Memo

455 Capitol Mall, Suite 210
Sacramento, CA 95814
(916) 444-7301

Date: August 26, 2010

To: David Morrison, Donald Rust, and Heidi Tschudin (Yolo County)

From: Honey Walters and Heather Phillips (Ascent Environmental, Inc.)

Subject: **Final Yolo County Historic Greenhouse Gas Emissions Inventory Results and Peer Review of the Base-Year and Build-Out Inventories**

cc: Jeff Henderson (AECOM), Claire Bonham-Carter (AECOM)

Introduction

The purpose of a greenhouse gas (GHG) emissions inventory is to identify sources and the relative magnitude of emissions to enable policy makers to implement cost-effective reduction strategies in sectors over which they have operational or discretionary control.

Ascent Environmental, Inc. (Ascent) developed a historic GHG emissions inventory for sources in Yolo County for the year 1990 (County 1990 inventory). The County's 1990 inventory was compiled for the following emission sectors: energy use (i.e., electricity, natural gas, propane, and water consumption); transportation; solid waste; stationary sources; construction and mining; agriculture; and waste water treatment. LSA Associates, Inc. (LSA) prepared Countywide 2008 and 2030 GHG emission inventories pursuant to build out of the County's general plan. Ascent conducted a peer review of the methodologies used in the base-year (2008) and build-out (2030) inventories. This memorandum presents the results of the County 1990 inventory work and a peer review of the inventories prepared by LSA.

There is currently no agency-adopted or recommended protocol for preparation of community-wide GHG emissions inventories. The field of practice and available tools and methods continue to evolve in absence of standardized guidance. State-of-the-practice methods underlain by factual historical data were used to develop the inventory, as discussed below.

Key Assumptions

Emission Factors

An emission factor is a representative constant that relates the quantity of a pollutant released to the atmosphere with an activity associated with the release of that pollutant (EPA 2010); it is typically expressed as a rate of emissions per unit of the activity. Several reputable sources of information can be used to gather emissions information for use in inventory development.

Sources of GHG emission factors relied upon in preparation of the County's 1990 inventory include the following:

- California Air Resources Board (ARB): On-Road Mobile-Source Emission Factor Model (EMFAC2007), Version 2.3., 2007.
- California Air Resources Board (ARB): Off-Road Mobile-Source Emission Factor Model (OFFROAD2007), Version 2.1., 2007.
- U.S. Environmental Protection Agency (EPA): AP-42 Compilation of Emission Factors. Chapter 2.4 Solid Waste Disposal, 2008.
- The California Climate Action Registry (CCAR): General Reporting Protocol, Version 3.1., 2009.
- Intergovernmental Panel on Climate Change (IPCC): IPCC Guidelines for National Greenhouse Gas Inventories, 2006.

The above-mentioned emission factors represent GHG emissions from activities occurring in Yolo County.

Demographic Data

1990 GHG emissions inventory data for certain sectors were either back-calculated or forecasted from the closest available data point using population data from the California Department of Finance (DOF 2010).

Consumption Data

The inventory was prepared using consumption and generation data from the following reputable sources:

- Yolo County Energy Plan, 1982.
- Yolo County Central Landfill (YCCL) Joint Technical Document, 2007.
- Unincorporated Yolo County Waste Generation Study, 1991.
- Yolo-Solano Air Quality Management District (YSAQMD) Permitted Stationary Sources in Yolo County, 1990.
- California Department of Transportation (Caltrans) Highway Performance Monitoring System (HPMS) California Public Road Data, 1990.
- Community Service District Waste Discharge Requirements (Esparto, Knights Landing, Madison Waste Water Treatment Facilities data).
- California Energy Commission (CEC). Refining Estimates of Water-Related Energy Use in California. CEC-500-2006-118, 2006 (December).
- University of California, Davis (UCD). Agricultural and Resource Economics: Current Cost and Return Studies, 2010.

Each of these sources includes data that are applicable to Yolo County.

