equipment              | SB | 5.73E+01 | 6.32E+01 | 2.26E+02 | 2.46E+00 | 4.13E-04 |
| 2010 Pumps Light Commercial Equipment              | SB | 6.21E+00 | 6.84E+00 | 4.37E+01 | 4.79E-01 | 5.30E-05 |
| 2010 Pumps Light Commercial Equipment              | SB | 4.47E+00 | 4.93E+00 | 4.50E+01 | 4.96E-01 | 3.56E-05 |
| 2010 Pumps Light Commercial Equipment              | SB | 8.82E-02 | 9.73E-02 | 1.52E+00 | 1.68E-02 | 1.08E-06 |
| 2010 Pumps Light Commercial Equipment              | SB | 1.47E-02 | 1.62E-02 | 4.19E-01 | 4.62E-03 | 3.06E-07 |
| 2010 Pumps Light Commercial Equipment              | SB | 3.23E-01 | 3.57E-01 | 2.20E+01 | 2.41E-01 | 2.14E-05 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 7.65E-01 | 1.71E+00 | 5.65E-01 | 6.15E-03 | 1.11E-06 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 1.51E+00 | 3.38E+00 | 2.24E+00 | 2.44E-02 | 4.97E-06 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 1.38E+01 | 3.07E+01 | 3.20E+01 | 3.41E-01 | 1.62E-04 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 9.17E+01 | 2.04E+02 | 4.41E+02 | 4.79E+00 | 9.39E-04 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 3.47E+00 | 7.74E+00 | 3.13E+01 | 3.42E-01 | 4.47E-05 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 4.88E+00 | 1.09E+01 | 6.48E+01 | 7.14E-01 | 6.04E-05 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 6.37E+00 | 1.42E+01 | 1.49E+02 | 1.64E+00 | 1.25E-04 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 2.38E+00 | 5.31E+00 | 8.63E+01 | 9.50E-01 | 7.34E-05 |
| 2010 Air Compressors Light Commercial Equipment    | SB | 5.88E-02 | 1.31E-01 | 2.90E+00 | 3.19E-02 | 3.09E-06 |
| 2010 Welders Light Commercial Equipment            | SB | 2.54E+01 | 4.47E+01 | 1.27E+01 | 1.39E-01 | 2.50E-05 |
| 2010 Welders Light Commercial Equipment            | SB | 2.23E+01 | 3.93E+01 | 2.03E+01 | 2.22E-01 | 4.52E-05 |
| 2010 Welders Light Commercial Equipment            | SB | 6.88E+01 | 1.21E+02 | 1.47E+02 | 1.57E+00 | 6.75E-04 |
| 2010 Welders Light Commercial Equipment            | SB | 5.34E+01 | 9.40E+01 | 1.70E+02 | 1.85E+00 | 3.44E-04 |
| 2010 Welders Light Commercial Equipment            | SB | 2.65E-01 | 4.66E-01 | 2.09E+00 | 2.28E-02 | 2.81E-06 |
| 2010 Welders Light Commercial Equipment            | SB | 5.88E-02 | 1.03E-01 | 5.59E-01 | 6.16E-03 | 4.93E-07 |
| 2010 Welders Light Commercial Equipment            | SB | 1.47E-01 | 2.59E-01 | 1.97E+00 | 2.17E-02 | 1.55E-06 |
| 2010 Pressure Washers Light Commercial Equipment   | SB | 3.47E+00 | 1.38E+00 | 3.08E-01 | 3.36E-03 | 5.14E-07 |
| 2010 Pressure Washers Light Commercial Equipment   | SB | 8.09E-01 | 3.21E-01 | 1.05E-01 | 1.15E-03 | 1.76E-07 |
| 2010 Pressure Washers Light Commercial Equipment   | SB | 1.60E+00 | 6.36E-01 | 4.19E-01 | 4.54E-03 | 1.19E-06 |
| 2010 Pressure Washers Light Commercial Equipment   | SB | 6.62E-01 | 2.63E-01 | 2.89E-01 | 3.16E-03 | 4.62E-07 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 3.09E+01 | 1.13E+01 | 7.83E-01 | 3.65E-03 | 1.55E-05 |
| 2010 Generator Sets Light Commercial Equipment     | SB | 2.42E+01 | 6.00E+00 | 4.46E-01 | 1.93E-03 | 1.05E-05 |

|                             |                               |    |          |          |                 |                 |                 |
|-----------------------------|-------------------------------|----|----------|----------|-----------------|-----------------|-----------------|
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 3.11E-01 | 1.14E-01 | 6.68E-02        | 3.32E-04        | 3.69E-07        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 2.37E-01 | 5.86E-02 | 3.78E-02        | 1.70E-04        | 5.00E-07        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.23E+02 | 8.66E+01 | 4.80E+00        | 2.83E-02        | 5.06E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 9.63E+01 | 4.58E+01 | 3.07E+00        | 1.49E-02        | 5.52E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 3.31E+01 | 2.34E+01 | 1.20E+01        | 6.10E-02        | 5.11E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 2.60E+01 | 1.23E+01 | 6.76E+00        | 3.22E-02        | 6.11E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 4.00E-01 | 2.83E-01 | 3.13E-01        | 1.57E-03        | 1.29E-06        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 3.11E-01 | 1.48E-01 | 1.67E-01        | 8.21E-04        | 8.51E-07        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 4.05E+02 | 1.49E+02 | 4.19E+01        | 1.92E-01        | 4.76E-04        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 3.18E+02 | 7.87E+01 | 2.33E+01        | 1.01E-01        | 2.76E-04        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 1.11E+03 | 4.09E+02 | 2.62E+02        | 1.19E+00        | 1.22E-03        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 8.74E+02 | 2.16E+02 | 1.47E+02        | 6.26E-01        | 8.73E-04        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 5.98E+02 | 2.20E+02 | 3.02E+02        | 1.34E+00        | 1.34E-03        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 4.70E+02 | 1.16E+02 | 1.66E+02        | 7.10E-01        | 9.04E-04        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 1.99E+02 | 6.26E+01 | 1.45E+02        | 1.18E+00        | 2.41E-04        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 3.84E+01 | 1.21E+01 | 6.55E+01        | 5.83E-01        | 7.89E-05        |
| 2010 Generator Sets         | Light Commercial Equipment    | SB | 3.63E+00 | 1.14E+00 | 1.03E+01        | 9.42E-02        | 7.38E-06        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.44E+02 | 1.01E+02 | 1.83E+01        | 9.94E-02        | 1.81E-04        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.13E+02 | 5.36E+01 | 1.15E+01        | 5.25E-02        | 1.35E-04        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.56E+02 | 1.10E+02 | 6.22E+01        | 2.87E-01        | 2.85E-04        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.22E+02 | 5.81E+01 | 3.43E+01        | 1.52E-01        | 1.84E-04        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 3.99E+01 | 2.82E+01 | 3.43E+01        | 1.56E-01        | 1.48E-04        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 3.13E+01 | 1.49E+01 | 1.84E+01        | 8.26E-02        | 8.54E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 1.59E+01 | 9.62E+00 | 2.21E+01        | 1.78E-01        | 3.99E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 2.02E+01 | 1.22E+01 | 7.52E+01        | 6.68E-01        | 9.88E-05        |
| 2010 Pumps                  | Light Commercial Equipment    | SB | 6.08E-01 | 3.67E-01 | 3.33E+00        | 3.03E-02        | 2.44E-06        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 5.19E+01 | 8.03E+01 | 1.80E+01        | 1.06E-01        | 1.61E-04        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 4.08E+01 | 4.24E+01 | 9.53E+00        | 5.62E-02        | 8.50E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 2.63E+01 | 4.07E+01 | 1.61E+01        | 7.54E-02        | 6.90E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 2.06E+01 | 2.15E+01 | 8.47E+00        | 3.99E-02        | 3.57E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 3.54E+00 | 5.48E+00 | 5.42E+00        | 2.47E-02        | 2.39E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 2.79E+00 | 2.90E+00 | 2.87E+00        | 1.31E-02        | 1.26E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 6.05E+00 | 8.01E+00 | 1.77E+01        | 1.36E-01        | 4.42E-05        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 1.96E+01 | 2.60E+01 | 1.01E+02        | 8.69E-01        | 1.92E-04        |
| 2010 Air Compressors        | Light Commercial Equipment    | SB | 1.32E+00 | 1.75E+00 | 1.20E+01        | 1.09E-01        | 1.10E-05        |
| 2010 Welders                | Light Commercial Equipment    | SB | 1.01E+02 | 5.78E+01 | 3.52E+01        | 1.53E-01        | 2.00E-04        |
| 2010 Welders                | Light Commercial Equipment    | SB | 3.67E+02 | 2.09E+02 | 1.94E+02        | 8.57E-01        | 9.52E-04        |
| 2010 Welders                | Light Commercial Equipment    | SB | 3.16E+01 | 1.80E+01 | 4.47E+01        | 3.56E-01        | 8.96E-05        |
| 2010 Welders                | Light Commercial Equipment    | SB | 3.22E+01 | 1.84E+01 | 6.35E+01        | 5.59E-01        | 9.47E-05        |
| 2010 Welders                | Light Commercial Equipment    | SB | 2.22E+00 | 1.27E+00 | 7.65E+00        | 6.96E-02        | 6.30E-06        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 1.09E+02 | 4.00E+01 | 1.54E+01        | 8.05E-02        | 1.46E-04        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 8.55E+01 | 2.11E+01 | 9.58E+00        | 4.25E-02        | 1.10E-04        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 9.70E+01 | 3.57E+01 | 2.22E+01        | 1.01E-01        | 1.04E-04        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 7.63E+01 | 1.89E+01 | 1.25E+01        | 5.31E-02        | 7.40E-05        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 1.82E+01 | 6.70E+00 | 1.08E+01        | 4.85E-02        | 4.52E-05        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 1.43E+01 | 3.54E+00 | 5.97E+00        | 2.56E-02        | 3.14E-05        |
| 2010 Pressure Washers       | Light Commercial Equipment    | SB | 1.78E+00 | 5.60E-01 | 1.46E+00        | 1.19E-02        | 2.40E-06        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 1.19E+00 | 1.57E+00 | 4.95E+00        | 5.40E-02        | 9.09E-06        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 2.91E-01 | 3.86E-01 | 1.67E+00        | 1.83E-02        | 2.04E-06        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 6.24E-02 | 8.26E-02 | 5.95E-01        | 6.55E-03        | 5.03E-07        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 2.29E-01 | 3.03E-01 | 4.07E+00        | 4.49E-02        | 3.09E-06        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 1.04E-01 | 1.38E-01 | 2.63E+00        | 2.90E-02        | 2.05E-06        |
| 2010 Misc Portable Equipn   | Other Portable Equipment      | SB | 4.16E-02 | 5.51E-02 | 1.41E+00        | 1.55E-02        | 1.37E-06        |
| 2010 Transport Refrigeratic | Transport Refrigeration Units | SB | 1.03E+02 | 2.94E+02 | 1.08E+02        | 1.18E+00        | 1.23E-04        |
| 2010 Transport Refrigeratic | Transport Refrigeration Units | SB | 3.75E+01 | 1.07E+02 | 6.63E+01        | 7.28E-01        | 8.27E-05        |
| 2010 Transport Refrigeratic | Transport Refrigeration Units | SB | 7.57E+02 | 3.04E+03 | 3.64E+03        | 3.94E+01        | 8.46E-03        |
| 2010 Transport Refrigeratic | Transport Refrigeration Units | SB | 7.83E+01 | 1.61E+02 | 9.66E+01        | 4.58E-01        | 3.01E-04        |
|                             |                               |    |          |          | <b>3.94E+03</b> | <b>4.20E+01</b> | <b>9.06E-03</b> |
|                             |                               |    |          |          | <b>1.62E+04</b> | <b>1.46E+02</b> | <b>6.65E-02</b> |



# OFFROAD Model Outputs

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2007

| CY   | Equipment                    | Class                             | Air Dist. | Population | Activity | Consumption | CO2 Exhaust | CH4 Exhaust |
|------|------------------------------|-----------------------------------|-----------|------------|----------|-------------|-------------|-------------|
| 2007 | Tampers/Rammers              | Construction and Mining Equipment | SB        | 4.20E+01   | 2.09E+01 | 4.27E+00    | 2.18E-02    | 1.75E-05    |
| 2007 | Plate Compactors             | Construction and Mining Equipment | SB        | 3.60E+00   | 2.03E+00 | 4.11E-01    | 2.12E-03    | 1.62E-06    |
| 2007 | Asphalt Pavers               | Construction and Mining Equipment | SB        | 9.15E-01   | 9.94E-01 | 5.93E-01    | 2.79E-03    | 2.46E-06    |
| 2007 | Asphalt Pavers               | Construction and Mining Equipment | SB        | 1.57E+00   | 1.70E+00 | 2.56E+00    | 1.17E-02    | 1.09E-05    |
| 2007 | Asphalt Pavers               | Construction and Mining Equipment | SB        | 8.84E-01   | 9.50E-01 | 2.24E+00    | 1.73E-02    | 5.62E-06    |
| 2007 | Asphalt Pavers               | Construction and Mining Equipment | SB        | 4.85E-01   | 5.22E-01 | 2.08E+00    | 1.79E-02    | 4.01E-06    |
| 2007 | Tampers/Rammers              | Construction and Mining Equipment | SB        | 1.94E+00   | 9.67E-01 | 5.20E-01    | 2.26E-03    | 2.93E-06    |
| 2007 | Plate Compactors             | Construction and Mining Equipment | SB        | 7.11E+01   | 3.51E+01 | 6.52E+00    | 3.65E-02    | 5.08E-05    |
| 2007 | Plate Compactors             | Construction and Mining Equipment | SB        | 7.54E+01   | 4.26E+01 | 1.99E+01    | 8.87E-02    | 1.05E-04    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 7.92E+00   | 1.80E+00 | 5.00E-01    | 2.64E-03    | 3.31E-06    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 1.28E+01   | 1.09E+01 | 6.12E+00    | 2.88E-02    | 2.55E-05    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 8.65E+00   | 7.35E+00 | 8.98E+00    | 4.10E-02    | 3.81E-05    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 6.22E-01   | 1.06E+00 | 2.78E+00    | 2.10E-02    | 7.89E-06    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 1.17E+00   | 1.99E+00 | 9.29E+00    | 7.91E-02    | 2.04E-05    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 9.95E+01   | 4.64E+01 | 9.29E+00    | 5.18E-02    | 7.15E-05    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 1.68E+02   | 9.23E+01 | 5.79E+01    | 2.58E-01    | 3.03E-04    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 3.74E+00   | 2.05E+00 | 2.86E+00    | 1.26E-02    | 1.43E-05    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 2.41E+00   | 1.16E+00 | 2.74E+00    | 2.18E-02    | 5.71E-06    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 6.22E-01   | 2.99E-01 | 1.13E+00    | 9.93E-03    | 1.78E-06    |
| 2007 | Surfacing Equipment          | Construction and Mining Equipment | SB        | 1.83E+01   | 1.00E+01 | 2.06E+00    | 1.16E-02    | 1.64E-05    |
| 2007 | Surfacing Equipment          | Construction and Mining Equipment | SB        | 5.43E+01   | 7.49E+01 | 2.96E+01    | 1.39E-01    | 1.29E-04    |
| 2007 | Surfacing Equipment          | Construction and Mining Equipment | SB        | 7.43E-01   | 1.02E+00 | 9.92E-01    | 4.52E-03    | 4.40E-06    |
| 2007 | Signal Boards                | Construction and Mining Equipment | SB        | 2.26E-01   | 8.04E-02 | 2.67E-02    | 1.45E-04    | 1.89E-07    |
| 2007 | Signal Boards                | Construction and Mining Equipment | SB        | 1.61E+00   | 1.25E+00 | 7.65E-01    | 3.60E-03    | 3.16E-06    |
| 2007 | Trenchers                    | Construction and Mining Equipment | SB        | 1.48E+01   | 1.77E+01 | 1.17E+01    | 5.52E-02    | 4.93E-05    |
| 2007 | Trenchers                    | Construction and Mining Equipment | SB        | 1.15E+01   | 1.37E+01 | 1.97E+01    | 8.98E-02    | 8.47E-05    |
| 2007 | Trenchers                    | Construction and Mining Equipment | SB        | 5.66E+00   | 6.24E+00 | 1.38E+01    | 1.07E-01    | 3.42E-05    |
| 2007 | Trenchers                    | Construction and Mining Equipment | SB        | 1.88E+00   | 2.07E+00 | 8.92E+00    | 8.92E-02    | 1.70E-05    |
| 2007 | Bore/Drill Rigs              | Construction and Mining Equipment | SB        | 4.24E-01   | 1.44E-01 | 1.24E-01    | 5.40E-04    | 6.83E-07    |
| 2007 | Bore/Drill Rigs              | Construction and Mining Equipment | SB        | 2.11E+00   | 7.17E-01 | 1.11E+00    | 4.83E-03    | 5.75E-06    |
| 2007 | Bore/Drill Rigs              | Construction and Mining Equipment | SB        | 2.74E-01   | 8.03E-02 | 2.18E-01    | 1.75E-03    | 4.32E-07    |
| 2007 | Bore/Drill Rigs              | Construction and Mining Equipment | SB        | 1.26E+00   | 3.69E-01 | 2.48E+00    | 2.19E-02    | 3.69E-06    |
| 2007 | Bore/Drill Rigs              | Construction and Mining Equipment | SB        | 3.11E-01   | 9.13E-02 | 8.27E-01    | 7.54E-03    | 7.37E-07    |
| 2007 | Concrete/Industrial Saws     | Construction and Mining Equipment | SB        | 7.79E+00   | 2.78E+00 | 7.58E-01    | 4.10E-03    | 5.35E-06    |
| 2007 | Concrete/Industrial Saws     | Construction and Mining Equipment | SB        | 3.50E+01   | 2.98E+01 | 2.10E+01    | 9.89E-02    | 8.75E-05    |
| 2007 | Concrete/Industrial Saws     | Construction and Mining Equipment | SB        | 1.10E+01   | 9.31E+00 | 1.28E+01    | 5.85E-02    | 5.44E-05    |
| 2007 | Concrete/Industrial Saws     | Construction and Mining Equipment | SB        | 1.02E+00   | 1.71E+00 | 4.77E+00    | 4.02E-02    | 2.83E-06    |
| 2007 | Concrete/Industrial Saws     | Construction and Mining Equipment | SB        | 5.85E-01   | 9.78E-01 | 4.62E+00    | 4.30E-02    | 1.18E-06    |
| 2007 | Cement and Mortar Mixers     | Construction and Mining Equipment | SB        | 1.41E+02   | 3.57E+01 | 9.29E+00    | 4.98E-02    | 6.39E-05    |
| 2007 | Cement and Mortar Mixers     | Construction and Mining Equipment | SB        | 2.40E+02   | 6.04E+01 | 3.33E+01    | 1.35E-01    | 2.26E-04    |
| 2007 | Cement and Mortar Mixers     | Construction and Mining Equipment | SB        | 1.01E+00   | 2.54E-01 | 4.32E-01    | 1.78E-03    | 2.65E-06    |
| 2007 | Cranes                       | Construction and Mining Equipment | SB        | 3.11E-01   | 3.54E-01 | 6.87E-01    | 5.32E-03    | 1.72E-06    |
| 2007 | Cranes                       | Construction and Mining Equipment | SB        | 6.22E-01   | 7.08E-01 | 2.44E+00    | 2.10E-02    | 4.67E-06    |
| 2007 | Cranes                       | Construction and Mining Equipment | SB        | 2.49E-02   | 2.83E-02 | 1.52E-01    | 1.38E-03    | 1.48E-07    |
| 2007 | Crushing/Proc. Equipment     | Construction and Mining Equipment | SB        | 3.85E-01   | 3.05E-01 | 2.35E-01    | 1.10E-03    | 9.71E-07    |
| 2007 | Crushing/Proc. Equipment     | Construction and Mining Equipment | SB        | 2.52E-01   | 2.00E-01 | 2.82E-01    | 1.29E-03    | 1.19E-06    |
| 2007 | Crushing/Proc. Equipment     | Construction and Mining Equipment | SB        | 3.61E-01   | 2.39E-01 | 1.90E+00    | 1.66E-02    | 3.19E-06    |
| 2007 | Rough Terrain Forklifts      | Construction and Mining Equipment | SB        | 1.24E-01   | 1.41E-01 | 4.66E-01    | 3.60E-03    | 1.17E-06    |
| 2007 | Rough Terrain Forklifts      | Construction and Mining Equipment | SB        | 1.77E+00   | 2.00E+00 | 1.06E+01    | 9.15E-02    | 2.03E-05    |
| 2007 | Rough Terrain Forklifts      | Construction and Mining Equipment | SB        | 6.22E-02   | 7.05E-02 | 5.77E-01    | 5.23E-03    | 5.62E-07    |
| 2007 | Rubber Tired Loaders         | Construction and Mining Equipment | SB        | 3.11E-01   | 4.37E-01 | 1.07E+00    | 8.15E-03    | 2.86E-06    |
| 2007 | Rubber Tired Loaders         | Construction and Mining Equipment | SB        | 2.07E+00   | 2.90E+00 | 1.12E+01    | 9.63E-02    | 2.33E-05    |
| 2007 | Tractors/Loaders/Backhoes    | Construction and Mining Equipment | SB        | 1.10E+00   | 2.61E+00 | 7.96E+00    | 6.75E-02    | 1.76E-05    |
| 2007 | Skid Steer Loaders           | Construction and Mining Equipment | SB        | 7.56E-01   | 6.61E-01 | 5.47E-01    | 2.54E-03    | 2.44E-06    |
| 2007 | Skid Steer Loaders           | Construction and Mining Equipment | SB        | 5.06E+01   | 4.42E+01 | 5.10E+01    | 2.31E-01    | 2.28E-04    |
| 2007 | Skid Steer Loaders           | Construction and Mining Equipment | SB        | 8.49E+00   | 7.21E+00 | 1.43E+01    | 1.16E-01    | 2.37E-05    |
| 2007 | Skid Steer Loaders           | Construction and Mining Equipment | SB        | 5.08E+00   | 4.32E+00 | 1.92E+01    | 1.71E-01    | 2.28E-05    |
| 2007 | Dumpers/Tenders              | Construction and Mining Equipment | SB        | 7.22E+00   | 2.95E+00 | 4.06E-01    | 2.29E-03    | 3.22E-06    |
| 2007 | Dumpers/Tenders              | Construction and Mining Equipment | SB        | 1.54E+01   | 6.29E+00 | 2.71E+00    | 1.10E-02    | 1.87E-05    |
| 2007 | Dumpers/Tenders              | Construction and Mining Equipment | SB        | 2.85E+00   | 1.17E+00 | 1.04E+00    | 4.30E-03    | 6.53E-06    |
| 2007 | Dumpers/Tenders              | Construction and Mining Equipment | SB        | 2.24E-01   | 7.80E-02 | 2.05E-01    | 1.80E-03    | 3.10E-07    |
| 2007 | Other Construction Equipment | Construction and Mining Equipment | SB        | 8.71E-01   | 8.86E-01 | 4.89E+00    | 4.45E-02    | 2.92E-06    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 2.12E-01   | 4.77E-01 | 4.07E-01    | 4.44E-03    | 7.91E-07    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 1.23E+01   | 2.83E+01 | 3.74E+01    | 3.95E-01    | 2.40E-04    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 1.45E+01   | 3.33E+01 | 1.06E+02    | 1.15E+00    | 2.89E-04    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 9.02E+00   | 2.07E+01 | 1.22E+02    | 1.33E+00    | 2.21E-04    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 1.09E+00   | 2.50E+00 | 2.21E+01    | 2.43E-01    | 3.20E-05    |
| 2007 | Pavers                       | Construction and Mining Equipment | SB        | 1.12E+00   | 2.56E+00 | 2.73E+01    | 2.99E-01    | 3.50E-05    |
| 2007 | Plate Compactors             | Construction and Mining Equipment | SB        | 4.54E+00   | 7.48E+00 | 1.47E+00    | 1.61E-02    | 1.81E-06    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 8.54E+00   | 1.63E+01 | 4.69E+00    | 5.14E-02    | 5.54E-06    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 3.57E+00   | 6.81E+00 | 4.14E+00    | 4.54E-02    | 5.68E-06    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 1.11E+01   | 2.14E+01 | 2.61E+01    | 2.77E-01    | 1.47E-04    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 5.96E+01   | 1.15E+02 | 3.11E+02    | 3.38E+00    | 7.50E-04    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 2.40E+01   | 4.61E+01 | 2.28E+02    | 2.49E+00    | 3.64E-04    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 3.40E+00   | 6.55E+00 | 4.56E+01    | 5.01E-01    | 5.51E-05    |
| 2007 | Rollers                      | Construction and Mining Equipment | SB        | 2.39E+00   | 4.59E+00 | 4.58E+01    | 5.02E-01    | 4.92E-05    |
| 2007 | Scrapers                     | Construction and Mining Equipment | SB        | 5.50E-01   | 1.69E+00 | 7.31E+00    | 7.93E-02    | 2.01E-05    |
| 2007 | Scrapers                     | Construction and Mining Equipment | SB        | 5.04E+00   | 1.55E+01 | 1.05E+02    | 1.14E+00    | 1.93E-04    |
| 2007 | Scrapers                     | Construction and Mining Equipment | SB        | 4.91E+00   | 1.51E+01 | 1.44E+02    | 1.58E+00    | 2.07E-04    |
| 2007 | Scrapers                     | Construction and Mining Equipment | SB        | 1.35E+01   | 4.15E+01 | 6.09E+02    | 6.67E+00    | 7.81E-04    |
| 2007 | Scrapers                     | Construction and Mining Equipment | SB        | 5.69E+00   | 1.75E+01 | 4.43E+02    | 4.85E+00    | 5.72E-04    |
| 2007 | Paving Equipment             | Construction and Mining Equipment | SB        | 3.67E-01   | 8.34E-01 | 4.80E-01    | 5.26E-03    | 6.58E-07    |