Summary of Results

Countywide 1990 emissions were calculated using a "bottom-up" approach, which involves multiplication of an emission factor for a given process by activity data describing that process. This approach ensures the highest level of control over the quality of the data used to generate the emissions inventory. Where data were available, 1990 GHG inventories were also prepared for the incorporated cities of Davis, West Sacramento, Winters, and Woodland. Emissions were also shown for the University of California (UC), Davis and tribal lands. However, these were kept separate from the unincorporated community emissions as such are distinct in terms of area, location, and operations. These inventories were not prepared with the same level of precision as the unincorporated County inventory, but are useful for comparison purposes.

Table 1 summarizes the magnitude and relative contribution of estimated 1990 GHG emissions for each sector. Methods used to calculate each emission sector are described in the sections that follow. For detailed assumptions, please refer to the attached documentation.

Figure 1 summarizes the relative contributions of each GHG emissions sector to the total 1990 GHG emissions in unincorporated Yolo County.

Figure 2 summarizes the relative contributors of each jurisdiction to the total 1990 GHG emissions in Yolo County (i.e., unincorporated plus incorporated).

Table 2 summarizes the results of the unincorporated County's 2008 base-year GHG emissions inventory. Each inventory was prepared using different methods, and, thus, direct comparison of the 1990 inventory to the base-year inventory is not appropriate. The differences in quantification methods, analysis of results, and recommendations to the County will be discussed in the following sections. The 2030 GHG emissions inventory was prepared in same manner as the base-year inventory. Thus, the discussion below, and subsequent references to the base-year inventory also apply to the 2030 GHG emissions inventory.

Figure 1

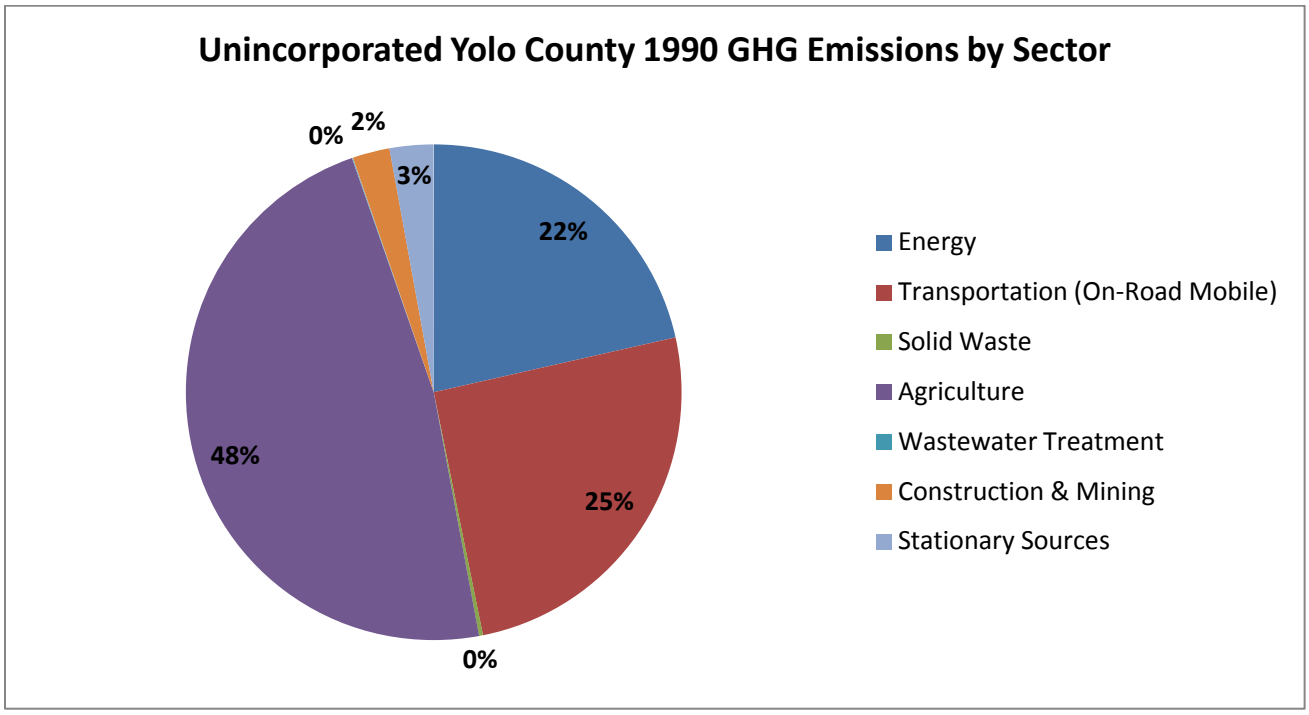
Unincorporated Yolo County 1990 GHG Emissions by Sector
0%
2%
3%
22%
48%
25%
0%
Energy
Transportation (On-Road Mobile)
Solid Waste
Agriculture
Wastewater Treatment
Construction & Mining
Stationary Sources