|                               |                                   |    |          |          |          |          |          |
|-------------------------------|-----------------------------------|----|----------|----------|----------|----------|----------|
| 2007 Paving Equipment         | Construction and Mining Equipment | SB | 3.11E-01 | 7.14E-01 | 8.08E-01 | 8.54E-03 | 5.13E-06 |
| 2007 Paving Equipment         | Construction and Mining Equipment | SB | 4.47E+00 | 1.03E+01 | 2.58E+01 | 2.80E-01 | 6.97E-05 |
| 2007 Paving Equipment         | Construction and Mining Equipment | SB | 2.10E+00 | 4.84E+00 | 2.24E+01 | 2.44E-01 | 4.02E-05 |
| 2007 Paving Equipment         | Construction and Mining Equipment | SB | 5.93E-01 | 1.36E+00 | 7.60E+00 | 8.33E-02 | 1.09E-05 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 2.82E-01 | 3.52E-01 | 2.32E-01 | 2.48E-03 | 1.12E-06 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 5.65E-02 | 7.03E-02 | 2.06E-01 | 2.24E-03 | 4.61E-07 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 4.23E-02 | 5.28E-02 | 2.07E-01 | 2.26E-03 | 3.05E-07 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 8.47E-02 | 1.06E-01 | 6.47E-01 | 7.11E-03 | 7.24E-07 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 7.06E-01 | 8.79E-01 | 8.85E+00 | 9.72E-02 | 8.84E-06 |
| 2007 Surfacing Equipment      | Construction and Mining Equipment | SB | 1.09E+00 | 1.36E+00 | 2.14E+01 | 2.35E-01 | 2.18E-05 |
| 2007 Signal Boards            | Construction and Mining Equipment | SB | 3.97E+01 | 8.17E+01 | 2.30E+01 | 2.52E-01 | 2.66E-05 |
| 2007 Signal Boards            | Construction and Mining Equipment | SB | 1.98E-01 | 2.90E-01 | 4.90E-01 | 5.24E-03 | 2.27E-06 |
| 2007 Signal Boards            | Construction and Mining Equipment | SB | 3.23E+00 | 4.74E+00 | 1.75E+01 | 1.90E-01 | 3.79E-05 |
| 2007 Signal Boards            | Construction and Mining Equipment | SB | 2.00E+00 | 2.94E+00 | 2.07E+01 | 2.27E-01 | 2.95E-05 |
| 2007 Signal Boards            | Construction and Mining Equipment | SB | 4.23E-01 | 6.21E-01 | 7.20E+00 | 7.92E-02 | 7.01E-06 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 1.06E+00 | 1.79E+00 | 6.93E-01 | 7.59E-03 | 8.01E-07 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 1.12E+00 | 1.89E+00 | 2.83E+00 | 3.11E-02 | 3.66E-06 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 4.24E+01 | 7.39E+01 | 1.15E+02 | 1.22E+00 | 7.03E-04 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 5.75E+01 | 1.00E+02 | 2.99E+02 | 3.25E+00 | 7.98E-04 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 6.29E+00 | 1.10E+01 | 7.22E+01 | 7.88E-01 | 1.29E-04 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 5.65E-01 | 9.83E-01 | 9.99E+00 | 1.09E-01 | 1.44E-05 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 7.20E-01 | 1.25E+00 | 1.78E+01 | 1.95E-01 | 2.27E-05 |
| 2007 Trenchers                | Construction and Mining Equipment | SB | 2.18E-01 | 3.79E-01 | 1.02E+01 | 1.11E-01 | 1.31E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 1.41E-01 | 3.14E-01 | 1.48E-01 | 1.62E-03 | 1.75E-07 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 4.23E-01 | 9.42E-01 | 6.86E-01 | 7.52E-03 | 9.41E-07 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 1.85E+00 | 4.30E+00 | 6.17E+00 | 6.67E-02 | 1.90E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 5.67E+00 | 1.32E+01 | 4.66E+01 | 5.09E-01 | 7.18E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 1.31E+00 | 3.05E+00 | 1.96E+01 | 2.15E-01 | 1.90E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 1.13E+00 | 2.63E+00 | 2.23E+01 | 2.47E-01 | 1.33E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 2.51E+00 | 5.84E+00 | 8.23E+01 | 9.09E-01 | 4.29E-05 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 3.37E+00 | 7.84E+00 | 2.18E+02 | 2.41E+00 | 1.19E-04 |
| 2007 Bore/Drill Rigs          | Construction and Mining Equipment | SB | 5.66E+00 | 1.31E+01 | 5.52E+02 | 6.10E+00 | 4.15E-04 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 5.22E-01 | 2.00E+00 | 1.50E+00 | 1.64E-02 | 1.85E-06 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 1.97E+01 | 7.67E+01 | 9.04E+01 | 9.58E-01 | 5.22E-04 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 5.34E+01 | 2.08E+02 | 7.05E+02 | 7.66E+00 | 1.67E-03 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 1.03E+02 | 4.02E+02 | 2.06E+03 | 2.25E+01 | 3.24E-03 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 4.19E+01 | 1.63E+02 | 1.18E+03 | 1.29E+01 | 1.27E-03 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 3.02E+01 | 1.18E+02 | 1.25E+03 | 1.38E+01 | 1.22E-03 |
| 2007 Excavators               | Construction and Mining Equipment | SB | 1.70E+00 | 6.64E+00 | 1.17E+02 | 1.29E+00 | 1.15E-04 |
| 2007 Concrete/Industrial Saws | Construction and Mining Equipment | SB | 5.65E-02 | 9.16E-02 | 6.87E-02 | 7.54E-04 | 8.88E-08 |
| 2007 Concrete/Industrial Saws | Construction and Mining Equipment | SB | 4.94E-01 | 7.86E-01 | 1.11E+00 | 1.19E-02 | 5.36E-06 |
| 2007 Concrete/Industrial Saws | Construction and Mining Equipment | SB | 8.61E-01 | 1.37E+00 | 4.66E+00 | 5.07E-02 | 1.02E-05 |
| 2007 Concrete/Industrial Saws | Construction and Mining Equipment | SB | 2.82E-02 | 4.49E-02 | 3.28E-01 | 3.59E-03 | 4.73E-07 |
| 2007 Cement and Mortar Mixers | Construction and Mining Equipment | SB | 7.21E+00 | 5.93E+00 | 1.71E+00 | 1.87E-02 | 2.46E-06 |
| 2007 Cement and Mortar Mixers | Construction and Mining Equipment | SB | 6.49E-01 | 5.34E-01 | 4.30E-01 | 4.68E-03 | 1.03E-06 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 4.80E-01 | 1.68E+00 | 1.85E+00 | 1.95E-02 | 1.18E-05 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 5.26E+00 | 1.85E+01 | 4.27E+01 | 4.63E-01 | 1.11E-04 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 5.26E+00 | 1.85E+01 | 6.79E+01 | 7.42E-01 | 1.18E-04 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 1.02E+01 | 3.58E+01 | 1.83E+02 | 2.01E+00 | 2.39E-04 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 3.74E+00 | 1.31E+01 | 1.08E+02 | 1.18E+00 | 1.26E-04 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 7.07E+00 | 2.48E+01 | 3.43E+02 | 3.76E+00 | 4.04E-04 |
| 2007 Cranes                   | Construction and Mining Equipment | SB | 8.88E+00 | 3.12E+01 | 1.38E+03 | 1.51E+01 | 1.80E-03 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 1.98E-01 | 5.19E-01 | 6.75E-01 | 7.14E-03 | 4.05E-06 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 1.32E+01 | 3.46E+01 | 1.19E+02 | 1.30E+00 | 2.97E-04 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 4.50E+01 | 1.18E+02 | 6.71E+02 | 7.33E+00 | 1.11E-03 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 2.79E+01 | 7.34E+01 | 5.74E+02 | 6.31E+00 | 6.92E-04 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 7.90E-01 | 2.08E+00 | 2.17E+01 | 2.38E-01 | 2.33E-05 |
| 2007 Graders                  | Construction and Mining Equipment | SB | 1.09E-01 | 2.86E-01 | 6.32E+00 | 6.94E-02 | 6.87E-06 |
| 2007 Off-Highway Trucks       | Construction and Mining Equipment | SB | 9.17E-01 | 5.00E+00 | 2.86E+01 | 3.13E-01 | 4.72E-05 |
| 2007 Off-Highway Trucks       | Construction and Mining Equipment | SB | 6.77E+00 | 3.69E+01 | 2.79E+02 | 3.07E+00 | 3.22E-04 |
| 2007 Off-Highway Trucks       | Construction and Mining Equipment | SB | 9.54E+00 | 5.20E+01 | 6.44E+02 | 7.08E+00 | 6.73E-04 |
| 2007 Off-Highway Trucks       | Construction and Mining Equipment | SB | 2.28E+01 | 1.24E+02 | 2.50E+03 | 2.74E+01 | 2.63E-03 |
| 2007 Off-Highway Trucks       | Construction and Mining Equipment | SB | 1.07E+01 | 5.83E+01 | 1.66E+03 | 1.82E+01 | 1.98E-03 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 2.26E+00 | 5.91E+00 | 1.22E+01 | 1.30E-01 | 6.99E-05 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 6.37E+00 | 1.67E+01 | 6.37E+01 | 6.92E-01 | 1.54E-04 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 2.70E+00 | 7.06E+00 | 5.40E+01 | 5.90E-01 | 8.62E-05 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 2.68E-01 | 7.02E-01 | 7.80E+00 | 8.58E-02 | 8.50E-06 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 1.51E+00 | 3.95E+00 | 6.71E+01 | 7.38E-01 | 6.48E-05 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 1.81E-01 | 4.75E-01 | 1.27E+01 | 1.40E-01 | 1.24E-05 |
| 2007 Crushing/Proc. Equipment | Construction and Mining Equipment | SB | 1.81E-01 | 4.75E-01 | 2.83E+01 | 3.10E-01 | 3.44E-05 |
| 2007 Rough Terrain Forklifts  | Construction and Mining Equipment | SB | 1.57E+00 | 4.87E+00 | 7.76E+00 | 8.24E-02 | 4.43E-05 |
| 2007 Rough Terrain Forklifts  | Construction and Mining Equipment | SB | 7.50E+01 | 2.33E+02 | 6.70E+02 | 7.28E+00 | 1.59E-03 |
| 2007 Rough Terrain Forklifts  | Construction and Mining Equipment | SB | 9.61E+00 | 2.99E+01 | 1.71E+02 | 1.86E+00 | 2.67E-04 |
| 2007 Rough Terrain Forklifts  | Construction and Mining Equipment | SB | 5.36E-01 | 1.67E+00 | 1.29E+01 | 1.42E-01 | 1.41E-05 |
| 2007 Rough Terrain Forklifts  | Construction and Mining Equipment | SB | 3.53E-01 | 1.10E+00 | 1.28E+01 | 1.41E-01 | 1.25E-05 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 1.98E-01 | 5.19E-01 | 4.00E-01 | 4.39E-03 | 5.16E-07 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 3.84E+00 | 1.03E+01 | 1.51E+01 | 1.60E-01 | 8.99E-05 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 1.04E+02 | 2.80E+02 | 7.58E+02 | 8.23E+00 | 1.87E-03 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 5.88E+01 | 1.58E+02 | 7.66E+02 | 8.37E+00 | 1.25E-03 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 5.85E+01 | 1.57E+02 | 1.06E+03 | 1.17E+01 | 1.26E-03 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 2.43E+01 | 6.53E+01 | 7.03E+02 | 7.73E+00 | 7.44E-04 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 4.39E+00 | 1.18E+01 | 2.60E+02 | 2.85E+00 | 2.78E-04 |
| 2007 Rubber Tired Loaders     | Construction and Mining Equipment | SB | 4.71E-01 | 1.26E+00 | 3.41E+01 | 3.74E-01 | 4.18E-05 |