Table 1
Yolo County Historic Greenhouse Gas Emissions Inventory (1990)

Emissions Sector	Unincorporated Yolo County		Davis		West Sacramento		Winters		Woodland		UC Davis	Tribal Activities	Total Yolo County	
	MT CO_2e	%	MT CO_2e	%	MT CO_2e	%	MT CO_2e	%	MT CO_2e	%	MT CO_2e	MT CO_2e	MT CO_2e	%
Energy Consumption[1]	131,652	21.5%	268,791	56.6%	162,132	54.9%	26,962	63.0%	236,082	41.4%			825,618	39.0%
Transportation	155,577	25.4%	187,629	39.5%	122,107	41.4%	14,005	32.7%	166,341	29.2%			645,659	30.5%
Solid Waste	1,654	0.3%	11,264	2.4%	6,794	2.3%	1,130	2.6%	9,893	1.7%			30,735	1.5%
Agriculture	292,032	47.6%	-	-	-	-	-	-	-	-			292,032	13.8%
Wastewater Treatment	256	0.0%	7,013	1.4%	4,230	1.4%	703	1.6%	6,159	1.1%	-	-	18,361	0.9%
Construction & Mining	14,954	2.4%	-	-	-	-	-	-	-	-			14,954	0.7%
Stationary Sources	17,526	2.9%	<0.1	-	<0.1	-	<0.1	-	151,211	26.5%[3]			168,737	8.0%
UC Davis											120,991		120,991	5.7%
Tribal Activities												439	439	0.0%
Total[2]	**613,651**		474,696		295,262		42,800		569,686		120,991	439	2,117,525	

Notes: CO_2e = carbon dioxide equivalent; MT= metric tons; UC = University of California.
[1] The energy consumption sector includes emissions from electricity production, natural gas and propane combustion, and water consumption.
[2] Totals may not match exactly the sum of the numbers in the applicable column due to rounding.
[3] The stationary source sector for the City of Woodland comprises a larger portion of the emission inventory in comparison to the other incorporated and other unincorporated areas due to the fact more industry is located there.
Source: Data compiled by Ascent and AECOM in 2010.

Figure 2

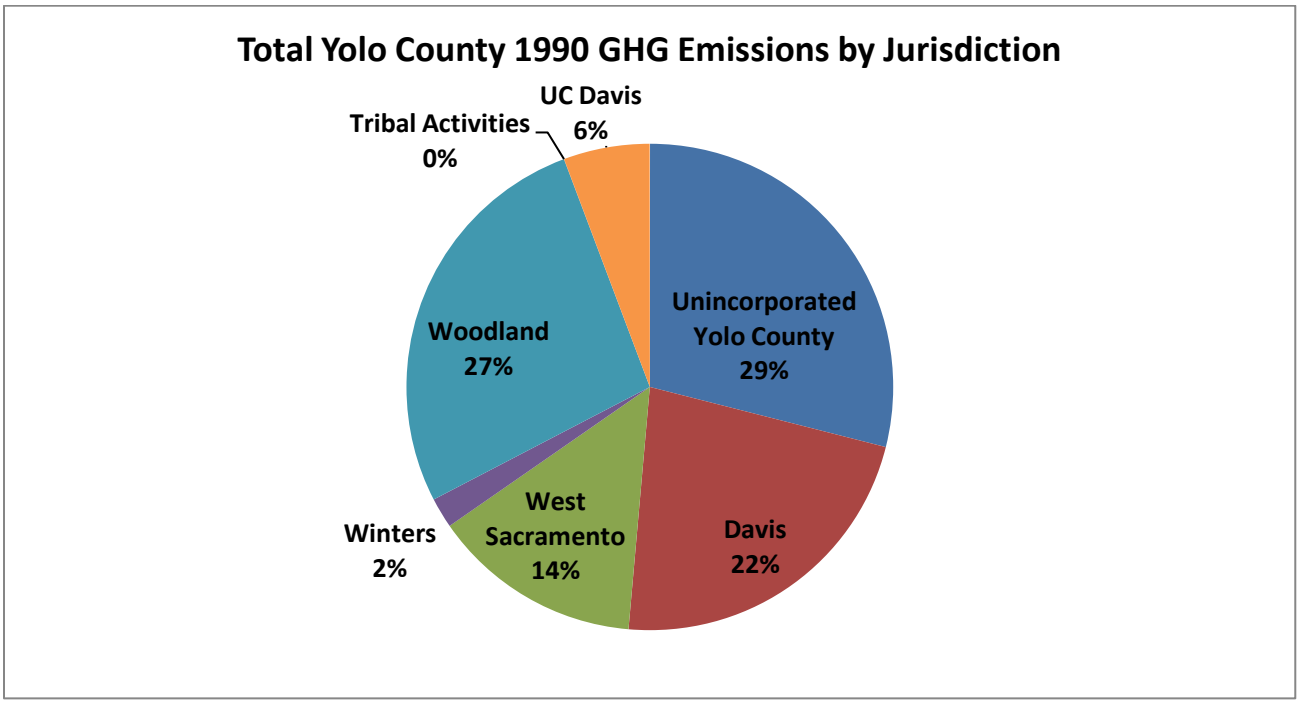

Table 2
Yolo County Base-Year (2008) Greenhouse Gas Emissions Inventory

Emissions Sector	Unincorporated Yolo County	
	MT CO_2e	%
Energy Consumption[1]	830,474	44.1%
Transportation	123,390	6.6%
Solid Waste	2,400	0.1%
Agriculture	879,977	46.7%
Wastewater Treatment	11	0.0%
Other Area Sources	6,231	0.3%
Construction & Mining	32,281	1.7%
Total[2]	**1,874,764**	

Notes: CO_2e = carbon dioxide equivalent; MT= metric tons.
[1] Energy consumption includes emissions from electricity production, from natural gas and propane combustion, and water consumption.
[2] Totals may not match exactly the sum of the numbers in the applicable column due to rounding.
Source: Data compiled by LSA 2009 (Tables IV.F-2 and V-11 of the FEIR).

Yolo County Historic Greenhouse Gas Emissions Inventory Methods and Base-Year Inventory Peer Review Results

This section briefly summarizes emissions inventory methods applied for each sector in the historic (1990) inventory and base-year (2008) inventories, respectively. This section also discusses key issues related to use of these inventories in the Climate Action Plan (CAP) process. For detailed assumptions and quantification inputs, please refer to the attached documentation.

Energy Consumption

Historic Inventory Methods

Electricity, natural gas, and propane consumption data for residential and non-residential land uses were based on data from the 1982 *Yolo County Energy Plan*. Consumption rates were extrapolated to 1990 using population growth estimates from the California Department of Finance (DOF 2010). Emission factors from the CCAR General Reporting Protocol were used to calculate carbon dioxide equivalent (CO_2e) emissions from these fuel types.GHG emissions associated with water consumption (i.e., conveyance, treatment, and distribution) were estimated using water demand rates from CEC for domestic uses and emission factors from CCAR for electricity consumption. Water consumption-related CO_2e emissions were included within the energy sector because electricity is used to convey, treat, and pump water.

Base-Year Inventory Methods

Electricity, natural gas, and propane consumption rates used in the 2008 inventory were obtained from the U.S. Department of Energy (DOE) Energy Information Administration (EIA) based on the estimated square footage of buildings and number of residential units in the unincorporated county. Emission factors from EPA and EIA were used to calculate GHG emissions associated with each of these fuels.