|                                     |                                   |    |          |          |          |          |          |
|-------------------------------------|-----------------------------------|----|----------|----------|----------|----------|----------|
| 2007 Rubber Tired Dozers            | Construction and Mining Equipment | SB | 1.41E-01 | 6.35E-01 | 3.77E+00 | 4.11E-02 | 7.77E-06 |
| 2007 Rubber Tired Dozers            | Construction and Mining Equipment | SB | 3.46E+00 | 1.56E+01 | 1.30E+02 | 1.43E+00 | 2.20E-04 |
| 2007 Rubber Tired Dozers            | Construction and Mining Equipment | SB | 5.32E+00 | 2.40E+01 | 2.91E+02 | 3.17E+00 | 4.37E-04 |
| 2007 Rubber Tired Dozers            | Construction and Mining Equipment | SB | 4.82E+00 | 2.17E+01 | 3.97E+02 | 4.32E+00 | 5.99E-04 |
| 2007 Rubber Tired Dozers            | Construction and Mining Equipment | SB | 3.26E-01 | 1.47E+00 | 3.99E+01 | 4.34E-01 | 6.34E-05 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 3.98E+00 | 1.03E+01 | 7.44E+00 | 8.15E-02 | 1.18E-05 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 2.38E+01 | 6.29E+01 | 8.97E+01 | 9.54E-01 | 4.77E-04 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 3.18E+02 | 8.42E+02 | 2.00E+03 | 2.17E+01 | 4.47E-03 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 2.37E+01 | 6.28E+01 | 2.91E+02 | 3.18E+00 | 4.28E-04 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 7.68E+00 | 2.03E+01 | 1.58E+02 | 1.74E+00 | 1.57E-04 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 1.24E+01 | 3.28E+01 | 5.13E+02 | 5.65E+00 | 4.54E-04 |
| 2007 Tractors/Loaders/Backhoes      | Construction and Mining Equipment | SB | 2.19E+01 | 5.80E+01 | 1.36E+03 | 1.50E+01 | 1.23E-03 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 1.98E-01 | 5.73E-01 | 6.75E-01 | 7.12E-03 | 4.46E-06 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 1.12E+02 | 3.25E+02 | 9.86E+02 | 1.07E+01 | 2.70E-03 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 3.79E+01 | 1.10E+02 | 6.11E+02 | 6.66E+00 | 1.12E-03 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 3.26E+01 | 9.46E+01 | 7.15E+02 | 7.85E+00 | 1.02E-03 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 2.23E+01 | 6.48E+01 | 7.67E+02 | 8.39E+00 | 9.72E-04 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 2.90E+00 | 8.41E+00 | 1.78E+02 | 1.95E+00 | 2.28E-04 |
| 2007 Crawler Tractors               | Construction and Mining Equipment | SB | 2.90E+00 | 8.40E+00 | 2.53E+02 | 2.76E+00 | 3.53E-04 |
| 2007 Skid Steer Loaders             | Construction and Mining Equipment | SB | 2.71E+01 | 6.20E+01 | 3.92E+02 | 4.27E-01 | 8.81E-05 |
| 2007 Skid Steer Loaders             | Construction and Mining Equipment | SB | 2.46E+02 | 5.77E+02 | 6.87E+02 | 7.36E+00 | 2.93E-03 |
| 2007 Skid Steer Loaders             | Construction and Mining Equipment | SB | 1.29E+02 | 3.02E+02 | 5.93E+02 | 6.46E+00 | 1.14E-03 |
| 2007 Off-Highway Tractors           | Construction and Mining Equipment | SB | 1.41E-02 | 4.35E-02 | 1.88E-01 | 2.04E-03 | 5.55E-07 |
| 2007 Off-Highway Tractors           | Construction and Mining Equipment | SB | 1.73E+01 | 5.33E+01 | 3.18E+02 | 3.47E+00 | 6.34E-04 |
| 2007 Off-Highway Tractors           | Construction and Mining Equipment | SB | 1.63E+01 | 5.03E+01 | 3.00E+02 | 3.28E+00 | 4.88E-04 |
| 2007 Off-Highway Tractors           | Construction and Mining Equipment | SB | 1.82E+01 | 5.61E+01 | 1.46E+03 | 1.59E+01 | 2.12E-03 |
| 2007 Off-Highway Tractors           | Construction and Mining Equipment | SB | 1.92E+00 | 5.92E+00 | 2.21E+02 | 2.41E+00 | 3.43E-04 |
| 2007 Dumpers/Tenders                | Construction and Mining Equipment | SB | 3.39E-01 | 6.15E-01 | 2.14E-01 | 2.34E-03 | 3.80E-07 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 4.67E+00 | 8.84E+00 | 4.08E+00 | 4.46E-02 | 4.82E-06 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 7.90E-01 | 1.50E+00 | 9.00E-01 | 9.87E-03 | 1.24E-06 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 1.21E+00 | 2.34E+00 | 3.06E+00 | 3.28E-02 | 1.43E-05 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 2.00E+00 | 3.87E+00 | 1.44E+01 | 1.56E-01 | 2.98E-05 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 2.77E+00 | 5.34E+00 | 2.60E+01 | 2.84E-01 | 3.52E-05 |
| 2007 Other Construction Equipment   | Construction and Mining Equipment | SB | 6.42E+00 | 1.24E+01 | 1.43E+02 | 1.57E+00 | 1.17E-04 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 5.50E-02 | 5.08E-02 | 1.03E-01 | 1.11E-03 | 4.33E-07 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 1.35E+00 | 1.25E+00 | 5.09E+00 | 5.54E-02 | 1.06E-05 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 1.11E+00 | 1.03E+00 | 7.02E+00 | 7.68E-02 | 9.60E-06 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 1.72E+00 | 1.59E+00 | 1.43E+01 | 1.57E-01 | 1.43E-05 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 2.67E+00 | 2.47E+00 | 3.10E+01 | 3.41E-01 | 2.81E-05 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 4.67E-01 | 4.32E-01 | 1.07E+01 | 1.17E-01 | 9.92E-06 |
| 2007 Generator (Entertainment)      | Entertainment Equipment           | SB | 6.87E-02 | 6.36E-02 | 2.79E+00 | 3.06E-02 | 3.21E-06 |
| 2007 Compressor (Entertainment)     | Entertainment Equipment           | SB | 1.37E-02 | 3.06E-02 | 4.92E-02 | 5.35E-04 | 1.21E-07 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 9.10E-01 | 9.36E-01 | 3.71E-01 | 1.91E-03 | 1.49E-06 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 1.76E-01 | 1.81E-01 | 1.09E-01 | 5.12E-04 | 4.47E-07 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 7.50E+00 | 7.71E+00 | 7.05E+00 | 3.19E-02 | 3.18E-05 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 9.16E+00 | 9.07E+00 | 1.49E+01 | 1.19E-01 | 2.72E-05 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 9.16E+00 | 9.07E+00 | 2.69E+01 | 2.39E-01 | 3.60E-05 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.76E-01 | 4.34E-01 | 3.12E-01 | 1.42E-03 | 1.37E-06 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 3.06E+01 | 1.51E+02 | 2.46E+02 | 1.60E+00 | 5.20E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.07E+02 | 5.29E+02 | 1.14E+03 | 9.49E+00 | 1.94E-03 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 3.92E+00 | 1.93E+01 | 7.84E+01 | 7.04E-01 | 6.29E-05 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 5.10E+00 | 3.77E+00 | 2.15E+00 | 1.01E-02 | 8.52E-06 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 4.97E+00 | 3.68E+00 | 4.87E+00 | 2.23E-02 | 2.03E-05 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 8.52E+00 | 1.21E+01 | 3.28E+01 | 2.59E-01 | 4.02E-05 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 7.12E+00 | 1.01E+01 | 4.64E+01 | 4.15E-01 | 3.78E-05 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 4.14E-02 | 5.85E-02 | 5.31E-01 | 4.83E-03 | 2.56E-07 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 1.01E+01 | 1.04E+01 | 4.51E+00 | 2.12E-02 | 1.86E-05 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 3.31E+00 | 3.90E+00 | 3.93E+00 | 1.80E-02 | 1.71E-05 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 2.93E+00 | 5.72E+00 | 1.06E+01 | 8.00E-02 | 1.64E-05 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 9.62E-01 | 1.88E+00 | 7.81E+00 | 6.85E-02 | 8.73E-06 |
| 2007 Other General Industrial Equip | Industrial Equipment              | SB | 9.31E-02 | 1.82E-01 | 1.56E+00 | 1.42E-02 | 9.48E-07 |
| 2007 Other Material Handling Equip  | Industrial Equipment              | SB | 4.14E-02 | 4.38E-02 | 1.06E-01 | 8.22E-04 | 2.49E-07 |
| 2007 Other Material Handling Equip  | Industrial Equipment              | SB | 1.83E+00 | 1.94E+00 | 5.47E+00 | 4.73E-02 | 9.79E-06 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 1.96E-01 | 2.02E-01 | 1.62E-01 | 8.99E-04 | 3.15E-06 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 8.43E+00 | 8.67E+00 | 1.03E+01 | 5.63E-02 | 3.04E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 8.27E-02 | 2.84E-01 | 2.78E-01 | 1.46E-03 | 1.48E-05 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 5.60E+01 | 2.77E+02 | 3.71E+02 | 2.53E+00 | 4.83E-03 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.97E+02 | 9.71E+02 | 2.32E+03 | 1.52E+01 | 3.10E-02 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 7.20E+00 | 3.55E+01 | 1.74E+02 | 1.16E+00 | 1.29E-03 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 4.34E+00 | 4.75E+00 | 1.88E+00 | 2.05E-02 | 2.56E-06 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 7.08E+00 | 7.75E+00 | 3.90E+00 | 4.24E-02 | 9.36E-06 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 2.59E+01 | 2.72E+01 | 2.49E+01 | 2.67E-01 | 1.06E-04 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 2.29E+01 | 2.42E+01 | 4.22E+01 | 4.59E-01 | 8.91E-05 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 2.94E+00 | 3.10E+00 | 2.99E+01 | 3.29E-01 | 2.54E-05 |
| 2007 Aerial Lifts                   | Industrial Equipment              | SB | 2.36E-01 | 2.49E-01 | 4.35E+00 | 4.79E-02 | 3.80E-06 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 7.84E+00 | 3.87E+01 | 2.68E+01 | 2.84E-01 | 1.63E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.23E+01 | 6.07E+01 | 8.72E+01 | 9.48E-01 | 2.15E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.24E+01 | 6.10E+01 | 1.56E+02 | 1.71E+00 | 2.57E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 1.23E+01 | 6.06E+01 | 2.12E+02 | 2.33E+00 | 2.08E-04 |
| 2007 Forklifts                      | Industrial Equipment              | SB | 5.25E+00 | 2.59E+01 | 1.30E+02 | 1.44E+00 | 1.15E-04 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 5.76E-01 | 1.03E+00 | 5.59E-01 | 6.12E-03 | 5.78E-07 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 5.76E-01 | 1.03E+00 | 9.16E-01 | 1.01E-02 | 1.16E-06 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment              | SB | 1.12E+01 | 3.75E+01 | 5.58E+01 | 5.91E-01 | 3.33E-04 |

|                                     |                           |    |          |          |          |          |          |
|-------------------------------------|---------------------------|----|----------|----------|----------|----------|----------|
| 2007 Sweepers/Scrubbers             | Industrial Equipment      | SB | 1.86E+01 | 6.21E+01 | 2.14E+02 | 2.33E+00 | 5.27E-04 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment      | SB | 8.54E+00 | 2.86E+01 | 1.82E+02 | 1.98E+00 | 2.96E-04 |
| 2007 Sweepers/Scrubbers             | Industrial Equipment      | SB | 1.37E+00 | 4.57E+00 | 3.36E+01 | 3.70E-01 | 3.42E-05 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.51E+00 | 5.91E+00 | 1.72E+00 | 1.89E-02 | 1.78E-06 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 2.03E+00 | 7.91E+00 | 5.53E+00 | 6.07E-02 | 6.85E-06 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 2.51E+00 | 9.80E+00 | 1.01E+01 | 1.06E-01 | 6.52E-05 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.00E+01 | 3.92E+01 | 1.12E+02 | 1.22E+00 | 2.95E-04 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.01E+01 | 3.93E+01 | 1.73E+02 | 1.88E+00 | 3.02E-04 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.00E+01 | 3.92E+01 | 2.41E+02 | 2.65E+00 | 2.87E-04 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.00E+01 | 3.91E+01 | 4.72E+02 | 5.18E+00 | 5.01E-04 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 2.50E+00 | 9.76E+00 | 1.94E+02 | 2.13E+00 | 2.09E-04 |
| 2007 Other General Industrial Equip | Industrial Equipment      | SB | 1.52E+00 | 5.94E+00 | 1.52E+02 | 1.66E+00 | 1.95E-04 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 7.20E-02 | 2.60E-01 | 3.73E-01 | 3.94E-03 | 2.38E-06 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 4.32E-01 | 1.56E+00 | 4.36E+00 | 4.73E-02 | 1.14E-05 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 4.63E-01 | 1.67E+00 | 9.34E+00 | 1.02E-01 | 1.62E-05 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 1.10E+00 | 3.98E+00 | 2.62E+01 | 2.88E-01 | 3.09E-05 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 2.06E-01 | 7.43E-01 | 6.47E+00 | 7.11E-02 | 6.81E-06 |
| 2007 Other Material Handling Equip  | Industrial Equipment      | SB | 6.17E-02 | 2.23E-01 | 7.53E+00 | 8.26E-02 | 9.63E-06 |
| 2007 Lawn Mowers                    | Lawn and Garden Equipment | SB | 5.17E+02 | 3.24E+02 | 3.66E+01 | 2.21E-01 | 2.62E-04 |
| 2007 Lawn Mowers                    | Lawn and Garden Equipment | SB | 3.88E+03 | 1.65E+02 | 2.90E+01 | 1.12E-01 | 8.44E-04 |
| 2007 Chainsaws                      | Lawn and Garden Equipment | SB | 9.25E+02 | 7.33E+02 | 4.37E+01 | 1.79E-01 | 2.27E-03 |
| 2007 Chainsaws                      | Lawn and Garden Equipment | SB | 1.04E+04 | 1.40E+02 | 1.04E+01 | 3.41E-02 | 4.78E-04 |
| 2007 Chainsaws                      | Lawn and Garden Equipment | SB | 6.52E+02 | 5.17E+02 | 7.45E+01 | 3.04E-01 | 3.87E-03 |
| 2007 Chainsaws                      | Lawn and Garden Equipment | SB | 7.33E+03 | 9.84E+01 | 1.58E+01 | 5.80E-02 | 6.75E-04 |
| 2007 Chainsaws Preempt              | Lawn and Garden Equipment | SB | 8.11E+02 | 6.43E+02 | 9.27E+01 | 3.79E-01 | 4.82E-03 |
| 2007 Chainsaws Preempt              | Lawn and Garden Equipment | SB | 9.13E+03 | 1.23E+02 | 2.28E+01 | 7.22E-02 | 1.07E-03 |
| 2007 Trimmers/Edgers/Brush Cutter   | Lawn and Garden Equipment | SB | 3.02E+03 | 1.00E+03 | 4.45E+01 | 2.14E-01 | 1.49E-03 |
| 2007 Trimmers/Edgers/Brush Cutter   | Lawn and Garden Equipment | SB | 3.36E+04 | 1.98E+03 | 8.92E+01 | 4.22E-01 | 2.89E-03 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 4.51E+03 | 2.42E+03 | 1.29E+02 | 5.74E-01 | 5.55E-03 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 1.16E+04 | 1.53E+02 | 1.11E+01 | 3.61E-02 | 5.07E-04 |
| 2007 Shredders                      | Lawn and Garden Equipment | SB | 2.28E+01 | 8.46E+00 | 3.71E+00 | 1.92E-02 | 1.30E-05 |
| 2007 Shredders                      | Lawn and Garden Equipment | SB | 8.11E+02 | 2.00E+00 | 1.27E+00 | 4.54E-03 | 4.48E-05 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 1.21E+01 | 2.65E+01 | 1.10E+01 | 5.64E-02 | 4.48E-05 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 5.96E+00 | 1.31E+01 | 1.17E+01 | 5.87E-02 | 4.90E-05 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 5.10E+00 | 9.59E-01 | 5.36E-02 | 2.63E-04 | 1.64E-06 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 1.56E+02 | 1.84E+00 | 1.55E-01 | 5.06E-04 | 7.07E-06 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 2.22E+00 | 4.17E-01 | 1.17E-01 | 5.73E-04 | 3.57E-06 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 6.81E+01 | 8.02E-01 | 3.00E-01 | 1.10E-03 | 1.28E-05 |
| 2007 Lawn Mowers                    | Lawn and Garden Equipment | SB | 3.06E+03 | 1.92E+03 | 2.33E+02 | 1.31E+00 | 1.55E-03 |
| 2007 Lawn Mowers                    | Lawn and Garden Equipment | SB | 4.85E+04 | 2.06E+03 | 3.37E+02 | 1.40E+00 | 2.68E-03 |
| 2007 Tillers                        | Lawn and Garden Equipment | SB | 3.18E+02 | 4.86E+01 | 7.17E+00 | 3.68E-02 | 4.30E-05 |
| 2007 Tillers                        | Lawn and Garden Equipment | SB | 1.23E+03 | 6.08E+01 | 1.13E+01 | 4.61E-02 | 9.63E-05 |
| 2007 Trimmers/Edgers/Brush Cutter   | Lawn and Garden Equipment | SB | 5.58E+02 | 2.08E+02 | 6.50E+00 | 3.54E-02 | 4.67E-05 |
| 2007 Trimmers/Edgers/Brush Cutter   | Lawn and Garden Equipment | SB | 2.60E+03 | 1.53E+02 | 6.98E+00 | 2.61E-02 | 7.51E-05 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 1.42E+02 | 2.42E+01 | 1.65E+00 | 8.25E-03 | 7.83E-06 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 1.22E+02 | 1.61E+00 | 1.41E-01 | 5.48E-04 | 1.05E-06 |
| 2007 Rear Engine Riding Mowers      | Lawn and Garden Equipment | SB | 1.68E+03 | 1.25E+03 | 4.26E+02 | 2.02E+00 | 1.56E-03 |
| 2007 Rear Engine Riding Mowers      | Lawn and Garden Equipment | SB | 1.47E+03 | 1.13E+02 | 4.11E+01 | 1.84E-01 | 1.71E-04 |
| 2007 Rear Engine Riding Mowers      | Lawn and Garden Equipment | SB | 7.66E+00 | 5.69E+00 | 3.80E+00 | 1.74E-02 | 1.43E-05 |
| 2007 Rear Engine Riding Mowers      | Lawn and Garden Equipment | SB | 6.61E+00 | 5.10E-01 | 3.55E-01 | 1.56E-03 | 1.39E-06 |
| 2007 Front Mowers                   | Lawn and Garden Equipment | SB | 7.68E+01 | 5.71E+01 | 3.12E+01 | 1.48E-01 | 1.14E-04 |
| 2007 Front Mowers                   | Lawn and Garden Equipment | SB | 2.48E+03 | 1.92E+02 | 1.11E+02 | 4.96E-01 | 4.61E-04 |
| 2007 Front Mowers                   | Lawn and Garden Equipment | SB | 6.01E+01 | 4.47E+01 | 3.29E+01 | 1.51E-01 | 1.24E-04 |
| 2007 Front Mowers                   | Lawn and Garden Equipment | SB | 1.94E+03 | 1.50E+02 | 1.15E+02 | 5.08E-01 | 4.52E-04 |
| 2007 Shredders                      | Lawn and Garden Equipment | SB | 6.03E+01 | 2.24E+01 | 6.24E+00 | 3.40E-02 | 4.49E-05 |
| 2007 Shredders                      | Lawn and Garden Equipment | SB | 2.24E+03 | 5.53E+00 | 2.20E+00 | 8.37E-03 | 1.58E-05 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 3.07E+02 | 1.08E+02 | 7.12E+01 | 3.38E-01 | 2.26E-04 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 2.00E+03 | 7.98E+01 | 5.51E+01 | 2.49E-01 | 1.94E-04 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 1.21E+02 | 4.27E+01 | 4.47E+01 | 2.06E-01 | 1.46E-04 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 7.87E+02 | 3.15E+01 | 3.43E+01 | 1.52E-01 | 1.16E-04 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 1.75E+00 | 4.99E-01 | 7.99E-01 | 6.47E-03 | 1.42E-06 |
| 2007 Wood Splitters                 | Lawn and Garden Equipment | SB | 1.03E+02 | 3.63E+01 | 1.09E+01 | 5.93E-02 | 6.95E-05 |
| 2007 Wood Splitters                 | Lawn and Garden Equipment | SB | 2.58E+03 | 7.77E+00 | 3.22E+00 | 1.27E-02 | 2.04E-05 |
| 2007 Chippers/Stump Grinders        | Lawn and Garden Equipment | SB | 1.45E+00 | 5.03E+00 | 4.38E+00 | 2.04E-02 | 1.87E-05 |
| 2007 Chippers/Stump Grinders        | Lawn and Garden Equipment | SB | 2.60E+00 | 1.17E-01 | 1.14E-01 | 4.77E-04 | 5.25E-07 |
| 2007 Chippers/Stump Grinders        | Lawn and Garden Equipment | SB | 8.26E+00 | 2.85E+01 | 4.20E+01 | 1.90E-01 | 1.83E-04 |
| 2007 Chippers/Stump Grinders        | Lawn and Garden Equipment | SB | 1.47E+01 | 6.64E-01 | 1.06E+00 | 4.41E-03 | 4.56E-06 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 1.09E+02 | 2.38E+02 | 1.33E+02 | 6.20E-01 | 5.85E-04 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 5.36E+01 | 1.17E+02 | 1.17E+02 | 5.28E-01 | 5.21E-04 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 2.16E+01 | 4.34E+01 | 7.06E+01 | 5.24E-01 | 1.81E-04 |
| 2007 Commercial Turf Equipment      | Lawn and Garden Equipment | SB | 1.43E-01 | 2.87E-01 | 7.06E-01 | 6.49E-03 | 2.34E-07 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 9.55E+01 | 1.79E+01 | 3.79E+00 | 1.97E-02 | 2.16E-05 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 2.93E+03 | 3.45E+01 | 9.73E+00 | 3.79E-02 | 7.10E-05 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 4.24E+01 | 7.97E+00 | 3.69E+00 | 1.75E-02 | 1.18E-05 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 1.30E+03 | 1.53E+01 | 7.69E+00 | 3.36E-02 | 2.64E-05 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 8.96E-01 | 1.68E-01 | 1.71E-01 | 7.86E-04 | 5.61E-07 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 2.76E+01 | 3.25E-01 | 3.53E-01 | 1.52E-03 | 1.17E-06 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 6.49E-02 | 1.08E-02 | 2.41E-02 | 1.96E-04 | 4.27E-08 |
| 2007 Other Lawn & Garden Equipm     | Lawn and Garden Equipment | SB | 1.56E-01 | 2.60E-02 | 1.48E-01 | 1.31E-03 | 1.95E-07 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 1.04E-01 | 3.41E-02 | 4.69E-03 | 5.13E-05 | 5.91E-09 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 9.09E-02 | 2.99E-02 | 6.65E-02 | 7.26E-04 | 1.23E-07 |
| 2007 Leaf Blowers/Vacuums           | Lawn and Garden Equipment | SB | 2.60E-02 | 8.54E-03 | 3.88E-02 | 4.28E-04 | 3.34E-08 |
| 2007 Lawn & Garden Tractors         | Lawn and Garden Equipment | SB | 2.51E+02 | 3.74E+02 | 1.59E+02 | 1.73E+00 | 2.08E-04 |

|                                 |                            |    |          |          |          |          |          |
|---------------------------------|----------------------------|----|----------|----------|----------|----------|----------|
| 2007 Lawn & Garden Tractors     | Lawn and Garden Equipment  | SB | 1.96E+02 | 2.92E+02 | 1.90E+02 | 2.09E+00 | 2.52E-04 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 1.17E-01 | 1.49E-01 | 1.36E-01 | 1.50E-03 | 1.77E-07 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 3.22E+00 | 4.10E+00 | 1.43E+01 | 1.56E-01 | 3.10E-05 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 2.21E-01 | 2.81E-01 | 1.69E+00 | 1.85E-02 | 2.41E-06 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 5.19E-02 | 6.61E-02 | 6.68E-01 | 7.35E-03 | 6.91E-07 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 4.80E-01 | 6.12E-01 | 6.87E+00 | 7.55E-02 | 6.38E-06 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 5.45E-01 | 6.95E-01 | 1.88E+01 | 2.06E-01 | 1.78E-05 |
| 2007 Chippers/Stump Grinders    | Lawn and Garden Equipment  | SB | 1.04E+00 | 1.32E+00 | 5.09E+01 | 5.59E-01 | 5.86E-05 |
| 2007 Commercial Turf Equipment  | Lawn and Garden Equipment  | SB | 6.31E+00 | 1.85E+01 | 8.13E+00 | 8.90E-02 | 9.30E-06 |
| 2007 Commercial Turf Equipment  | Lawn and Garden Equipment  | SB | 1.19E+02 | 3.47E+02 | 2.29E+02 | 2.51E+00 | 2.83E-04 |
| 2007 Other Lawn & Garden Equipm | Lawn and Garden Equipment  | SB | 9.09E-02 | 1.08E-01 | 6.02E-02 | 6.58E-04 | 7.26E-08 |
| 2007 Other Lawn & Garden Equipm | Lawn and Garden Equipment  | SB | 1.30E-02 | 1.54E-02 | 1.14E-02 | 1.25E-04 | 1.45E-08 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.05E+01 | 1.12E+01 | 9.10E-01 | 3.61E-03 | 2.52E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 2.40E+01 | 5.93E+00 | 5.22E-01 | 1.91E-03 | 1.67E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.08E-01 | 1.13E-01 | 7.05E-02 | 3.28E-04 | 6.77E-07 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 2.34E-01 | 5.80E-02 | 4.08E-02 | 1.68E-04 | 8.76E-07 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.21E+02 | 8.56E+01 | 5.48E+00 | 2.80E-02 | 8.30E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 9.52E+01 | 4.52E+01 | 3.50E+00 | 1.48E-02 | 8.45E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 3.27E+01 | 2.31E+01 | 1.26E+01 | 6.03E-02 | 9.11E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 2.57E+01 | 1.22E+01 | 7.27E+00 | 3.19E-02 | 1.06E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 3.95E-01 | 2.79E-01 | 3.14E-01 | 1.55E-03 | 1.37E-06 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 3.08E-01 | 1.46E-01 | 1.76E-01 | 8.11E-04 | 1.69E-06 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 4.00E+02 | 1.47E+02 | 4.62E+01 | 1.90E-01 | 5.93E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.14E+02 | 7.78E+01 | 2.55E+01 | 1.00E-01 | 3.34E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 1.10E+03 | 4.04E+02 | 2.74E+02 | 1.17E+00 | 1.66E-03 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 8.64E+02 | 2.14E+02 | 1.50E+02 | 6.19E-01 | 9.99E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 5.91E+02 | 2.17E+02 | 3.10E+02 | 1.33E+00 | 1.73E-03 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 4.64E+02 | 1.15E+02 | 1.68E+02 | 7.02E-01 | 1.02E-03 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 1.97E+02 | 6.19E+01 | 1.44E+02 | 1.16E+00 | 2.71E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.80E+01 | 1.19E+01 | 6.53E+01 | 5.76E-01 | 9.15E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.59E+00 | 1.13E+00 | 1.02E+01 | 9.31E-02 | 8.61E-06 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.42E+02 | 1.00E+02 | 2.11E+01 | 9.83E-02 | 2.44E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.12E+02 | 5.30E+01 | 1.34E+01 | 5.19E-02 | 1.81E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.54E+02 | 1.09E+02 | 6.52E+01 | 2.84E-01 | 3.73E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.21E+02 | 5.74E+01 | 3.60E+01 | 1.50E-01 | 2.31E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 3.94E+01 | 2.78E+01 | 3.45E+01 | 1.55E-01 | 1.61E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 3.10E+01 | 1.47E+01 | 1.91E+01 | 8.17E-02 | 1.05E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.57E+01 | 9.50E+00 | 2.21E+01 | 1.76E-01 | 4.81E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.99E+01 | 1.20E+01 | 7.54E+01 | 6.60E-01 | 1.24E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 6.00E-01 | 3.63E-01 | 3.29E+00 | 3.00E-02 | 3.07E-06 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 5.13E+01 | 7.94E+01 | 1.78E+01 | 1.05E-01 | 1.59E-04 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 4.03E+01 | 4.19E+01 | 9.42E+00 | 5.56E-02 | 8.40E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 2.60E+01 | 4.02E+01 | 1.59E+01 | 7.46E-02 | 6.91E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 2.04E+01 | 2.12E+01 | 8.49E+00 | 3.94E-02 | 3.81E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 3.50E+00 | 5.42E+00 | 5.37E+00 | 2.44E-02 | 2.38E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 2.75E+00 | 2.87E+00 | 2.88E+00 | 1.29E-02 | 1.36E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 5.98E+00 | 7.91E+00 | 1.74E+01 | 1.34E-01 | 4.74E-05 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 1.94E+01 | 2.57E+01 | 1.00E+02 | 8.59E-01 | 2.10E-04 |
| 2007 Air Compressors            | Light Commercial Equipment | SB | 1.30E+00 | 1.73E+00 | 1.19E+01 | 1.08E-01 | 1.22E-05 |
| 2007 Welders                    | Light Commercial Equipment | SB | 1.00E+02 | 5.71E+01 | 3.67E+01 | 1.52E-01 | 2.45E-04 |
| 2007 Welders                    | Light Commercial Equipment | SB | 3.63E+02 | 2.06E+02 | 2.00E+02 | 8.47E-01 | 1.14E-03 |
| 2007 Welders                    | Light Commercial Equipment | SB | 3.12E+01 | 1.78E+01 | 4.44E+01 | 3.52E-01 | 9.89E-05 |
| 2007 Welders                    | Light Commercial Equipment | SB | 3.19E+01 | 1.81E+01 | 6.33E+01 | 5.53E-01 | 1.07E-04 |
| 2007 Welders                    | Light Commercial Equipment | SB | 2.20E+00 | 1.25E+00 | 7.55E+00 | 6.88E-02 | 7.18E-06 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 1.08E+02 | 3.95E+01 | 1.74E+01 | 7.95E-02 | 1.96E-04 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 8.45E+01 | 2.09E+01 | 1.05E+01 | 4.20E-02 | 1.36E-04 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 9.59E+01 | 3.53E+01 | 2.33E+01 | 9.93E-02 | 1.41E-04 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 7.54E+01 | 1.86E+01 | 1.27E+01 | 5.25E-02 | 8.47E-05 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 1.80E+01 | 6.62E+00 | 1.11E+01 | 4.80E-02 | 5.93E-05 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 1.41E+01 | 3.50E+00 | 6.05E+00 | 2.53E-02 | 3.64E-05 |
| 2007 Pressure Washers           | Light Commercial Equipment | SB | 1.76E+00 | 5.53E-01 | 1.46E+00 | 1.18E-02 | 2.94E-06 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 2.83E+00 | 8.89E-01 | 5.59E+00 | 3.73E-02 | 5.40E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 2.34E+00 | 7.37E-01 | 8.08E+00 | 5.44E-02 | 6.35E-05 |
| 2007 Gas Compressors            | Light Commercial Equipment | SB | 4.39E-01 | 1.02E+01 | 3.50E+01 | 2.40E-01 | 1.86E-04 |
| 2007 Gas Compressors            | Light Commercial Equipment | SB | 9.08E-01 | 2.11E+01 | 2.05E+02 | 1.35E+00 | 1.03E-03 |
| 2007 Gas Compressors            | Light Commercial Equipment | SB | 1.46E-01 | 3.41E+00 | 5.26E+01 | 3.51E-01 | 2.83E-04 |
| 2007 Gas Compressors            | Light Commercial Equipment | SB | 1.17E-01 | 2.73E+00 | 5.45E+01 | 3.62E-01 | 2.48E-04 |
| 2007 Gas Compressors            | Light Commercial Equipment | SB | 1.03E-01 | 2.39E+00 | 7.69E+01 | 5.10E-01 | 6.54E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 7.40E+01 | 6.85E+01 | 3.21E+01 | 3.49E-01 | 6.12E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 5.42E+01 | 5.01E+01 | 4.05E+01 | 4.41E-01 | 7.89E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 6.61E+01 | 6.12E+01 | 8.71E+01 | 9.36E-01 | 3.58E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 1.01E+02 | 9.30E+01 | 3.32E+02 | 3.62E+00 | 6.88E-04 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 5.94E+00 | 5.49E+00 | 3.56E+01 | 3.90E-01 | 4.82E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 3.32E+00 | 3.07E+00 | 2.96E+01 | 3.26E-01 | 2.75E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 7.38E+00 | 6.83E+00 | 1.04E+02 | 1.15E+00 | 8.71E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 4.59E+00 | 4.24E+00 | 1.05E+02 | 1.15E+00 | 8.99E-05 |
| 2007 Generator Sets             | Light Commercial Equipment | SB | 1.19E+00 | 1.10E+00 | 5.27E+01 | 5.78E-01 | 5.96E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 5.56E+01 | 6.13E+01 | 2.09E+01 | 2.27E-01 | 4.64E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 1.66E+01 | 1.83E+01 | 1.64E+01 | 1.78E-01 | 4.19E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 2.90E+01 | 3.19E+01 | 5.11E+01 | 5.48E-01 | 2.22E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 5.68E+01 | 6.26E+01 | 2.24E+02 | 2.44E+00 | 4.77E-04 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 6.14E+00 | 6.78E+00 | 4.33E+01 | 4.74E-01 | 6.05E-05 |
| 2007 Pumps                      | Light Commercial Equipment | SB | 4.43E+00 | 4.88E+00 | 4.46E+01 | 4.91E-01 | 4.28E-05 |

|                                    |                               |    |          |          |          |          |          |
|------------------------------------|-------------------------------|----|----------|----------|----------|----------|----------|
| 2007 Pumps                         | Light Commercial Equipment    | SB | 8.74E-02 | 9.63E-02 | 1.51E+00 | 1.66E-02 | 1.30E-06 |
| 2007 Pumps                         | Light Commercial Equipment    | SB | 1.46E-02 | 1.61E-02 | 4.16E-01 | 4.58E-03 | 3.67E-07 |
| 2007 Pumps                         | Light Commercial Equipment    | SB | 3.20E-01 | 3.53E-01 | 2.18E+01 | 2.39E-01 | 2.50E-05 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 7.57E-01 | 1.69E+00 | 5.60E-01 | 6.09E-03 | 1.24E-06 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 1.50E+00 | 3.34E+00 | 2.22E+00 | 2.41E-02 | 5.67E-06 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 1.36E+01 | 3.04E+01 | 3.18E+01 | 3.38E-01 | 1.79E-04 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 9.08E+01 | 2.02E+02 | 4.37E+02 | 4.75E+00 | 1.06E-03 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 3.44E+00 | 7.66E+00 | 3.10E+01 | 3.39E-01 | 4.97E-05 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 4.83E+00 | 1.08E+01 | 6.42E+01 | 7.07E-01 | 7.10E-05 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 6.30E+00 | 1.41E+01 | 1.48E+02 | 1.63E+00 | 1.45E-04 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 2.36E+00 | 5.26E+00 | 8.56E+01 | 9.41E-01 | 8.57E-05 |
| 2007 Air Compressors               | Light Commercial Equipment    | SB | 5.82E-02 | 1.30E-01 | 2.88E+00 | 3.16E-02 | 3.53E-06 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 2.51E+01 | 4.42E+01 | 1.26E+01 | 1.37E-01 | 2.80E-05 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 2.21E+01 | 3.89E+01 | 2.02E+01 | 2.20E-01 | 5.16E-05 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 6.81E+01 | 1.20E+02 | 1.46E+02 | 1.55E+00 | 7.54E-04 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 5.29E+01 | 9.31E+01 | 1.69E+02 | 1.84E+00 | 3.91E-04 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 2.62E-01 | 4.61E-01 | 2.07E+00 | 2.26E-02 | 3.16E-06 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 5.82E-02 | 1.02E-01 | 5.54E-01 | 6.09E-03 | 5.85E-07 |
| 2007 Welders                       | Light Commercial Equipment    | SB | 1.46E-01 | 2.56E-01 | 1.95E+00 | 2.14E-02 | 1.83E-06 |
| 2007 Pressure Washers              | Light Commercial Equipment    | SB | 3.44E+00 | 1.36E+00 | 3.06E-01 | 3.33E-03 | 5.84E-07 |
| 2007 Pressure Washers              | Light Commercial Equipment    | SB | 8.01E-01 | 3.18E-01 | 1.04E-01 | 1.13E-03 | 2.03E-07 |
| 2007 Pressure Washers              | Light Commercial Equipment    | SB | 1.59E+00 | 6.30E-01 | 4.16E-01 | 4.50E-03 | 1.40E-06 |
| 2007 Pressure Washers              | Light Commercial Equipment    | SB | 6.55E-01 | 2.60E-01 | 2.87E-01 | 3.13E-03 | 5.43E-07 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 1.19E+00 | 1.57E+00 | 4.96E+00 | 5.40E-02 | 1.10E-05 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 2.91E-01 | 3.86E-01 | 1.67E+00 | 1.83E-02 | 2.44E-06 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 6.24E-02 | 8.26E-02 | 5.96E-01 | 6.55E-03 | 6.43E-07 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 2.29E-01 | 3.03E-01 | 4.08E+00 | 4.49E-02 | 3.95E-06 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 1.04E-01 | 1.38E-01 | 2.64E+00 | 2.90E-02 | 2.61E-06 |
| 2007 Misc Portable Equipment       | Other Portable Equipment      | SB | 4.16E-02 | 5.51E-02 | 1.41E+00 | 1.55E-02 | 1.68E-06 |
| 2007 Transport Refrigeration Units | Transport Refrigeration Units | SB | 7.74E+01 | 1.59E+02 | 9.63E+01 | 4.53E-01 | 4.14E-04 |
| 2007 Transport Refrigeration Units | Transport Refrigeration Units | SB | 9.02E+01 | 2.57E+02 | 9.43E+01 | 1.03E+00 | 1.26E-04 |
| 2007 Transport Refrigeration Units | Transport Refrigeration Units | SB | 3.43E+01 | 9.76E+01 | 6.07E+01 | 6.65E-01 | 8.20E-05 |
| 2007 Transport Refrigeration Units | Transport Refrigeration Units | SB | 6.50E+02 | 2.61E+03 | 3.15E+03 | 3.39E+01 | 1.22E-02 |



# OFFROAD Model Outputs

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| Class                | Air Dist. | Population | Activity | Consumption | CO2 Exhaust | CH4 Exhaust |
|----------------------|-----------|------------|----------|-------------|-------------|-------------|
| Industrial Equipment | SB        | 8.47E-01   | 8.71E-01 | 8.31E-01    | 1.78E-03    | 6.78E-05    |
| Industrial Equipment | SB        | 1.64E-01   | 1.68E-01 | 1.45E-01    | 4.76E-04    | 1.99E-06    |
| Industrial Equipment | SB        | 6.98E+00   | 7.18E+00 | 8.98E+00    | 2.97E-02    | 1.13E-04    |
| Industrial Equipment | SB        | 8.53E+00   | 8.44E+00 | 1.45E+01    | 1.11E-01    | 7.50E-05    |
| Industrial Equipment | SB        | 8.53E+00   | 8.44E+00 | 2.62E+01    | 2.22E-01    | 1.06E-04    |
| Industrial Equipment | SB        | 1.64E-01   | 4.04E-01 | 4.02E-01    | 1.32E-03    | 5.23E-06    |
| Industrial Equipment | SB        | 2.84E+01   | 1.40E+02 | 2.13E+02    | 1.49E+00    | 1.62E-03    |
| Industrial Equipment | SB        | 9.98E+01   | 4.93E+02 | 1.10E+03    | 8.83E+00    | 6.77E-03    |
| Industrial Equipment | SB        | 3.65E+00   | 1.80E+01 | 7.34E+01    | 6.55E-01    | 2.00E-04    |
| Industrial Equipment | SB        | 4.75E+00   | 3.51E+00 | 2.86E+00    | 9.45E-03    | 3.71E-05    |
| Industrial Equipment | SB        | 4.63E+00   | 3.43E+00 | 6.25E+00    | 2.07E-02    | 7.63E-05    |
| Industrial Equipment | SB        | 7.93E+00   | 1.12E+01 | 3.16E+01    | 2.41E-01    | 1.65E-04    |
| Industrial Equipment | SB        | 6.62E+00   | 9.37E+00 | 4.55E+01    | 3.86E-01    | 1.87E-04    |
| Industrial Equipment | SB        | 3.85E-02   | 5.45E-02 | 4.96E-01    | 4.50E-03    | 1.19E-06    |
| Industrial Equipment | SB        | 9.40E+00   | 9.67E+00 | 6.02E+00    | 1.98E-02    | 8.26E-05    |
| Industrial Equipment | SB        | 3.08E+00   | 3.63E+00 | 5.06E+00    | 1.67E-02    | 6.48E-05    |
| Industrial Equipment | SB        | 2.72E+00   | 5.33E+00 | 9.95E+00    | 7.45E-02    | 5.74E-05    |
| Industrial Equipment | SB        | 8.95E-01   | 1.75E+00 | 7.60E+00    | 6.37E-02    | 3.47E-05    |
| Industrial Equipment | SB        | 8.66E-02   | 1.69E-01 | 1.46E+00    | 1.32E-02    | 3.60E-06    |
| Industrial Equipment | SB        | 3.85E-02   | 4.08E-02 | 1.03E-01    | 7.65E-04    | 6.08E-07    |
| Industrial Equipment | SB        | 1.70E+00   | 1.80E+00 | 5.26E+00    | 4.41E-02    | 2.48E-05    |
| Industrial Equipment | SB        | 1.83E-01   | 1.88E-01 | 1.91E-01    | 8.36E-04    | 6.18E-06    |
| Industrial Equipment | SB        | 7.84E+00   | 8.07E+00 | 1.22E+01    | 5.24E-02    | 4.95E-04    |
| Industrial Equipment | SB        | 7.70E-02   | 2.64E-01 | 3.25E-01    | 1.35E-03    | 1.90E-05    |
| Industrial Equipment | SB        | 5.22E+01   | 2.57E+02 | 3.47E+02    | 2.35E+00    | 7.03E-03    |
| Industrial Equipment | SB        | 1.83E+02   | 9.04E+02 | 2.18E+03    | 1.41E+01    | 4.73E-02    |
| Industrial Equipment | SB        | 6.70E+00   | 3.31E+01 | 1.63E+02    | 1.08E+00    | 2.03E-03    |
| Industrial Equipment | SB        | 4.10E+00   | 4.49E+00 | 1.79E+00    | 1.94E-02    | 5.56E-06    |
| Industrial Equipment | SB        | 6.70E+00   | 7.33E+00 | 3.72E+00    | 4.01E-02    | 1.41E-05    |
| Industrial Equipment | SB        | 2.45E+01   | 2.58E+01 | 2.37E+01    | 2.53E-01    | 1.31E-04    |
| Industrial Equipment | SB        | 2.17E+01   | 2.28E+01 | 4.02E+01    | 4.34E-01    | 1.33E-04    |
| Industrial Equipment | SB        | 2.78E+00   | 2.93E+00 | 2.88E+01    | 3.11E-01    | 6.01E-05    |
| Industrial Equipment | SB        | 2.24E-01   | 2.36E-01 | 4.19E+00    | 4.53E-02    | 8.73E-06    |
| Industrial Equipment | SB        | 7.42E+00   | 3.66E+01 | 2.57E+01    | 2.68E-01    | 2.06E-04    |
| Industrial Equipment | SB        | 1.16E+01   | 5.75E+01 | 8.33E+01    | 8.96E-01    | 3.31E-04    |
| Industrial Equipment | SB        | 1.17E+01   | 5.77E+01 | 1.49E+02    | 1.62E+00    | 3.95E-04    |
| Industrial Equipment | SB        | 1.16E+01   | 5.73E+01 | 2.04E+02    | 2.21E+00    | 5.39E-04    |
| Industrial Equipment | SB        | 4.97E+00   | 2.45E+01 | 1.27E+02    | 1.36E+00    | 2.95E-04    |
| Industrial Equipment | SB        | 5.45E-01   | 9.71E-01 | 5.35E-01    | 5.79E-03    | 1.66E-06    |
| Industrial Equipment | SB        | 5.45E-01   | 9.71E-01 | 8.82E-01    | 9.51E-03    | 3.34E-06    |
| Industrial Equipment | SB        | 1.06E+01   | 3.55E+01 | 5.33E+01    | 5.59E-01    | 4.01E-04    |
| Industrial Equipment | SB        | 1.76E+01   | 5.87E+01 | 2.05E+02    | 2.20E+00    | 7.88E-04    |
| Industrial Equipment | SB        | 8.08E+00   | 2.70E+01 | 1.73E+02    | 1.88E+00    | 4.49E-04    |
| Industrial Equipment | SB        | 1.29E+00   | 4.33E+00 | 3.23E+01    | 3.50E-01    | 8.37E-05    |
| Industrial Equipment | SB        | 1.43E+00   | 5.59E+00 | 1.65E+00    | 1.78E-02    | 5.11E-06    |
| Industrial Equipment | SB        | 1.92E+00   | 7.49E+00 | 5.32E+00    | 5.74E-02    | 2.02E-05    |
| Industrial Equipment | SB        | 2.37E+00   | 9.27E+00 | 9.64E+00    | 1.01E-01    | 7.72E-05    |
| Industrial Equipment | SB        | 9.49E+00   | 3.71E+01 | 1.07E+02    | 1.15E+00    | 4.31E-04    |
| Industrial Equipment | SB        | 9.52E+00   | 3.72E+01 | 1.65E+02    | 1.78E+00    | 4.56E-04    |
| Industrial Equipment | SB        | 9.48E+00   | 3.70E+01 | 2.32E+02    | 2.51E+00    | 6.42E-04    |
| Industrial Equipment | SB        | 9.46E+00   | 3.70E+01 | 4.60E+02    | 4.90E+00    | 1.11E-03    |
| Industrial Equipment | SB        | 2.36E+00   | 9.23E+00 | 1.89E+02    | 2.02E+00    | 4.57E-04    |
| Industrial Equipment | SB        | 1.44E+00   | 5.62E+00 | 1.47E+02    | 1.57E+00    | 3.54E-04    |
| Industrial Equipment | SB        | 6.81E-02   | 2.46E-01 | 3.56E-01    | 3.73E-03    | 2.82E-06    |
| Industrial Equipment | SB        | 4.08E-01   | 1.48E+00 | 4.16E+00    | 4.47E-02    | 1.67E-05    |