Discussion

The base-year inventory overestimates GHG emissions from energy consumption in the County in two ways. The first is that use of EIA consumption rates may not accurately represent consumption rates in Yolo County, since EIA collects data for the entire U.S. Presumably, the average energy consumption in the U.S., which experiences a range of extreme climate conditions, may not be applicable to a moderate climate, such as that experienced in Yolo County. The second is that emission factors from EIA for the average electricity portfolio in the U.S. likely overstate emissions per kilowatt hour produced in California. California's energy portfolio comprises a higher percentage of renewable energy and natural gas fuel types than the rest of the U.S., which relies heavily on coal. The base-year inventory estimates GHG emissions from energy consumption nearly 700,000 MT CO_2e/year higher than was estimated for the unincorporated County in 1990. This difference cannot be explained by population growth in the unincorporated County, particularly because annexation of land (and end users) from the unincorporated area to incorporated cities occurred between 1990 and 2008. ***Thus, GHG emissions in the energy sector should be revised for the base year using California-specific emission factors and energy consumption rates.***

Transportation

Historic Inventory Methods

On-road mobile-source emissions for 1990 were calculated using Caltrans HPMS data for roadways in the unincorporated County, along with emission factors from EMFAC 2007 by speed bin (i.e., portion of vehicle miles traveled [VMT] that would occur within a range of 5 mile per hour increments). HPMS data for 1990 was used in combination with data prepared by Fehr & Peers (2010) from the Yolo County General Plan Traffic Demand Forecasting (TDF) model, which included 2005 VMT data by speed bin. The dataset obtained from Fehr & Peers accounted for trips that did not originate or terminate in the county by apportioning 50% of VMT and associated GHG emissions to Yolo County for internal-to-external trips, and external-to-internal trips. VMT, and associated GHG emissions, resulting from internal-to-internal trips were allocated 100% to Yolo County. This methodology is consistent with the Regional Target Advisory Committee (RTAC) recommendations in response to Senate Bill (SB) 375.

These data were used to derive a correction factor to apply to the 1990 Caltrans dataset to achieve a more accurate 1990 VMT number. Another correction was applied to the Caltrans dataset in order to allocate a percentage of VMT that would occur on state highways to the unincorporated County, based on 1990 population.

Base-Year Inventory Methods

Transportation-related GHG emissions for the base year were calculated using emission factors from EMFAC 2007 and 2005 VMT data from the Yolo County General Plan TDF model.

Discussion

Methods used to calculate transportation-related GHG emissions were very similar. The base-year emissions inventory showed slightly lower (123,390 MT CO_2e/year) GHG emissions in the transportation sector than did the historic inventory (155,577 MT CO_2e/year). This could be explained by two factors: 1) fuel economy (miles per gallon) has improved, which would be reflected through reduction in tailpipe emissions; and 2) the difference in datasets, given that the origin of the 1990 data is Caltrans HPMS (with Yolo County General Plan TDF model correction applied), whereas the 2005 VMT was obtained directly from the TDF model.

Other important factors that explain the difference in transportation-related GHG emissions between the historic and base-year inventories are: 1) use of the RTAC VMT allocation method (i.e., 50% VMT allocation for internal-external and external-internal trips, 100% allocation to internal-internal trips, and 0% allocation to external-external [i.e., pass-through] trips), and 2) use of emission factors specific to individual speed bins (i.e., a matrix of emission rates corresponding to a matrix of VMT by speed). Based on information for 2005 provided by Fehr &Peers, these methods were applied to the 1990 dataset, but they have not been applied through the 2005 GHG emissions data represented in Table 2. ***Thus, the RTAC VMT allocation methodology and emission factors by speed bin should be applied to the base-year inventory to align with the methodology that will ultimately be important during implementation of SB 375[1].***

[1] No additional traffic modeling would be required to support this revision, as Fehr & Peers has already provided 2005 VMT data by speed bin and origin-destination.

Solid Waste

Historic Inventory Methods

GHG emissions related to solid waste disposal were calculated using a first-order decay modeling method from EPA for the Yolo County Central Landfill (YCCL). Waste characterization data for the unincorporated County and for the UCD landfill were obtained from the 1991 *Yolo County Waste Generation Study*. Solid waste disposal-related emissions were apportioned to the incorporated areas using population data contained in the solid waste disposal study.