|                            |    |          |          |          |          |          |
|----------------------------|----|----------|----------|----------|----------|----------|
| Industrial Equipment       | SB | 4.38E-01 | 1.58E+00 | 8.91E+00 | 9.64E-02 | 2.45E-05 |
| Industrial Equipment       | SB | 1.04E+00 | 3.76E+00 | 2.52E+01 | 2.72E-01 | 6.92E-05 |
| Industrial Equipment       | SB | 1.94E-01 | 7.03E-01 | 6.31E+00 | 6.73E-02 | 1.51E-05 |
| Industrial Equipment       | SB | 5.83E-02 | 2.11E-01 | 7.32E+00 | 7.81E-02 | 1.75E-05 |
| Light Commercial Equipment | SB | 2.84E+01 | 1.04E+01 | 2.24E+00 | 3.36E-03 | 1.75E-04 |
| Light Commercial Equipment | SB | 2.23E+01 | 5.52E+00 | 1.18E+00 | 1.78E-03 | 9.24E-05 |
| Light Commercial Equipment | SB | 2.86E-01 | 1.05E-01 | 1.42E-01 | 3.05E-04 | 1.16E-05 |
| Light Commercial Equipment | SB | 2.18E-01 | 5.39E-02 | 7.29E-02 | 1.56E-04 | 5.95E-06 |
| Light Commercial Equipment | SB | 1.13E+02 | 7.97E+01 | 1.74E+01 | 2.60E-02 | 1.35E-03 |
| Light Commercial Equipment | SB | 8.86E+01 | 4.21E+01 | 9.17E+00 | 1.37E-02 | 7.16E-04 |
| Light Commercial Equipment | SB | 3.04E+01 | 2.15E+01 | 2.62E+01 | 5.61E-02 | 2.14E-03 |
| Light Commercial Equipment | SB | 2.39E+01 | 1.13E+01 | 1.38E+01 | 2.97E-02 | 1.13E-03 |
| Light Commercial Equipment | SB | 3.68E-01 | 2.60E-01 | 6.73E-01 | 1.44E-03 | 5.50E-05 |
| Light Commercial Equipment | SB | 2.86E-01 | 1.36E-01 | 3.52E-01 | 7.55E-04 | 2.88E-05 |
| Light Commercial Equipment | SB | 3.72E+02 | 1.37E+02 | 8.02E+01 | 1.76E-01 | 2.59E-03 |
| Light Commercial Equipment | SB | 2.93E+02 | 7.24E+01 | 4.21E+01 | 9.32E-02 | 1.35E-03 |
| Light Commercial Equipment | SB | 1.02E+03 | 3.76E+02 | 3.32E+02 | 1.09E+00 | 4.51E-03 |
| Light Commercial Equipment | SB | 8.04E+02 | 1.99E+02 | 1.75E+02 | 5.76E-01 | 2.37E-03 |
| Light Commercial Equipment | SB | 5.50E+02 | 2.02E+02 | 3.73E+02 | 1.24E+00 | 4.58E-03 |
| Light Commercial Equipment | SB | 4.32E+02 | 1.07E+02 | 1.97E+02 | 6.53E-01 | 2.40E-03 |
| Light Commercial Equipment | SB | 1.83E+02 | 5.76E+01 | 1.41E+02 | 1.08E+00 | 6.85E-04 |
| Light Commercial Equipment | SB | 3.53E+01 | 1.11E+01 | 6.28E+01 | 5.36E-01 | 2.40E-04 |
| Light Commercial Equipment | SB | 3.34E+00 | 1.05E+00 | 9.55E+00 | 8.66E-02 | 2.24E-05 |
| Light Commercial Equipment | SB | 1.32E+02 | 9.33E+01 | 4.19E+01 | 9.15E-02 | 1.36E-03 |
| Light Commercial Equipment | SB | 1.04E+02 | 4.93E+01 | 2.20E+01 | 4.83E-02 | 7.13E-04 |
| Light Commercial Equipment | SB | 1.43E+02 | 1.01E+02 | 8.07E+01 | 2.64E-01 | 1.14E-03 |
| Light Commercial Equipment | SB | 1.12E+02 | 5.34E+01 | 4.26E+01 | 1.40E-01 | 5.92E-04 |
| Light Commercial Equipment | SB | 3.67E+01 | 2.59E+01 | 4.35E+01 | 1.44E-01 | 5.47E-04 |
| Light Commercial Equipment | SB | 2.88E+01 | 1.37E+01 | 2.29E+01 | 7.60E-02 | 2.84E-04 |
| Light Commercial Equipment | SB | 1.46E+01 | 8.84E+00 | 2.14E+01 | 1.63E-01 | 1.10E-04 |
| Light Commercial Equipment | SB | 1.85E+01 | 1.12E+01 | 7.23E+01 | 6.14E-01 | 2.93E-04 |
| Light Commercial Equipment | SB | 5.59E-01 | 3.38E-01 | 3.08E+00 | 2.79E-02 | 7.33E-06 |
| Light Commercial Equipment | SB | 4.77E+01 | 7.39E+01 | 4.51E+01 | 9.79E-02 | 1.47E-03 |
| Light Commercial Equipment | SB | 3.75E+01 | 3.90E+01 | 2.38E+01 | 5.17E-02 | 7.77E-04 |
| Light Commercial Equipment | SB | 2.42E+01 | 3.74E+01 | 2.13E+01 | 6.94E-02 | 3.10E-04 |
| Light Commercial Equipment | SB | 1.90E+01 | 1.98E+01 | 1.12E+01 | 3.67E-02 | 1.58E-04 |
| Light Commercial Equipment | SB | 3.26E+00 | 5.04E+00 | 6.90E+00 | 2.27E-02 | 9.02E-05 |
| Light Commercial Equipment | SB | 2.56E+00 | 2.67E+00 | 3.64E+00 | 1.20E-02 | 4.67E-05 |
| Light Commercial Equipment | SB | 5.56E+00 | 7.36E+00 | 1.69E+01 | 1.25E-01 | 1.06E-04 |
| Light Commercial Equipment | SB | 1.80E+01 | 2.39E+01 | 9.62E+01 | 7.99E-01 | 4.82E-04 |
| Light Commercial Equipment | SB | 1.21E+00 | 1.61E+00 | 1.11E+01 | 1.00E-01 | 2.82E-05 |
| Light Commercial Equipment | SB | 9.33E+01 | 5.31E+01 | 4.31E+01 | 1.41E-01 | 6.08E-04 |
| Light Commercial Equipment | SB | 3.37E+02 | 1.92E+02 | 2.38E+02 | 7.88E-01 | 3.00E-03 |
| Light Commercial Equipment | SB | 2.91E+01 | 1.65E+01 | 4.30E+01 | 3.28E-01 | 2.26E-04 |
| Light Commercial Equipment | SB | 2.97E+01 | 1.69E+01 | 6.07E+01 | 5.14E-01 | 2.50E-04 |
| Light Commercial Equipment | SB | 2.04E+00 | 1.16E+00 | 7.07E+00 | 6.41E-02 | 1.69E-05 |
| Light Commercial Equipment | SB | 1.00E+02 | 3.68E+01 | 3.35E+01 | 7.40E-02 | 1.07E-03 |
| Light Commercial Equipment | SB | 7.86E+01 | 1.94E+01 | 1.77E+01 | 3.91E-02 | 5.63E-04 |
| Light Commercial Equipment | SB | 8.93E+01 | 3.28E+01 | 2.81E+01 | 9.25E-02 | 3.82E-04 |
| Light Commercial Equipment | SB | 7.01E+01 | 1.73E+01 | 1.49E+01 | 4.89E-02 | 2.01E-04 |
| Light Commercial Equipment | SB | 1.68E+01 | 6.17E+00 | 1.34E+01 | 4.47E-02 | 1.64E-04 |
| Light Commercial Equipment | SB | 1.32E+01 | 3.26E+00 | 7.10E+00 | 2.36E-02 | 8.65E-05 |
| Light Commercial Equipment | SB | 1.64E+00 | 5.15E-01 | 1.42E+00 | 1.10E-02 | 6.81E-06 |
| Light Commercial Equipment | SB | 2.63E+00 | 8.28E-01 | 5.22E+00 | 3.47E-02 | 6.79E-05 |
| Light Commercial Equipment | SB | 2.18E+00 | 6.86E-01 | 7.53E+00 | 5.07E-02 | 8.09E-05 |
| Light Commercial Equipment | SB | 4.09E-01 | 9.52E+00 | 3.28E+01 | 2.24E-01 | 6.07E-04 |

|                            |    |          |          |          |          |          |
|----------------------------|----|----------|----------|----------|----------|----------|
| Light Commercial Equipment | SB | 8.45E-01 | 1.97E+01 | 1.92E+02 | 1.26E+00 | 3.87E-03 |
| Light Commercial Equipment | SB | 1.36E-01 | 3.17E+00 | 4.91E+01 | 3.27E-01 | 5.64E-04 |
| Light Commercial Equipment | SB | 1.09E-01 | 2.54E+00 | 5.10E+01 | 3.37E-01 | 6.49E-04 |
| Light Commercial Equipment | SB | 9.54E-02 | 2.22E+00 | 7.18E+01 | 4.75E-01 | 9.14E-04 |
| Light Commercial Equipment | SB | 7.00E+01 | 6.48E+01 | 3.05E+01 | 3.30E-01 | 9.46E-05 |
| Light Commercial Equipment | SB | 5.12E+01 | 4.74E+01 | 3.87E+01 | 4.17E-01 | 1.47E-04 |
| Light Commercial Equipment | SB | 6.26E+01 | 5.79E+01 | 8.30E+01 | 8.85E-01 | 4.40E-04 |
| Light Commercial Equipment | SB | 9.51E+01 | 8.79E+01 | 3.17E+02 | 3.42E+00 | 1.03E-03 |
| Light Commercial Equipment | SB | 5.62E+00 | 5.20E+00 | 3.39E+01 | 3.69E-01 | 7.57E-05 |
| Light Commercial Equipment | SB | 3.14E+00 | 2.90E+00 | 2.84E+01 | 3.08E-01 | 6.33E-05 |
| Light Commercial Equipment | SB | 6.98E+00 | 6.46E+00 | 1.00E+02 | 1.09E+00 | 2.06E-04 |
| Light Commercial Equipment | SB | 4.34E+00 | 4.01E+00 | 1.01E+02 | 1.09E+00 | 2.07E-04 |
| Light Commercial Equipment | SB | 1.13E+00 | 1.04E+00 | 5.06E+01 | 5.47E-01 | 1.04E-04 |
| Light Commercial Equipment | SB | 5.26E+01 | 5.80E+01 | 1.99E+01 | 2.15E-01 | 6.16E-05 |
| Light Commercial Equipment | SB | 1.57E+01 | 1.73E+01 | 1.56E+01 | 1.69E-01 | 5.93E-05 |
| Light Commercial Equipment | SB | 2.74E+01 | 3.02E+01 | 4.87E+01 | 5.18E-01 | 2.72E-04 |
| Light Commercial Equipment | SB | 5.37E+01 | 5.92E+01 | 2.14E+02 | 2.31E+00 | 7.11E-04 |
| Light Commercial Equipment | SB | 5.81E+00 | 6.41E+00 | 4.13E+01 | 4.49E-01 | 9.46E-05 |
| Light Commercial Equipment | SB | 4.19E+00 | 4.62E+00 | 4.27E+01 | 4.64E-01 | 9.79E-05 |
| Light Commercial Equipment | SB | 8.26E-02 | 9.11E-02 | 1.46E+00 | 1.57E-02 | 3.05E-06 |
| Light Commercial Equipment | SB | 1.38E-02 | 1.52E-02 | 4.01E-01 | 4.33E-03 | 8.40E-07 |
| Light Commercial Equipment | SB | 3.03E-01 | 3.34E-01 | 2.09E+01 | 2.26E-01 | 4.38E-05 |
| Light Commercial Equipment | SB | 7.16E-01 | 1.60E+00 | 5.33E-01 | 5.76E-03 | 1.65E-06 |
| Light Commercial Equipment | SB | 1.42E+00 | 3.16E+00 | 2.12E+00 | 2.28E-02 | 8.02E-06 |
| Light Commercial Equipment | SB | 1.29E+01 | 2.87E+01 | 3.04E+01 | 3.20E-01 | 2.15E-04 |
| Light Commercial Equipment | SB | 8.58E+01 | 1.91E+02 | 4.17E+02 | 4.49E+00 | 1.57E-03 |
| Light Commercial Equipment | SB | 3.25E+00 | 7.25E+00 | 2.96E+01 | 3.20E-01 | 7.65E-05 |
| Light Commercial Equipment | SB | 4.57E+00 | 1.02E+01 | 6.17E+01 | 6.68E-01 | 1.60E-04 |
| Light Commercial Equipment | SB | 5.96E+00 | 1.33E+01 | 1.44E+02 | 1.54E+00 | 3.30E-04 |
| Light Commercial Equipment | SB | 2.23E+00 | 4.97E+00 | 8.31E+01 | 8.90E-01 | 1.91E-04 |
| Light Commercial Equipment | SB | 5.51E-02 | 1.23E-01 | 2.79E+00 | 2.98E-02 | 6.37E-06 |
| Light Commercial Equipment | SB | 2.38E+01 | 4.18E+01 | 1.20E+01 | 1.30E-01 | 3.72E-05 |
| Light Commercial Equipment | SB | 2.09E+01 | 3.68E+01 | 1.93E+01 | 2.08E-01 | 7.30E-05 |
| Light Commercial Equipment | SB | 6.44E+01 | 1.13E+02 | 1.39E+02 | 1.47E+00 | 9.10E-04 |
| Light Commercial Equipment | SB | 5.00E+01 | 8.80E+01 | 1.61E+02 | 1.74E+00 | 5.81E-04 |
| Light Commercial Equipment | SB | 2.48E-01 | 4.36E-01 | 1.97E+00 | 2.14E-02 | 4.90E-06 |
| Light Commercial Equipment | SB | 5.51E-02 | 9.69E-02 | 5.31E-01 | 5.76E-03 | 1.32E-06 |
| Light Commercial Equipment | SB | 1.38E-01 | 2.42E-01 | 1.89E+00 | 2.03E-02 | 4.20E-06 |
| Light Commercial Equipment | SB | 3.25E+00 | 1.29E+00 | 2.91E-01 | 3.15E-03 | 9.02E-07 |
| Light Commercial Equipment | SB | 7.57E-01 | 3.00E-01 | 9.95E-02 | 1.07E-03 | 3.77E-07 |
| Light Commercial Equipment | SB | 1.50E+00 | 5.96E-01 | 3.96E-01 | 4.25E-03 | 1.76E-06 |
| Light Commercial Equipment | SB | 6.20E-01 | 2.46E-01 | 2.73E-01 | 2.96E-03 | 8.19E-07 |

9.51E+01 1.28E-01

**9.78E+01**  
**3.57E+04** tons/year for Ci

County population 1990  
City population 1 0.231518257

## Appendix A3

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Detailed Assumptions and Calculations for Climate Plan Measures



## Breakdown of Calculated GHG Emission Reductions for Climate Plan Measures

|  | <i>2020<br/>Reduction (MT CO<sub>2</sub>e)</i> | <i>2030<br/>Reduction (MT CO<sub>2</sub>e)</i> |
|--|--|--|
| <b>Energy Efficiency &amp; Green Building</b>  |  |  |
| <i>Energy-efficient City facilities</i>  |  |  |
| <i>HVAC and Controls upgrades</i>  | 191  | 382  |
| <i>Parking Garage Lighting</i>   | 56   | 112  |
| <i>Indoor Lighting Retrofits</i>   | 16   | 32   |
| <i>Server Virtualization</i>   | 55   | 55   |
| <b>Subtotal</b>  | <b>318</b>                                     | <b>581</b>                                     |
| <i>Recreational field lighting efficiency projects</i>   | <b>16</b>                                      | <b>16</b>                                      |
| <b>Energy efficient buildings–voluntary actions</b>  |  |  |
| <i>Information on current energy use and conservation options</i>  | BMP  | BMP  |
| <i>Incentives for voluntary upgrades</i>   | 961  | 2,400  |
| <i>Voluntary incremental upgrades may be encouraged at time of sale, and/or other methods for greening the existing building stock</i> | 106  | 341  |
| <i>Tools for self-assessment financing....</i>   | 2,925  | 7,075  |
| <i>Green Business program</i>  | BMP  | BMP  |
| <b>Subtotal</b>  | <b>3992</b>                                    | <b>9816</b>                                    |
| <b>Energy efficient buildings–further outreach, incentives, requirements</b>   |  |  |
| <i>Community energy efficiency outreach</i>  | BMP  | BMP  |
| <i>Incentives and funding assistance</i>   | BMP  | BMP  |
| <i>Reach code energy efficiency ordinance</i>  | 74   | 815  |
| <i>Lighting standards</i>  | 48   | 180  |
| <i>Upgrades at time of sale</i>  | 212  | 2,275  |
| <b>Subtotal</b>  | <b>334</b>                                     | <b>3270</b>                                    |
| <b>Green building</b>  | BMP  | BMP  |
|  |  |  |
| <b>SUBTOTAL FOR CATEGORY (APPLIES TO ELECTRICITY AND NATURAL GAS)</b>  | <b>4660</b>                                    | <b>13683</b>                                   |
| <b>Renewable Energy Measures</b>   |  |  |
| <i>Hydroelectric plant recommissioning</i>   | <b>233</b>                                     | <b>233</b>                                     |
| <i>Solar photovoltaic project at Airport long-term parking lot</i>   | <b>167</b>                                     | <b>167</b>                                     |
| <i>Community Choice Aggregation</i>  | <b>20,101</b>                                  | <b>20,101</b>                                  |
| <i>Alternative/advanced fuels</i>  | <b>48,811</b>                                  | <b>85,560</b>                                  |

|   | <b>2020<br/>Reduction (MT CO<sub>2</sub>e)</b> | <b>2030<br/>Reduction (MT CO<sub>2</sub>e)</b> |
|---|--|--|
| <b><i>Incentives for alternative/advanced fuel infrastructure</i></b>   | Implementation measure for above               |  |
| <b><i>Small wind generators</i></b>                                     | <b>24</b>                                      | <b>60</b>                                      |
| <b><i>Facilitate renewable energy technologies</i></b>                  | <b>167</b>                                     | <b>334</b>                                     |
| <b><i>Solar energy</i></b>  | <b>996</b>                                     | <b>3287</b>                                    |
| <b><i>SUBTOTAL ELECTRICITY MEASURES (APPLY TO ELECTRICITY)</i></b>      | <b>21,688</b>                                  | <b>24,182</b>                                  |
| <b><i>SUBTOTAL ALTERNATIVE FUEL MEASURES (APPLY TO ON-ROAD)</i></b>     | <b>48,811</b>                                  | <b>85,560</b>                                  |
| <b>Travel and Land Use Measures</b>                                     |  |  |
| <b><i>Fleet Vehicles</i></b>  | <b>242</b>                                     | <b>484</b>                                     |
| <b><i>City employee travel changes</i></b>                              | <b>200</b>                                     | <b>345</b>                                     |
| <b><i>Mixed use land use policies</i></b>                               | Addressed in traffic model                     |  |
| <b><i>Sustainable Neighborhood Plans – travel and land use</i></b>      | Addressed in traffic model                     |  |
| <b><i>Experimental development</i></b>                                  | BMP  | BMP  |
| <b><i>Complementary land uses</i></b>                                   | Addressed in traffic model                     |  |
| <b><i>Electric vehicle charging stations</i></b>                        | <b>1,967</b>                                   | <b>3,018</b>                                   |
| <b><i>Pedestrian infrastructure</i></b>                                 | <b>327</b>                                     | <b>584</b>                                     |
| <b><i>Bicycle infrastructure improvements</i></b>                       | <b>905</b>                                     | <b>1,735</b>                                   |
| <b><i>Personal transportation</i></b>                                   | <b>2,616</b>                                   | <b>2,919</b>                                   |
| <b><i>Intermodal connections</i></b>                                    | <b>1,967</b>                                   | <b>1,886</b>                                   |
| <b><i>Optimize roadway capacity, flow &amp; safety</i></b>              | <b>7,867</b>                                   | <b>15,090</b>                                  |
| <b><i>Mid-block traffic Improvement and connectivity techniques</i></b> | BMP  | BMP  |
| <b><i>Regional transportation &amp; commuter transit</i></b>            | <b>4,284</b>                                   | <b>7,974</b>                                   |
| <b><i>Vehicle speeds</i></b>  | BMP  | BMP  |
| <b><i>Bus pull-out right of way</i></b>                                 | BMP  | BMP  |
| <b><i>Circulation improvements</i></b>                                  | BMP  | BMP  |
| <b><i>Transit passes</i></b>  | <b>2,927</b>                                   | <b>5,449</b>                                   |
| <b><i>Parking Policies</i></b>  | <b>31,466</b>                                  | <b>69,973</b>                                  |
| <b><i>Car-pooling and telecommuting</i></b>                             | <b>3,570</b>                                   | <b>4,984</b>                                   |
| <b><i>Car-sharing</i></b>   | <b>1,118</b>                                   | <b>1,990</b>                                   |
| <b><i>Development impact fees</i></b>                                   | BMP  | BMP  |
| <b><i>Street widths</i></b>   | BMP  | BMP  |

|   | <i>2020<br/>Reduction (MT CO<sub>2</sub>e)</i>  | <i>2030<br/>Reduction (MT CO<sub>2</sub>e)</i> |
|---|---|--|
| <b>New development vehicle emissions</b>                        | Based on projections incorporating State policies, these targets would be achieved without further measures. Therefore, no reductions are associated with this measure. |  |
| <b>Marine Shipping Emissions</b>                                | BMP   | BMP  |
| <b>SUBTOTAL</b>   | <b>59,456</b>   | <b>116,431</b>                                 |
| <b>Vegetation and Open Space</b>                                |   |  |
| <i>Tree planting</i>  | <b>18</b>   | <b>35</b>                                      |
| <i>Street trees</i>   | BMP   | BMP  |
| <i>Urban heat island effect</i>                                 | <b>806</b>  | <b>1,612</b>                                   |
| <i>Regional open space preservation</i>                         | BMP   | BMP  |
| <b>SUBTOTAL</b>   | <b>824</b>  | <b>1,647</b>                                   |
| <b>Waste Reduction Measures</b>                                 |   |  |
| <i>City business purchasing guidelines</i>                      | BMP   | BMP  |
| <i>City facilities recycling</i>                                | BMP   | BMP  |
| <i>Electronic processes</i>                                     | BMP   | BMP  |
| <i>City coordination with region</i>                            | BMP   | BMP  |
| <i>Waste-to-energy facility at landfill</i>                     | <b>533</b>  | <b>533</b>                                     |
| <i>Elings former landfill</i>                                   | No offset under CAP; this measure has been included in the State Policies case as it is now installed.  |  |
| <i>Communitywide waste diversion goal</i>                       | <b>1,121</b>  | <b>1,158</b>                                   |
| <i>Regional Material Recovery Facility</i>                      | BMP   | BMP  |
| <i>Waste audit information for businesses</i>                   | BMP   | BMP  |
| <i>Recycling education campaigns</i>                            | BMP   | BMP  |
| <i>Single-use materials and packaging reduction</i>             | BMP   | BMP  |
| <i>Business &amp; multi-family sector recycling ordinance</i>   | BMP   | BMP  |
| <i>Construction waste hauling program enforcement</i>           | BMP   | BMP  |
| <i>Increased recyclables sorting</i>                            | BMP   | BMP  |
| <i>School waste diversion</i>                                   | BMP   | BMP  |
| <i>Materials reuse &amp; recycling information for builders</i> | BMP   | BMP  |
| <i>Building space guidelines for waste management</i>           | BMP   | BMP  |
| <i>Additional recycling materials</i>                           | BMP   | BMP  |
| <i>Additional greenwaste capacity</i>                           | BMP   | BMP  |

|  | <i>2020<br/>Reduction (MT CO<sub>2</sub>e)</i> | <i>2030<br/>Reduction (MT CO<sub>2</sub>e)</i> |
|--|--|--|
| <i>Additional recycling in public places</i> | BMP  | BMP  |
| <i>Additional composting</i>                 | BMP  | BMP  |
| <i>Single-use bag reduction</i>              | BMP  | BMP  |
| <b><i>SUBTOTAL</i></b>                       | <b>1,654</b>                                   | <b>1,691</b>                                   |
| <b>Water Conservation Measures</b>           |  |  |
| <b>City facilities</b>                       | <b>1</b>                                       | <b>2</b>                                       |
| <b>Community water conservation</b>          | <b>1329</b>                                    | <b>1539</b>                                    |
| <i>Recycled water</i>                        | BMP  | BMP  |
| <i>On-site water storage and reuse</i>       | <b>138</b>                                     | <b>208</b>                                     |
| <b><i>SUBTOTAL</i></b>                       | <b>1468</b>                                    | <b>1749</b>                                    |
| <b>Summary</b>                               |  |  |
|  | MT CO <sub>2</sub> e                           | MT CO <sub>2</sub> e                           |
|  | <i>2020</i>                                    | <i>2030</i>                                    |
| <b>GRAND TOTAL REDUCTION</b>                 | <b>138,561</b>                                 | <b>244,943</b>                                 |
| <b>EMISSIONS AFTER REDUCTION</b>             | <b>543,185</b>                                 | <b>428,167</b>                                 |
| <b>PERCENT REDUCTION OF TOTAL</b>            | <b>20%</b>                                     | <b>36%</b>                                     |



## Assumptions and Calculations

The following section provides detailed assumptions and calculations for the specific reductions associated with Climate Plan measures.

### ENERGY EFFICIENCY & GREEN BUILDING: ADDITIONAL FUTURE CITY ACTIONS

#### City Government Operations

1. **Energy-efficient City facilities** (City program; General Plan (GP) policy ER5.2; through 2030)  
Continue implementing programs through the City Sustainable Santa Barbara program for retrofitting of municipal systems with energy efficient equipment, systems, and programs.

The following equipment upgrades are currently planned to further improve energy efficiency at City buildings: upgrade computer systems to provide automated computer workstation power-off function; replace separate copier, printer, fax, and scanner units with shared multi-function printing units; virtualize 35 remaining servers in primary City Hall and Business Continuity data centers to reduce electrical power and cooling requirements.

#### Data and assumptions for calculating GHG offset:

##### HVAC and Controls upgrades

Typically, this energy conservation measure (ECM) will replace old (20 year+) package air conditioning systems, add electronic controls and air economizers. On average, this measure saves 4,000 kWh/ton of cooling capacity/year. A typical package air conditioning system has 2-5 tons of cooling capacity.

Assuming replacement of 40 HVAC units by the year 2020 and an additional 40 by the year 2030, the following electricity and GHG savings would result:

2020: 4000 kWh/ton X 5 tons X 40 units = 800000 kWh = **191 MT CO<sub>2</sub>e**

2030: 4000 kWh/ton X 5 tons X 80 units = 1600000 kWh = **382 MT CO<sub>2</sub>e**

##### Parking Garage Lighting

This measure involves replacing HID lighting with high-efficiency T-8 lamps. A typical parking structure retrofit would result in 236,000 kWh annual savings.

Assuming that one parking garage would be retrofitted by 2020, and that another would be retrofitted by 2030:

2020: 236,000 kWh saved = **56 MT CO<sub>2</sub>e**

2030: 472,000 kWh saved = **112 MT CO<sub>2</sub>e**

##### Indoor Lighting Retrofits

This project typically replaces T-12 and older T-8 lighting with new high-efficiency T-8 lighting.

On average, this saves about 6.5 kWh/sq.ft./year (Jim Dewey)

Assuming that 10,000 sf of City buildings receive indoor lighting retrofits by 2020, and an additional 10,000 sf receive retrofits by 2030, this would result in the following electricity savings:

2020: 6.5 kWh/sf X 10000 sf=65000 kWh = reduction of **16 MT CO<sub>2</sub>e**

2030: 6.5 kWh/sf X 20000 sf=130000 kWh = reduction of **32 MT CO<sub>2</sub>e**

### Server Virtualization

Assuming virtualization of 35 servers. Based on vmware's server virtualization calculator (<http://www.vmware.com/solutions/green/calculator.html>), this would reduce electricity consumption for running and cooling City servers by 231,387 kWh, after accounting for remote energy usage. It is assumed that this would all happen before 2020, so there is no additional reduction for 2030.

2020: 231,387 kWh = reduction of **55 MT CO<sub>2</sub>e**

## **2. Recreational field lighting efficiency projects** (City program; target 2015)

Install energy-efficient lighting projects at Dwight Murphy and Pershing Ball Fields.

### Data and assumptions for calculating GHG offset:

This project replaces a mixture of mercury vapor and metal halide lights with high-efficiency Musco Lighting systems based on ceramic pulse-start metal-halide lighting, and an electronic control time-based control system.

Each project saves about 23,000 kWh per year (Jim Dewey):

So for all three projects, total annual energy savings would equal 69000 kWh. It is assumed that this would all happen before 2020, so there is no additional reduction for 2030.

2020: 69000 kWh = reduction of **16 MT CO<sub>2</sub>e**

### Communitywide Measures

## **3. Energy efficient buildings—voluntary actions** (City program; GP policy ER5.1; through 2030)

Encourage all new construction to be designed and built consistent with City green programs and policies, the California Green Building Code, and Architecture 2030 goals for energy efficiency in buildings. Further reduce energy consumption over time in both new building and through retrofits.

Establish a voluntary program and time line for increasing the energy efficiency and carbon neutrality of new buildings or additions, and existing building stock. Provide:

(a) Information on current energy use and conservation options;

Data and assumptions for calculating GHG offset:

BMP

(b) Incentives for voluntary upgrades;

Data and assumptions for calculating GHG offset:

Assume that incentives result in 5% of City residents voluntarily upgrade and improve energy efficiency of homes and businesses by 20% each by 2020, with an additional 5% upgrading by 2030. Estimate of 20% energy efficiency assumes standard efficiency measures (e.g., air sealing, pipe insulation, thermostatic shut-off valve) as well as replacement of inefficient heating and cooling units:

2020 Reduction in GHG emissions = **961 MT CO<sub>2</sub>e**

2030 Reduction in GHG emissions = **2,400 MT CO<sub>2</sub>e**

(c) Voluntary incremental upgrades may be encouraged at time of sale, and/or other methods for greening the existing building stock; and

Data and assumptions for calculating GHG offset:

Assume that program becomes active in 2015. Assume that 5% of the 500 typical City home sales (25) voluntarily upgrade each year, and each upgrade reduces energy consumption by 20%. Estimate of 20% energy efficiency assumes standard efficiency measures (e.g., air sealing, pipe insulation, thermostatic shut-off valve) as well as replacement of inefficient heating and cooling units: Assuming average home electricity consumption is 7,605 kWh per year and 50 MCF per year:

2020: reduction of **106 MT CO<sub>2</sub>e**

2030: reduction of **341 MT CO<sub>2</sub>e**

(d) Tools for financing for energy-efficiency upgrades and on-site solar and wind power generation. Continue City work with the County emPower program for financing private energy efficiency and alternative source projects, including assisting with applications, inspections, and outreach education and promotion.

Data and assumptions for calculating GHG offset:

Assume that 1% of City homeowners utilize financing mechanisms to improve home energy efficiency, and that each home experiences a reduction in energy consumption of 40% as a result of extensive improvements (empowerSBC estimate for "Advanced Upgrades", which does not include potential improvement associated with solar or wind power).

2020: reduction of 34560 MCF natural gas and 5,256,576 kWh = reduction of **2,925 MT CO<sub>2</sub>e**

2030: reduction of 77,760 MCF natural gas and 11,827,796 kWh electricity = reduction of **7,075 MT CO<sub>2</sub>e**

(e) County Green Business program. Continue City work to check and certify participating local green businesses.

Data and assumptions for calculating GHG offset:

BMP – no records found for energy efficiency of City businesses that participate in the program.

**4. *Energy efficient buildings—further outreach, incentives, requirements*** (City program; to 2030)

If there is insufficient progress from the voluntary programs above toward the City’s Architecture 2030 building energy efficiency goals, as identified through periodic assessments (using 50% progress by 2020 as a benchmark), institute further actions.

Additional future actions may include the following:

- (a) *Community energy efficiency outreach.* Expand outreach programs to promote energy conservation and efficiency in the community, such as the following measures: (1) an energy efficiency challenge campaign for community residents; (2) energy conservation campaigns specifically targeted to residents, businesses, and institutions; (3) further education and assistance with applications and inspections; and (4) an exchange program for high-energy-use items (e.g., halogen torchiere lamps).

Data and assumptions for calculating GHG offset:

CAPCOA quantification report considers this a BMP until data regarding effectiveness and scope of programs is presented.

- (b) *Incentives and funding assistance.* Expand financial incentive measures, such as: (1) a low-income weatherization assistance program; and (2) other energy efficiency upgrade assistance targeted to residential, business, and institutional sectors.

Data and assumptions for calculating GHG offset:

CAPCOA quantification report considers this a BMP until data regarding effectiveness and scope of programs is presented.

- (c) *Reach code energy efficiency ordinance.* Implement City municipal code amendment to require energy efficiency levels for new development and redevelopment beyond California Green Building Code standards.

Data and assumptions for calculating GHG offset:

Assume policy implemented in 2020. Assume 10% improvement beyond Title 24 standard.

2020: Based on reduction of 193,298 kWh and 655 MCF consumption in cumulative 2020 development, GHG emissions reduction of **74 MT CO<sub>2</sub>e**.

2030: Based on reduction of 1,896,708 kWh and 6,615 MCF consumption in cumulative 2030 development, GHG emissions reduction of **815 MT CO<sub>2</sub>e**.

- (d) *Lighting standards*. Establish additional standards for energy efficiency of outdoor lighting in the City lighting ordinance, which may include measures to provide for full cut-off light fixtures at parking lots and on buildings where safety standards are met; provide photocells or astronomical time switches on all permanently installed exterior lighting; and provide exterior and security lights with motion detectors.

Data and assumptions for calculating GHG offset:

CAPCOA quantification report considers this a BMP due to lack of data regarding effectiveness. However, for sake of consideration, assume 20% reduction in outdoor lighting energy consumption for development that is subject to the standards. Assume outdoor lighting accounts for 5% of total electricity consumption for residential, commercial and industrial sectors. Assume standard is in place by 2015. Assume 5% of City development upgrades lighting based on this standard by 2020, and 15% by 2030.

2020: Reduction of 243,780 kWh = **48 MT CO<sub>2</sub>e**

2030: Reduction of 753,424 kWh = **180 MT CO<sub>2</sub>e**

- (e) *Upgrades at time of sale*. Adopt ordinance provisions to establish requirements for energy efficiency upgrades at the time of property sale to increase the efficiency of existing building stock.

Data and assumptions for calculating GHG offset:

Assuming a target of 10% increase in efficiency at time of sale, and assuming requirement would not be established until 2020 due to political constraints. Assuming home sales in 2020 and 2030 are similar to current rates, and City home sales in 2011 were approximately 500, and assuming average home electricity consumption is 7605 kWh per year and 50 MCF per year:

2020: Reduction in electricity consumption of 380,250 kWh and gas consumption of 2,500 MCF = **212 MT CO<sub>2</sub>e**

2030: Reduction in electricity consumption of 3,802,500 kWh and gas consumption of 25,000 MCF = **2,275 MT CO<sub>2</sub>e**

5. **Green building** (City program; GP policies ER3; ER3.1; ongoing to 2030)

In addition to promoting reduced unit size, building footprints, and GHG emissions, and energy conservation, promote the use of more sustainable building and landscaping materials and methods. Establish additional green building incentives for the use of locally harvested, renewable building or manufacturing materials.

Data and assumptions for calculating GHG offset:

BMP

## 2.3.2 Renewable Energy Measures

### RENEWABLE ENERGY: ADDITIONAL FUTURE CITY ACTIONS

#### City Government Operations

6. **Hydroelectric plant recommissioning** (City program; target 2013)

Recommissioning the City's small hydroelectric plant will result in the production of clean and renewable hydroelectric power. It is estimated that the plant will initially produce 1600 megawatt hours (MWh) of power annually, and due to siltation at Gibraltar Dam, will gradually reduce to a steady state production of 975 MWh, equivalent to the energy demand of approximately 200 single-family homes.

Data and assumptions for calculating GHG offset:

Assuming power generation would be reduced to the steady-state of 975 MWh by 2020, using 2020 emissions factors for SCE power = reduction of **233 MT CO<sub>2</sub>e**

7. **Solar photovoltaic project at Airport long-term parking lot** (City program; target 2015)

Data and assumptions for calculating GHG offset:

Per City Energy Team and Airport staff, this would be a 500kW installation.

Assuming industry standard output calculations and a conservative capacity factors of 16%, and operation 365 days per year, annual power generation would be:

500 kW X \* 16% capacity factor \* 8760 hours per year = 700,800 kWh = **167 MT CO<sub>2</sub>e**

#### Communitywide Measures

8. **Community Choice Aggregation** (City program; GP policy ER6.1; target 2015)

Conduct a feasibility study to include a cost-benefit analysis and carbon footprint assessment for a Community Choice Aggregation arrangement as either a bulk purchaser or producer of energy from alternative resources.

Data and assumptions for calculating GHG offset:

Assuming the feasibility study identifies the CCA as feasible and the City sets a modest Renewable Portfolio target at 40% by 2020, exceeding state standards of 33%:

SCE Emission factors would be changed as follows:

33% RPS / 40% RPS X 523.8lbs CO<sub>2</sub>e/MWh = 432.135 CO<sub>2</sub>e/MWh

33% RPS / 40% RPS X .008 lbs N<sub>2</sub>O/MWh = 0.0066 lbs N<sub>2</sub>O/MWh

33% RPS / 40% RPS X .024 lbs CH<sub>4</sub>/MWh = 0.0198 lbs CH<sub>4</sub>/MWh

Applying these factors to projected City electricity consumption in 2020 of 497,440,387 kWh results in projected GHG emissions of 98,060 metric tons CO<sub>2</sub>e, a reduction of:

**20,101 MT CO<sub>2</sub>e**

**9. *Alternative/advanced fuels*** (City program; GP policy ER6.2; target 2020)

Support and implement the California Energy Commission and State Air Resources Board goal for alternative/advanced fuels set forth in AB 1007, for non-petroleum fuel use of 20% by 2020 and 30% by 2030.

Data and assumptions for calculating GHG offset:

Assuming full achievement of the AB 1007 goals, changed fuel split in CACP software coefficients to be 20% in 2020 (16% biofuels, 4% electric/hydrogen) and 30% in 2030 (22% biofuels, 8% electric/hydrogen)

*Proportion of VMT:*

2020: Biodiesel – Heavy Duty 4%, Light Trucks 4%, Passenger Cars 2%; CNG - Buses 2%, Heavy Duty 1%; Gasoline – Light Trucks 28%, Passenger Cars 47.5%, Electricity – Passenger Cars 4%, Diesel – Heavy Duty 3.4%, Light Trucks 0.9%, Light Duty Vehicles 0.2%; Ethanol – Buses 1%, Heavy Duty Vehicles 1%, Light Duty Vehicles 1%.

total of 344,515 MT CO<sub>2</sub>e, a reduction of **48,811 MT CO<sub>2</sub>e**

2030: Biodiesel – Heavy Duty 6%, Light Trucks 5%, Passenger Cars 5%; CNG - Buses 2%, Heavy Duty 1%; Gasoline – Light Trucks 24%, Passenger Cars 40.9%, Electricity – Passenger Cars 8%, Diesel – Heavy Duty 2.4%, Light Trucks 0.6%, Light Duty Vehicles 0.1%; Ethanol – Buses 1%, Heavy Duty Vehicles 2%, Light Duty Vehicles 2%.

total of 291,685 MT CO<sub>2</sub>e, a reduction of **85,560 MT CO<sub>2</sub>e**

**10. *Incentives for alternative fuel infrastructure*** (City program; GP policy ER6.3; target 2015)

Give priority through expedited processing to projects providing infrastructure for alternative/advanced fuels.