Base-Year Inventory Methods

GHG emissions from solid waste disposal were derived using disposal data from the California Integrated Waste Management Board (CIWMB) and emission factors from EPA. The EPA factors used are U.S. averages, independent of the age and size of the landfill facility, and account for the total life cycle of the solid waste stream in question. These factors are typically used to compare waste disposal processes rather than to conduct bottom-up emission inventories.

Discussion

The methods used to prepare the historic inventory resulted in higher solid waste disposal-related GHG emissions than in the base-year inventory due to different methods of modeling GHG emissions. Decomposition of solid waste in a landfill is well-described using a first order decay model, as was done in the historic inventory. In other words, the decomposition of material in a landfill and the associated methane emissions are a function of the size of the landfill (i.e., waste-in-place) as well as the annual incremental addition of waste to the landfill. The base-year inventory does not treat the emissions process in this way, nor does it account for facility-related waste-in-place emissions. ***The base-year inventory should be revised using the methods employed in the historic inventory to better-characterize GHG emissions from the YCCL, and the countywide contribution to solid waste-related GHG emissions.***

Agriculture

Historic Inventory Methods

Agricultural sources of GHG emissions include off-road farm equipment, irrigation pumps, residue burning, livestock, pesticide application, rice cultivation, and fertilizer volatilization. The process data for Yolo County's agricultural sector were obtained from a variety of sources as discussed in detail below. GHG emission factors associated with farming equipment in 1990 were obtained from OFFROAD2007. The GHG emission factor for agricultural irrigation pumps and the number of pumps in the county were obtained from ARB's GHG emissions inventory (ARB 2006, ARB 2003). Fertilizer application data for 1990 were obtained from the University of California, Davis, Agriculture and Resource Economics Department *Current Cost and Return Studies* (UCD 2010a). Emission factors and methods to quantify GHG emissions associated with fertilizer application were obtained from ARB's GHG emissions inventory (ARB 2007). Calendar year 1990 process data for acres of rice and other crops cultivated and livestock populations in Yolo County were obtained from Yolo County's 1990 *Annual Crop Report* (Yolo County 1990). GHG emissions associated with lime and urea application were obtained from UC Davis. Emission factors and quantification methodologies for enteric fermentation and manure management were obtained from the ARB's GHG emissions inventory (ARB 2007). Please see the attached documentation for agricultural-related GHG emissions by source type.

Base-Year Inventory Methods

Agricultural GHG emissions for 2008 were calculated using a top-down method derived from California's statewide GHG inventory. The agricultural sector and subsectors (e.g., livestock, rice cultivation, heavy-equipment, crop residue, fertilizer) from the State's inventory were scaled down using area of farmland in the state. In other words, a statewide average emission factor was calculated for each agricultural process and applied using the area of farmland in the unincorporated county. In addition, GHG emissions from agricultural-related water consumption were included in the agricultural sector in the base-year inventory, whereas this was included in the energy sector in the historic inventory.

Discussion

Base-year agricultural emissions were approximately 600,000 MT CO_2e/year greater than those estimated within the historic inventory. This result is counterintuitive, given that agricultural activities in the County would not be anticipated to increase during this period (e.g., the number of cultivated acres in 1990 was approximately 438,000 and in 2008 it was approximately 420,000). Thus, it is expected that agricultural-related activities and associated GHG emissions in Yolo County are overstated in the base-year inventory. ***The base-year inventory should be revised for this sector to more-closely align with the bottom-up methodology used to develop the historic inventory.***

Wastewater Treatment

Historic Inventory Methods

Methane emissions from wastewater treatment facilities were calculated using process data (e.g., treatment capacity, biological oxygen demand) for the three wastewater treatment facilities that serve unincorporated Yolo County. Ascent obtained this information from Esparto, Knights Landing, and Madison Community Service District Waste Discharge Requirements facility permit records from the Central Valley Regional Water Quality Control Board as these were in existence in 1990.

The GHG emissions associated with wastewater treatment processes were quantified using methods and emission factors from IPCC for centralized, aerobic wastewater treatment plants, which is representative of processes at these facilities in 1990 (IPCC 2006b).

Base-Year Inventory Methods

Wastewater generation activity in the base-year inventory was calculated using gallon per day per resident and gallon per day per commercial acre factors obtained from a Marin County source, and the number of residents and commercial acres in the unincorporated county. Wastewater-related GHG emissions were calculated using an emission factor cited as EPA, but the source could not be traced back to EPA.