Data and assumptions for calculating GHG offset:

Implementation measure for #9.

**11. *Small wind generators*** (City program; GP policy ER6.4; target 2020)

Identify and study regulatory obstacles to installing small individual or community wind generators, and prepare standards for siting, design, maintenance, and operation to ensure compatibility with adjoining land uses and protect environmental resources.

Data and assumptions for calculating GHG offset:

Assuming implementation of 20 small wind generators by 2020 and 50 by 2030, each with an average generation of 5,000 kWh annually (conservative assumption using the lowest average wind speed of 5 m/s and an average output for small wind generators)

Savings in 2020= 100,000 kWh = reduction of **24 MT CO<sub>2</sub>e**

Savings in 2030= 250,000 kWh = reduction of **60 MT CO<sub>2</sub>e**

**12. *Facilitate renewable energy technologies*** (City program; GP policy ER6.5; target 2020)

Promote flexible design review standards and facilitate use of renewable energy technologies through streamlined planning and development rules, codes, processing, and other incentives.

Data and assumptions for calculating GHG offset:

Assuming that changes in standards, rules, codes, etc. would result in 100 new solar installations of an average of 5 kW output by 2020 and 200 new solar installations of 5 kW output by 2030, and assuming industry standard output calculations and a conservative capacity factor of 16%, and operation 365 days per year, annual power generation would be:

Savings in 2020: 500 kW X \* 16% capacity factor \* 8760 hours per year = 700,800 kWh = **167 MT CO<sub>2</sub>e**

Savings in 2030: 1000 kW X \* 16% capacity factor \* 8760 hours per year = 1,401,600 kWh = **334 MT CO<sub>2</sub>e**

**13. *Solar energy*** (City program; GP policy ER6.6; target 2015)

Encourage the use of solar photovoltaic arrays on new construction, redevelopment, and significant remodel projects, as appropriate, taking into consideration project scale and budget, building size, orientation, roof type, and current energy use.

- (a) For multi-residential projects of three (3) or more units, require provision of a minimum two (2) kilowatts (kW) system per unit consistent with the City's Solar Energy System Design Guidelines, if physically feasible.
- (b) For 1- or 2-unit residential projects, require provision of 300 square feet rectangular unobstructed roof area free of mechanical equipment and vents facing south, east, or west in a manner that future photovoltaic installation would be consistent with the City's Solar Energy System Design Guidelines, if physically feasible.
- (c) For commercial and industrial projects, provide a minimum of five (5) kW of photovoltaic panel systems for every new square foot of building net floor area; or a photovoltaic system sized to meet a minimum of 30% of the average projected energy demand for the structure, whichever is lower.

Data and assumptions for calculating GHG offset:

Assuming 5 hours of daily irradiance and operation 365 days per year



## 2020

Half of development between 2010 and 2020 subject to this given 2015 target year

So for multi-family: 1108 units X 50% \* 2kW \*75% of units required to do this = 831 kW, 831 kW \* 16% capacity factor \* 8760 hours per year = 1,164,730 kWh per year = **278 MT CO<sub>2</sub>e**

For single family: 163 units X 50% \* 5kW \*10% of units voluntarily installing = 41 kW, 41 kW \* 16% capacity factor \* 8760 hours per year = 57466 kWh per year = **14 MT CO<sub>2</sub>e**

For non-residential: 841095 sf X 50% \*5W= 2,103 kW, 2,103 kW \* 16% capacity factor \* 8760 hours per year = 2,947,565 kWh per year = **704 MT CO<sub>2</sub>e**

## 2030

¾ of development between 2010 and 2030 subject to this given 2015 target year

So for multi-family: 2437 units X 75% \* 2kW \*75% of units required to do this = 2,742 kW, 2,742 kW \* 16% capacity factor \* 8760 hours per year = 3,843,187 kWh per year = **918 MT CO<sub>2</sub>e**

For single family: 358 units X 75% \* 5kW \*10% of units voluntarily installing = 134 kW, 134 kW \* 16% capacity factor \* 8760 hours per year = 187,814 kWh = **45 MT CO<sub>2</sub>e**

For non-residential: 1,850,251 sf X 75% \*5W= 6,938 kW, 6,938\* 16% capacity factor \* 8,760 hours per year =9,724,301 kWh per year = **2,324 MT CO<sub>2</sub>e**

### 2.3.3 Travel and Land Use Measures

#### TRAVEL & LAND USE: ADDITIONAL FUTURE CITY ACTIONS

##### City Government Operations

#### 14. **Fleet Vehicles** (City programs; ongoing through 2030)

Continue gradual transition of City fleet to use more alternative technologies and fuels that lower carbon emissions. Continue to expand fleet operations efficiency measures, such as a program for pooling medium and heavy-duty City trucks.

##### Data and assumptions for calculating GHG offset:

Assuming 10% reduction in GHGs from fleet petroleum fuel use by 2020 and 20% reduction in GHGs from fleet petroleum fuel use by 2030:

City fleet fuel consumption in 2010 (per Gary Horwald, City fleet manager): 27,110 gallons B20, 1,541 gallon equivalents CNG, 32,041 gallons diesel, and 202,060 gallons gasoline. GHG emissions from this quantity of fuel = 2,420 MT CO<sub>2</sub>e

2020: Reduction of **242 MT CO<sub>2</sub>e**

2030: Reduction of **484** MT CO<sub>2</sub>e

**15. *City employee travel changes*** (City programs; ongoing through 2030)

Continue and expand programs to reduce City employee travel emissions, including through alternate work hours and telecommuting; and reduced commute and work-related vehicle trips through vehicle sharing, walking, bicycling, and transit.

Data and assumptions for calculating GHG offset:

Assuming similar reduction in City employee VMT to the successful 2009-2010 program, additional reduction of 500,000 City employee commute VMT by 2020 and 1,000,000 City employee commute VMT by 2030.

2020: Reduction in commute GHG emissions: **200 MT CO<sub>2</sub>e**

2030: Reduction in commute GHG emissions: **345 MT CO<sub>2</sub>e**

**Communitywide Measures**

**16. *Mixed use land use policies*** (2011 General Plan policies; ongoing though 2030)

Implement new policies for smaller unit and density incentives to further encourage a mix of commercial and residential land uses, particularly in the City Downtown, and to encourage workforce and affordable housing close to transit and commercial services.

Data and assumptions for calculating GHG offset:

Addressed in traffic model

**17. *Sustainable Neighborhood Plans – travel and land use.*** (City GP LG15.1; ongoing to 2030)

Develop sustainable neighborhood plans that would enhance livability and accessibility, and reduce the community's carbon footprint. The plans would include measures to address land use, circulation, and infrastructure issues, such as housing types and affordability; neighborhood-serving commercial and institutional uses; community services; transit, vehicle, bicycle, and pedestrian connectivity; open space, street tree, and landscaping improvements; and parking policies.

Data and assumptions for calculating GHG offset:

Addressed in traffic model

**18. *Experimental development*** (City program; target 2015; ongoing through 2030)

Establish permitting process and development standard flexibility on a limited basis to allow new development techniques and materials that could provide reduced carbon emissions. Examples may include green roofs and straw bale construction.

Data and assumptions for calculating GHG offset:

BMP

**19. *Complementary land uses*** (City program; target 2020; ongoing through 2030)

As part of in-fill mixed-use development Downtown and the preparation of Sustainable Neighborhood Plans, facilitate complementary new uses not present (e.g., supermarkets, parks, schools), and allow local-serving businesses near employment centers (e.g., childcare, restaurants, banks, medical offices, drug stores)

Data and assumptions for calculating GHG offset:

Addressed in traffic model

**20. *Electric vehicle charging stations*** (City program; target 2015; ongoing through 2030)

Continue installation of universal electric vehicle charging stations in designated City-owned parking lots. Work with the business community and community interest groups to identify areas, design standards, and funding sources to facilitate installation of additional charging stations in commercial, institutional, and residential areas of the community.

Data and assumptions for calculating GHG offset:

Conservative assumption of 0.5% reduction in GHG from vehicles in 2020 due to replacement of petroleum powered vehicles, with a 0.8% reduction in 2030. Reflects some increase in Scope 2 emissions from increased consumption of electricity. Low end of range listed in CAPCOA quantification guide for EV-facilitating policies.

$$2020 = 0.5\% * 393,326 = \mathbf{1,967 \text{ MT CO}_2\text{e}}$$

$$2030 = 0.8\% * 377,245 = \mathbf{3,018 \text{ MT CO}_2\text{e}}$$

**21. *Pedestrian infrastructure*** (City program; GP policy C1.1; ongoing to 2030)

Continue to implement additional pedestrian facility improvements, such as sidewalk in-fills and safe routes to schools; universal access with corner curb ramps; Pedestrian Master Plan measures for crossing designs and pedestrian amenities (e.g., lighting, benches, trees, shelters, newspaper dispensers, landscaping).

Data and assumptions for calculating GHG offset:

From Nelson-Nygaard analysis for Plan SB EIR: 1% increase in alternative mode use for work trips, 0.5% increase in alternative mode use for other trips. Conservatively use 0.5% reduction assumption for full implementation in 2030, and 0.25% for partial implementation in 2020.

$$2020: \text{ Assuming } 0.25\% \text{ reduction in internal VMT, results in reduction in CO}_2\text{e of: } \mathbf{327 \text{ MT CO}_2\text{e}}$$

$$2030: \text{ Assuming } 0.5\% \text{ reduction in internal VMT, results in reduction in CO}_2\text{e of: } \mathbf{584 \text{ MT CO}_2\text{e}}$$

**22. *Bicycle infrastructure improvements*** (City program; GP policy C1.1; ongoing to 2030)

Continue to implement additional Bicycle Master Plan measures (e.g., bicycle facilities on streets and public places, policies for bicyclists on major routes during peak travel periods, and funding for bike lane maintenance) and safe routes to school improvements; and coordinate with South Coast agencies to expand regional routes and paths.

Data and assumptions for calculating GHG offset:

From Nelson-Nygaard analysis for the Plan SB EIR: 0.46% reduction in vehicle trips.

2020: Assuming 0.23% reduction in total VMT by 2020, results in a reduction in CO<sub>2</sub>e of:

**905 MT CO<sub>2</sub>e**

2030: Assuming 0.46% reduction in total VMT by 2030, results in a reduction in CO<sub>2</sub>e of:

**1,735 MT CO<sub>2</sub>e**

**23. *Personal transportation*** (Joint City/ private program; GP policy C1.2; ongoing to 2030)

Work with business and community interest groups to establish community car sharing and bicycle sharing programs.

Data and assumptions for calculating GHG offset:

Assume 1% reduction in internal City VMT for bicycle sharing for 2020 and 2030, assume 1% reduction in VMT for an estimated 500 people joining a car-sharing service by 2020 and, and 1.5% reduction in VMT for an estimate 1000 people joining a car-sharing service by 2030.

2020: Bicycle sharing reduction = **1,308 MT CO<sub>2</sub>e**

2020: Car sharing reduction = **1,308 MT CO<sub>2</sub>e**

2030: Bicycle sharing reduction = **1,168 MT CO<sub>2</sub>e**

2030: Car sharing reduction = **1,751 MT CO<sub>2</sub>e**

**24. *Intermodal connections*** (City program; GP policy C1.3; ongoing to 2030)

Continue to improve intermodal route connections and infrastructure for vehicles, public transit (buses, shuttles, rail, and taxis), car pools, carshare/bikeshare programs, bicycles, and pedestrian routes.

Data and assumptions for calculating GHG offset:

Assuming 0.5% reduction in VMT based on solely improved intermodal connections/infrastructure.

2020: reduction of **1,967 MT CO<sub>2</sub>e**

2030: reduction of **1,886 MT CO<sub>2</sub>e**

**25. *Optimize roadway capacity, flow and safety*** (City program; GP C1.4; ongoing to 2030)

Continue to use Intelligent Transportation System (ITS) techniques such as signal timing to optimize capacity and improve flow and safety for vehicles, pedestrians, bicycles, and buses.

Data and assumptions for calculating GHG offset:

Based on FHWA study, a minimum reduction of 4% in fuel consumption was observed with comprehensive ITS techniques. Assume half of ITS strategies in place by 2020 and the remainder by 2030.

2020: Reduction of 2% in fuel consumption = reduction of **7,867 MT CO<sub>2</sub>e**

2030: Reduction of 4% in fuel consumption = reduction of **15,090 MT CO<sub>2</sub>e**

**26. *Mid-block traffic Improvement and connectivity techniques*** (City program; C1.4; to 2030)

As part of capital improvements and private development, continue to implement measures to improve mid-block traffic flow, connectivity, and alternative travel mode access, such as shared driveway access and parking; effective access design and driveway spacing; median treatment; traffic control refinement; and design of improvements for buses, pedestrians, and bicycles.

Data and assumptions for calculating GHG offset:

BMP

**27. *Regional transportation and commuter transit*** (City/joint agencies; GP policy C2; to 2030)

Continue to coordinate regionally with SBCAG, MTD, railroads, cities, counties, Caltrans, and other agencies and the private sector to improve rail, bus, and carpool options for commuters and improve energy efficiency of transportation network in conjunction with SB 375 Sustainable Communities planning. Include efforts to improve inter-county multi-modal and rail and express bus commuting, and to improve bus service headways during peak periods to five minutes on primary transit corridors. Study and pursue all feasible funding mechanisms to improve transit service.

Data and assumptions for calculating GHG offset:

2020: Assuming a 10% increase in commuter and regional service, and a conservative elasticity of demand for service at 0.6% per CAPCOA guidance, would result in a 6% reduction in commute VMT. Reduction in GHG emissions = **4,284 MT CO<sub>2</sub>e**

2030: Assuming a 20% increase in commuter and regional service, and a conservative elasticity of demand for service at 0.6% per CAPCOA guidance, would result in a 12% reduction in commute VMT. Reduction in GHG emissions = **7,974 MT CO<sub>2</sub>e**

**28. *Vehicle speeds*** (City program; GP policy C3; target 2015)

Advocate for legislation to promote speed limits that consider street design, adjacent land uses, and mix of travel modes used.

Data and assumptions for calculating GHG offset:

BMP

**29. *Bus pull-out right of way*** (City program; GP policy C4; target 2015)

Advocate legislation to facilitate buses in turn-out pockets merging back into traffic.

Data and assumptions for calculating GHG offset:

BMP

**30. *Circulation improvements*** (City program; GP policy C6; ongoing through 2030)

Identify intersection deficiencies, feasible improvements and funding, and install improvements.

Data and assumptions for calculating GHG offset:

BMP

**31. *Transit passes*** (City/joint agency program; GP policy C6.3; ongoing to 2030)

Establish program to require employer-paid transit passes for new development and employers, and work with regional partners to include regional bus and rail services, and provide compatible fare media.

Data and assumptions for calculating GHG offset:

Fehr & Peers analysis from Plan SB: 8.2% reduction in employee trips – apply to commute VMT

2020: Assume 4.1% reduction in commute VMT: **2,927 MT CO<sub>2</sub>e**

2030: Assume 8.2% reduction in commute VMT: **5,449 MT CO<sub>2</sub>e**

**32. *Parking Policies*** (City program; GP policies C6.4, C6.5, C7; ongoing to 2030)

Continue to refine parking policies to support traffic management and vehicle trip emissions reduction, including expansion of programs as supported by the community to provide an employer parking cash-out program; on-street parking pricing; changes to parking requirements for development such as parking maximums and unbundled parking; changes to downtown parking district; shared parking policies; and changes to residential parking programs.

Data and assumptions for calculating GHG offset:

Assuming robust parking policies are implemented, and based on Nelson-Nygaard report and Fehr & Peers TDM model runs for the Plan SB EIR, assume an 8% reduction in total VMT for year 2020 and 16% total reduction for 2030:

2020: Reduction of **31,466 MT CO<sub>2</sub>e**

2030: Reduction of **69,973 MT CO<sub>2</sub>e**

**33. *Car-pooling and telecommuting*** (Joint public/private program; GP policy C6.7; to 2030)

Continue to work with public and private interests and regional partners to promote opportunities for increased carpooling and telecommuting.

Data and assumptions for calculating GHG offset:

Based on Nelson-Nygaard report on Plan SB, assumes 5% reduction in commute VMT by 2020 and 7.5% reduction in commute VMT by 2030:

2020: Reduction of **3,570 MT CO<sub>2</sub>e**

2030: Reduction of **4,984 MT CO<sub>2</sub>e**

**34. *Car-sharing*** (Joint public/private program; GP policy C6.8; ongoing to 2030)

Continue to work with public and private interests and regional partners to support establishment of car-sharing programs and facilities.

Data and assumptions for calculating GHG offset:

According to Nelson-Nygaard report, UC Berkeley research indicates 50% reduction in trips for members of car-sharing program.

Assuming that 500 additional people sign up for car-sharing program due to expanded access by 2020 and 1,000 by 2030:

50% of per capita vehicular GHG for 500 people in 2020, based on Plan SB model = **1,118 MT CO<sub>2</sub>e**

50% of per capita vehicular GHG for 1000 people in 2030, based on Plan SB model = **1,990 MT CO<sub>2</sub>e**

**35. *Development impact fees*** (City program; GP EF26, C1.1; target 2015)

Conduct a feasibility study toward establishing development fees to help fund circulation improvements. Consider a fee scale based on project locations, extent of mixed-use development, and extent of green space loss.

Data and assumptions for calculating GHG offset:

BMP

**36. *Street widths*** (City program; ongoing through 2030)

Continue to implement measures in appropriate locations to reduce street widths or vehicle lanes, while maintaining adequate emergency access, in order to manage traffic and safety and accommodate complete street improvements for pedestrian and bicycle travel.

Data and assumptions for calculating GHG offset:

BMP

**37. *New development vehicle emissions*** (City program; GP Policy ER1.2; target 2015)

Require new development, redevelopment and substantial remodels to demonstrate how the project will support the City in attaining regional GHG vehicular emissions reduction targets. The Santa Barbara region has targets of zero net increase (from 2005 levels) in per capita GHG vehicular emissions in 2020 and 2035. These regional targets were adopted in 2010 by the Santa Barbara County Association of Governments (SBCAG) and the California Air Resources Board (CARB) pursuant to SB 375.

Data and assumptions for calculating GHG offset:

Based on projections incorporating State policies, these targets would be achieved without further measures. Therefore, no reductions are associated with this measure.

**38. *Marine Shipping Emissions*** (City program; GP Policy ER9; ongoing through 2030).

Support regional and State efforts to reduce marine shipping emissions.

Data and assumptions for calculating GHG offset:

Marine shipping emissions are not captured in the City's inventory as they are considered outside City control; therefore, any reductions associated with this measure cannot be applied to City emissions.

## 2.3.4 Vegetation

### VEGETATION: ADDITIONAL FUTURE CITY ACTIONS

#### Communitywide Measures

**39. *Tree planting*** (City program; target 2030)

Increase carbon sequestration through the planting of additional trees, with a goal of 1,000 new trees by 2030.

Data and assumptions for calculating GHG offset:

2020: 500 new trees 0.0354 MT CO<sub>2</sub>/year for miscellaneous tree (CAPCOA) = **17.7 MT CO<sub>2</sub>e/year**

2030: 1,000 new trees X 0.0354 MT CO<sub>2</sub>/year for miscellaneous tree (CAPCOA) = **35.4 MT CO<sub>2</sub>e/year**

**40. *Street trees*** (City program; target plan update 2015; ongoing through 2030)

Update the Street Tree Master Plan to establish and implement measures addressing management and community objectives for long-term tree preservation and maintenance, and effectively allocate resources. Issues to be addressed would include canopy cover, land uses, infrastructure constraints, environmental resources, and aesthetics.

Data and assumptions for calculating GHG offset:

BMP

**41. *Urban Tree Protection and Enhancement*** (City program; GP Policy ER11.3)

Create a citywide enforcement and mitigation program for removal, severe pruning without a permit, or neglect, of protected trees (street trees, trees in front yards, and historic or otherwise designated trees).

Data and assumptions for calculating GHG offset:

BMP

**42. *Urban heat island effect*** (City program; GP policy ER1.3; target 2020)

Reduce the urban heat island effect by establishing standards to decrease impermeable surfaces and building areas relative to lot size; providing incentives such as expedited permitting for building projects that incorporate cool roofs and green roofs; and coordinating with the Fire Department and Transportation Division to establish any appropriate changes to roadway standards to allow more permeable surfaces.

Data and assumptions for calculating GHG offset:

Assume 250,000 sf conversion by 2020, 500,000 sf by 2030. Assumes profile of retail facility would be typical.



Assumes half of area converted is pre-1980 construction and half is post-1980. Assumes 2438 heating degree days for Santa Barbara.

### 2020

Reduction Factors for Retail Buildings in this Heating Degree Day Group (Akpari & Konopacki 2005)

1. Electricity: 2244 kg CO<sub>2</sub>e/ 1000 sf for pre-1980, 2265 kg CO<sub>2</sub>e/ 1000 sf for post-1980 = 280500 kg CO<sub>2</sub>e + 283,125 kg CO<sub>2</sub>e = 563,625 kg CO<sub>2</sub>e = **563.625 MT CO<sub>2</sub>e**
2. Gas: 967 kg CO<sub>2</sub>e/ 1000 sf for pre-1980, 969 kg CO<sub>2</sub>e/ 1000 sf for post-1980 = 120875 kg CO<sub>2</sub>e + 121,125 kg CO<sub>2</sub>e = 242000 kg CO<sub>2</sub>e = **242.00 MT CO<sub>2</sub>e**

### 2030

Reduction Factors for Retail Buildings in this Heating Degree Day Group (Akpari & Konopacki 2005)

3. Electricity: 2244 kg CO<sub>2</sub>e/ 1000 sf for pre-1980, 2265 kg CO<sub>2</sub>e/ 1000 sf for post-1980 = 561000 kg CO<sub>2</sub>e + 566250 kg CO<sub>2</sub>e = 1127250 kg CO<sub>2</sub>e = **1127.250 MT CO<sub>2</sub>e**
- Gas: 967 kg CO<sub>2</sub>e/ 1000 sf for pre-1980, 969 kg CO<sub>2</sub>e/ 1000 sf for post-1980 = 241750 kg CO<sub>2</sub>e + 242250 kg CO<sub>2</sub>e = 484000 kg CO<sub>2</sub>e = **484.0 MT CO<sub>2</sub>e**

#### **43. Regional open space preservation** (City/joint agency program; GPU OP2.3; ongoing to 2030)

Coordinate with the County of Santa Barbara, School District, and recreational service providers of the cities of Goleta and Carpinteria on regional open space protection in the Las Positas Valley, foothills, and other areas determined appropriate.

Data and assumptions for calculating GHG offset:

BMP

## **2.3.5 Waste Reduction Measures**

### **WASTE REDUCTION: ADDITIONAL FUTURE CITY ACTIONS**

#### **City Government Operations**

#### **44. City business purchasing guidelines** (City program; GP Policy PS8.5; target 2015)

Amend City procurement guidelines to increase use of goods made from re-used materials in City government operations.

Data and assumptions for calculating GHG offset:

BMP

**45. *City facilities recycling*** (City program; target 2015)

Establish additional comprehensive recycling programs at City facilities with the target of reaching overall City operations waste diversion rate of 50% by 2015 and 60% by 2020.

Data and assumptions for calculating GHG offset:

BMP

**46. *Electronic processes*** (City program; target 2014)

Increase City processes done electronically to reduce printing. These will include more use of scanning and email technology to reduce printing of legal documents; and coordinating an electronic campaign filing system for candidates, committees, and elected officials.

Data and assumptions for calculating GHG offset:

BMP

**47. *City coordination with region*** (City program; through 2020)

Continue coordination with Santa Barbara County and other cities in solid waste management planning.

Data and assumptions for calculating GHG offset:

BMP

**Methane Reduction**

**48. *Waste-to-energy facility at landfill*** (County/City program; GP Policy PS8.4; target 2015)

Continue to partner with the County of Santa Barbara and other participating South Coast agencies in establishing a waste-to-energy conversion technology facility at Tajiguas Landfill.

Data and assumptions for calculating GHG offset:

Assumes that City's share of Tajiguas waste remains constant at 44.6% (2010 value)

Estimated 1,000 kW annually (planning documents for anaerobic digester), which equates to approximately 5,000,000 kWh given expected operating cycles.

2,230,000 kWh offset from electricity consumption = **533 MT CO<sub>2</sub>e (applies to all years)**

No change in landfill GHG emissions as methane is currently being collected and flared, and there is no expectation that methane capture would be increased with the digester.

## **Communitywide Reduced Waste Disposal and Increased Recycling**

### **49. *Communitywide waste diversion goal*** (City program; target 2020)

Achieve 75% overall waste diversion from landfill disposal by 2020 through waste reduction, reuse, recycling, and composting.

#### **Data and assumptions for calculating GHG offset:**

Assume 10% reduction in total landfilled waste and alter waste stream mix to be .

2020: Paper: 12%, Food Waste: 16%, Plant Debris 10%, Wood or Textiles 10%, all other waste 52%

Total Waste Disposal: 75,597 tons, results in a reduction in CO<sub>2</sub>e of **1,121 MT CO<sub>2</sub>e**

**2030:** Paper: 12%, Food Waste: 16%, Plant Debris 10%, Wood or Textiles 10%, all other waste 52%

Total Waste Disposal: 78,098 tons, results in a reduction in CO<sub>2</sub>e of **1,158 MT CO<sub>2</sub>e**

### **50. *Regional material recovery facility*** (County/City program; City Strategic Plan; target 2015)

Continue pursuing the establishment and operation of regional MR facility on South Coast.

#### **Data and assumptions for calculating GHG offset:**

BMP

### **51. *Waste audit information for businesses*** (City programs; GP Policy PS8.5; target 2015)

Continue conducting commercial business waste audits with the Green Business Program.

#### **Data and assumptions for calculating GHG offset:**

BMP

### **52. *Recycling education campaigns*** (City program; GP Policy PS8.5; target 2015)

Continue to develop recycling outreach education and incentive programs to highlight the economic and environmental benefits of recycling.

#### **Data and assumptions for calculating GHG offset:**

BMP

### **53. *Single-use materials and packaging reduction*** (City program; GP Policy PS8.5; target 2015)

Consider City ordinance options to discourage single-use materials and reduce packaging.

#### **Data and assumptions for calculating GHG offset:**

BMP

- 54. *Business and multi-family sector recycling ordinance*** (City program; GP Policy PS8.5; 2015)  
Develop a City ordinance requiring recycling in the business and multi-family residential sectors to achieve compliance with AB 341 legislation.

Data and assumptions for calculating GHG offset:

BMP

- 55. *Construction waste hauling program enforcement*** (City program; GP Policy PS8.5; 2015)  
Increase monitoring and enforcement of City Unscheduled Hauling Ordinance to ensure that most construction debris is recycled.

Data and assumptions for calculating GHG offset:

BMP

- 56. *Increased recyclables sorting*** (City program; GP Policy PS8.5; target 2015)  
Pursue increased waste diversion capture through increased sorting, via waste management contracts or the regional resource recovery facility project.

Data and assumptions for calculating GHG offset:

BMP

- 57. *School waste diversion*** (City/District program; target 2015)  
Continue City program with district schools to establish mixed recyclables and food scrap collection programs at Santa Barbara high schools and junior high schools.

Data and assumptions for calculating GHG offset:

BMP

- 58. *Materials reuse & recycling information for builders*** (City program; GP PS8.2; target 2015)  
*Establish data and outreach to connect builders to outlets for salvage and recycled building materials.*

Data and assumptions for calculating GHG offset:

BMP

- 59. *Building space guidelines for waste management*** (City program; GP Policy PS8.3; 2015)

Revise the City's Space Enclosure Guidelines for new building to provide additional space for recycling, green waste, and food scrap collection.

Data and assumptions for calculating GHG offset:

BMP

**60. *Additional recycling materials*** (City program; GP Policy PS8.5; target 2020)

Pursue measures to add more materials to recycling and organics diversion (e.g., textiles, wood, and film plastics).

Data and assumptions for calculating GHG offset:

BMP

**61. *Additional greenwaste capacity*** (City program; target 2020)

Undertake measures to increase local greenwaste capacity.

Data and assumptions for calculating GHG offset:

BMP

**62. *Additional recycling in public places*** (City program; target 2020)

Install additional recycling containers in public parks and streets (identify # goal?)

Data and assumptions for calculating GHG offset:

BMP

**63. *Additional composting*** (City program; target 2020)

Coordinate with public and private entities to increase composting.

Data and assumptions for calculating GHG offset:

BMP

**64. *Single-use bag reduction*** (City program; target 2015)

Implement an ordinance to regulate the distribution of single-use bags by retailers in the City.

Data and assumptions for calculating GHG offset:

BMP

## 2.3.6 Water Conservation Measures

### WATER CONSERVATION: ADDITIONAL FUTURE CITY ACTIONS

#### City Government Operations

##### 65. City facilities (City program; ongoing through 2030)

Continue implementing City policies for water-conserving equipment upgrades and practices at City government facilities. Implement additional facility, landscape, and procedure improvements to further conserve water as identified and determined feasible.

#### Data and assumptions for calculating GHG offset:

Typical improvements within City facilities would include installation of the following: Replacement of standard urinals with waterless type, replacement of high flow (4 gpf) with low flow (1.2 gpf) toilets, installation of restricting aerators on faucets reducing 0.5 gpm from 2 gpm.

Assuming further implementation of these measures within City facilities would save 650,000 gallons or approximately 2 AFY by 2020, and assuming water eliminated is SWP water, so pumping factor = 2826 kWh per acre-foot (per CAP inventory assumptions)

would result in energy savings of: 5,635 kWh = **1 MT CO<sub>2</sub>e**

Assuming further implementation of these measures within City facilities would save 1,000,000 gallons or approximately 3 AFY by 2030, and assuming water eliminated is SWP water, so pumping factor = 2826 kWh per acre-foot (per CAP inventory assumptions)

would result in energy savings of: 8,673 kWh = **2 MT CO<sub>2</sub>e**

#### Communitywide Measures

##### 66. Community water conservation (City program; LTWSP and GP PS6.1; ongoing through 2030)

Continue and expand City water conservation measures as identified in the City Long Term Water Supply Plan (2011), including services to water customers, public information and education, landscape design standards, building standards, and regional coordination. The year 2020 water use reduction target for the Santa Barbara community is to reduce 20% per capita water use from the prior baseline level of 154 gallons per capita per day (GPCD) to 117 GPCD in 2020. The 2009 level for the City was 130 GPCD. Actions to further encourage or require water conservation may include the following:

- (a) *Marketing plan.* Continue and expand efforts, such as establishment of water wise landscape and homeowner association recognition programs; enhance outreach materials including dual-language communications materials for gardeners; continue and enhance water wise gardening workshops, gardening tours, and school programs.

- (b) *Green building design.* Work with local Green Building associations, City Building Division, developers, designers, vendors to promote incorporating water efficiency into building design.
- (c) *Commercial/industrial evaluation and incentives.* Establish program to offer free water survey and evaluation by trained technical professional to 100 highest water user accounts (such as hotels, laundries, etc.). Follow-up communication would be provided on recommended measures for the business to save water and money, and City financial incentives may be offered based on cost/benefit analysis and as City funding sources allow.
- (d) *Free mulch.* Establish a City subsidy for delivery charges for mulch obtained free from the County or other sources (currently \$25-40). Use of mulch benefits water savings by keeping irrigation or storm water on site and reducing run-off and evaporation.
- (e) *Toilet retrofits prior to building sales.* To coincide with California state law Senate Bill 407, establish a program in 2017 (residential) and 2019 (commercial) to work with the real estate industry to require a certificate of compliance be submitted to the City that efficient fixtures are in place or installed at the time of sale prior to close of escrow. Consider allowing this certification to be made as part of the conventional private building inspection report process.

Data and assumptions for calculating GHG offset:

Assuming consistency with the City's Long Range Water Supply Plan – Program B.

By 2020, most reduction would have occurred based on projections in water supply plan – estimated reduction of 430 AFY over plumbing code reductions that are part of State policy, based on Long Range Water Supply Plan figure

By 2030, reduction in use of 498 AFY over plumbing code reductions that are part of State policy

Assumes water eliminated is SWP water, so pumping factor = 2826 kWh per acre-foot (per CAP inventory assumptions)

Assumes treatment process is typical, so treatment and distribution factor = 4244 kWh per acre-foot (CAPCOA Table WSW-3.1)

Assumes that the eliminated water consumption would similarly reduce wastewater generation and required treatment = 5864.6 kWh per acre-foot (CAPCOA Table WSW-3.1)

2020 Incremental electricity reduction = 5,561,878 kWh = **1329 MT CO<sub>2</sub>e**

2030 Incremental electricity reduction = 6,441,431 kWh = **1539 MT CO<sub>2</sub>e**

**67. Recycled water** (City program; LTWSP and GPU PS6.2; target 2030)

Per the Long Term Water Supply Program to the year 2030, continue to expand existing City programs for use of recycled water for irrigation at parks, schools, golf courses, and new development near supplies, targeting 300 acre-feet/year (AFY) expansion for a total of 1,100 AFY. Evaluate methods to optimize the feasible use of recycled water in place of potable water. Work towards reducing or eliminating the need for blending potable water with recycled water, based on economic, regulatory, and water supply requirements.

Data and assumptions for calculating GHG offset:

BMP

**68. On-site water storage and reuse** (City program; GPUPS6.3; target 2020)

Identify more detailed guidelines for use of cisterns and grey water in new development and for retrofitting existing development.

Data and assumptions for calculating GHG offset:

Assuming 1,000 additional residents are using on-site water storage and reuse systems by 2020, and 1500 by 2030:

40 gallons of graywater per person per day (from California Plumbing Code)

Assuming same energy intensity for potable water supply, distribution treatment, and wastewater treatment from Measure 65:

2020 = 40,000 gallons per day of potable water use avoided = 44.805 AFY = 579543.75 = **138 MT CO<sub>2</sub>e**

2030 = 60,000 gallons per day of potable water use avoided = 67.208 AFY = 869315.6 kWh = **208 MT CO<sub>2</sub>e**



## Appendix A4

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Technical Memorandum: Projection of Development and Vehicle Miles  
Travelled for 2020





## **Technical Memorandum: Projection of Development and Vehicle Miles Travelled for 2020, City of Santa Barbara Climate Action Greenhouse Gas Inventory and Forecast**

This memorandum has been prepared by AMEC Environment & Infrastructure to describe the methodology to be employed in the projection of development and vehicle miles travelled (VMT) for the year 2020.

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### Residential and Non-Residential Development

It is assumed that projected development to 2030 Plan SB development caps would occur at a consistent rate and is spread over a 22-year period (consistent with EIR). The annualized rate was derived from the development distribution spreadsheet provided by the City for 2030 and approved GP (February 15, 2012), projected to the year 2020.

#### *Non-Residential sf:*

1. Service Commercial: 148,562 sf City, 12,245 sf Sphere
2. Retail: 111,251 sf City, 0 Sphere
3. Office: 127,151 sf City, 0 Sphere
4. Industrial: 81,797 sf City, 0 Sphere
5. Institutional: 262,980 sf City, 40,567 sf Sphere
6. Hotel: 109,354 sf City, 28,189 sf Sphere

#### *Residential Units:*

- 1,524 units City, 220 Sphere

These projections were further refined into single family and multi-family residential, based on historical ratios (consistent with the Plan SB EIR):

- a. Single Family: 195 units City, 28 Sphere
  - b. Multi-Family and Second Units: 1,329 units City, 192 Sphere
- 

### Vehicle Miles Travelled:

First, a new baseline for 2010 is established using the No Project projection from the Plan SB traffic model to estimate increase in VMT from the previous 2008 "existing condition" to the new 2010 baseline. This baseline is also corrected from that used in the Plan SB EIR by counting only 50% of VMT from trips that have an origin or destination outside the City, consistent with guidance from the SB 375 Regional Targets Advisory Committee (RTAC, September 2009) and the Santa Barbara County Clean Air Plan in progress.

- No Project Annual increase in VMT from 2008-2030 = 6,226,821/ year
- So 2010 had 859,869,065 VMT, an increase of 12,453,642 VMT from the old baseline 2008 VMT.

The EIR analysis concluded that VMT for the Hybrid would be roughly comparable to the Plan SB scenario because the lack of TDM measures would offset the reduction in trip generation resulting from less non-residential square footage. Relative to existing conditions, Plan Santa Barbara was forecast by Fehr & Peers to increase overall daily trips by 13%, while the Hybrid Alternative would increase overall daily trips by 11%. VMT estimates for Plan Santa Barbara included the benefits of the TDM program only for trip occurring in during the peak hours, so if those were applied to the full day's trips, it is likely that they would be nearly the same.

In the absence of a new transportation model run, the starting point is a pro-rated version of the 2030 Plan SB forecast assuming a constant rate of increase in VMT, and counting only 50% of VMT from trips that have an origin or destination outside the City, consistent with the SB 375 Regional Targets Advisory Committee (RTAC, September 2009)

- Plan SB Annual increase in VMT from 2008-2030 = 5,893,521/ year
- So 2020 would experience 918,804,275 VMT, an increase of 58,935,210 VMT from the new baseline 2010 VMT.

These numbers include the Sphere. Excluding Sphere-generated VMT provides the following numbers:

- Plan SB 2020: Annual increase in VMT from 2008-2030 = 5,156,831/ year
- So 2020 would experience 911,437,375 VMT, an increase of 51,568,310 VMT from the new baseline 2010 VMT.

The final GP included 350,000 sf (19%) more non-residential sf than the Hybrid Alternative. Development would also be less focused within the Downtown area, resulting in a greater number of trips generated by residential development and a greater average trip distance. Therefore, a factor to increase VMT as compared to the Hybrid or the Plan SB scenario is required. Our suggestion is to "split the difference" between the trip generation identified for the No Project Alternative and for the Plan SB scenario, which would result in an additional annual growth increment of 166,650 VMT for the City and 145,819 VMT if excluding the Sphere. The resulting VMT would be:

- Final GP Policies 2020: Annual increase in VMT from 2008-2030 = 6,060,171/ year
- So 2020 would experience 920,470,775 VMT, an increase of 60,601,710 VMT.

These numbers include the Sphere. Excluding Sphere-generated VMT provides the following numbers:

- Final GP Policies 2020: Annual increase in VMT from 2008-2030 = 5,302,650/ year
- So 2020 would experience 912,895,565 VMT, an increase of 53,026,500 VMT.

## Appendix A5

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Technical Memorandum: Emissions from Aircraft Traffic at Santa Barbara  
Airport





## **Technical Memorandum: Addressing Emissions from Aircraft Traffic at Santa Barbara Airport; City of Santa Barbara Climate Action Greenhouse Gas Inventory and Forecast**

This memorandum has been prepared by AMEC Environment & Infrastructure (AMEC) to provide information to the City of Santa Barbara regarding standard industry practices for inventory of GHG emissions for an airport within a municipal jurisdiction.

In a 2011 study comparing 18 GHG inventories across the country (Blackhurst et al. 2011), nine of the GHG inventories report emissions from air travel (Scope 1 or Scope 3 emissions, depending on whether the airport is located within the City or not), three indicate that air travel is out of scope, and the remainder are not explicit (may or may not include them).

Among recent GHG inventories in California, the City of Riverside (2010) included emissions from their small corporate-focused airport, basing emissions strictly on fuel sales at the airport. This is the methodology recommended by the ICLEI International Local Government GHG Emissions Analysis Protocol. However, at a commercial airport like SBA this method is not typically used as it so substantially increases the GHG emissions and the City has so little control over those emissions. Most California cities with commercial airports have either not completed community GHG inventories (e.g., Los Angeles) or excluded airports from the inventory (e.g., San Francisco, San Diego).

The Bay Area Air Quality Management District (BAAQMD) provided 2010 guidance that the methods to apportion emissions from air travel to community inventories are currently inconsistent and highly speculative. At this time they do not recommend that emissions from air travel be included in community GHG inventories (BAAQMD 2010). BAAQMD recommends that ground emissions from an airport still be included in the inventory, however. This refers to building energy use, ground fleet vehicles, etc., as well as fuel used by aircraft at the gate. Emissions from providing electricity to planes at the gate should be counted in the community inventory as utility-provided electricity.

### **References**

Bay Area Air Quality Management District. 2010. GHG Plan Level Quantification Guidance. [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/GHG%20Quantification%20Guidance\\_5\\_3\\_10.ashx](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/GHG%20Quantification%20Guidance_5_3_10.ashx)

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