Discussion

Similar to GHG emissions from solid waste disposal, emissions from wastewater treatment are facility-specific and depend on the type of treatment process, wastewater influent properties, and volume of water treated. Although this sector's emissions are small in magnitude compared with the other emissions sectors in the inventory, ***the base-year inventory should be revised to reflect activities at treatment facilities in Yolo County using a reputable emissions inventory protocol and factors, such as the IPCC.***

Other Sources

Construction & Mining

Ascent calculated 1990 GHG emissions from construction and mining activities within unincorporated Yolo County in the historic inventory using emission factors and inventory data from the OFFROAD model. The base-year inventory calculated emissions from this sector in the same manner for year 2008. It was not possible to allocate emissions to the respective activities because the OFFROAD model is equipment-based, rather than activity-based. Thus, it was not possible to determine which pieces of equipment in the OFFROAD model were used for construction and which were used for mining. Please note that this sector only includes emissions associated with the on-site use of heavy-duty equipment. Emissions associated with the land uses themselves (e.g., off-site transportation and energy use) are included in the other sectors as applicable. Also, for the sake of clarification, the issue of fugitive particulate matter dust emissions, which is typically associated with mining activities, is not addressed in this inventory as such are not classified as GHGs.

Stationary Sources

GHG emissions from stationary sources within the County in 1990 were calculated using facility permit data obtained from YSAQMD. The permit data contained fuel consumption activity information from which GHG emissions were calculated using CCAR emission factors. Stationary-source emissions were heavily influenced by permitted facilities that burned wood/biomass in 1990. CCAR recommends treatment of wood combustion sources as biogenic (i.e., originating from living organisms) emissions and are included in the historic inventory for informational purposes. GHG emissions associated with agricultural processing facilities were itemized separately within this sector.

In addition, the OFFROAD model was used to obtain heavy-duty equipment emissions associated with industrial land uses within the County in 1990.The base-year inventory did not include GHG emissions from stationary or industrial sources, including agricultural processing facilities or heavy-duty equipment. However, the base-year inventory did include emissions associated with construction and mining as discussed above.

Other Area Sources

The base-year inventory included GHG emissions from hearth combustion and landscaping equipment obtained from the Urban Emissions Model (URBEMIS) 2007, version 9.2.4. To the extent that fireplace features are natural gas-fueled or landscaping equipment is electric-powered, these emissions would be double-counted in the base-year inventory.

University of California, Davis

Emissions from UC Davis (for the Davis campus) were calculated for 1990 in the *2009-2010 Climate Action Plan* and were estimated at 120,991 MT CO_2e/year (UCD 2010b). Emissions for the Davis campus in 2008 were estimated at 162,775 MT CO_2e/year. In addition, Ascent calculated GHG emissions from the UC Davis landfill in 1990 (4,725 MT CO_2e/year) using the same methods described above for the 1990 solid waste sector for the historic inventory.

Tribal Activities

GHG emissions associated with activities on tribal land were modeled using the Urban Emissions Model (URBEMIS 2007 version 9.2.4) and population data obtained from County staff. Emissions from tribal activities were estimated to be 439 MT CO_2e/year in 1990.

Port of Sacramento

The GHG emissions inventory for West Sacramento is currently in the preparation process, and is anticipated to include GHG emissions from activities at the Port of Sacramento. However, emissions estimates for the Port were not available at this time.

Yolo Bypass

GHG emissions from agricultural production in the Bypass were included in the Agricultural sector. The Yolo Wildlife Area was federally designated in 1997, therefore, GHG emissions that occurred in the Bypass during 1990 were under the County's jurisdiction, and were included in the County's 1990 Historic inventory.

Conclusion

Although only limited conclusions can be drawn from direct comparison of the historic and base-year GHG inventories, the difference in GHG emissions (i.e., 1.8 megatons versus 0.6 megatons) cannot be explained by a growth in population. It is especially relevant that growth in GHG emissions in the unincorporated County would be, in part, offset by annexation of land uses (and GHG emissions sources) into cities' jurisdictions during this 18-year timeframe (e.g., Gibson Ranch [480 acres to City of Woodland in 1992] and Wildhorse [419 acres to City of Davis in 1995]). Thus, 2008 GHG emissions are likely overestimated, which can be appropriate for their original use in the 2030 General Plan and General Plan Update environmental impact report, but are not recommended for the more precise needs of a CAP. In particular, GHG emissions in the energy sector and agricultural sector are greatly overestimated in the base-year inventory because of the use of consumption and/or emission factors that are too conservatively high for use in the CAP and are not based on factual data applicable to Yolo County. Other refinements are also recommended elsewhere in this report to improve the functionality of the GHG inventory for purposes of the CAP.

References

ARB. See California Air Resources Board.

California Air Resources Board. 2003. Fuel Consumption Methodologies for Agricultural Irrigation Engines (category 052-042-1200-0000). Available: http://www.arb.ca.gov/ei/areasrc/FULLPDF/FULL1-1.pdf

California Air Resources Board. 2006. Rulemaking to Consider Proposed Amendments to the Stationary Diesel Engine Control Measure - Appendix D: Emission Inventory Methodology Agricultural Irrigation Pumps - Diesel. Available: http://www.arb.ca.gov/regact/agen06/append.pdf

California Air Resources Board. 2007. *1990 Greenhouse Gas Emissions Inventory: Agriculture and Forestry. Livestock Population*. Available: http://www.arb.ca.gov/app/ghg/1990_1990/ghg_sector.php.

California Climate Action Registry. 2009. *General Reporting Protocol*, Version 3.1.

California Department of Food and Agriculture. 1990. California Agricultural Resources Directory 1990. Available: <http://www.cdfa.ca.gov/statistics.html>. Accessed April 2010.

California Department of Finance. 2010. *Report 90 E-4: Population Estimates for California State and Counties (1989-1990)*. Available: http://www.dof.ca.gov/research/demographic/reports/estimates/e-4/1981-90/. Accessed June 10, 2010.

California Energy Commission. 2005. *California Energy - Water Relationship Staff Report*, CEC-700-2005-011-SF.

CEC. See California Energy Commission.

DOF. See California Department of Finance.

EPA. See U.S. Environmental Protection Agency.

Fehr & Peers. 2010. *Yolo County VMT Analysis Memo.*

Intergovernmental Panel on Climate Change. 2006a. *IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 10 Emissions from Livestock and Manure Management.*

Intergovernmental Panel on Climate Change. 2006b*. IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 6: Wastewater Treatment and Discharge*.

IPCC. See Intergovernmental Panel on Climate Change.

UCD. See University of California, Davis.

University of California, Davis. 2010a. Agricultural and Resource Economics: Current Cost and Return Studies. Available < http://coststudies.ucdavis.edu/current.php>.

University of California, Davis. 2010b (June). *UC Davis 2009-2010 Climate Action Plan*.

U.S. Environmental Protection Agency. 2010. Emission Factors Information. Available: http://www.epa.gov/ttn/chief/efpac/abefpac.html. Accessed June 10, 2010.

Summary

Yolo County Greenhouse Gas Emissions Inventory - 1990

Jurisdiction	Total County-wide		Unincorporated		Incorporated (Cities)		Davis		West Sac		Winters		Woodland		Unincorporated	
Sector	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**	**MT CO2e/yr**	**% of total**
Energy	825,618	41.4%	131,652	21.5%	693,966	46.8%	268,791	56.6%	162,132	54.9%	26,962	63.0%	236,082	41.4%	131,652	21.5%
Transportation (On-Road Mobile)	645,659	32.4%	155,577	25.4%	490,082	33.1%	187,629	39.5%	122,107	41.4%	14,005	32.7%	166,341	29.2%	155,577	25.4%
Solid Waste	30,735	1.5%	1,654	0.3%	29,081	2.0%	11,264	2.4%	6,794	2.3%	1,130	2.6%	9,893	1.7%	1,654	0.3%
Agriculture	292,032	14.6%	292,032	47.6%	-	0.0%	-	-	-	-	-	-	-	-	292,032	47.6%
Wastewater Treatment	18,105	0.9%	256	0.0%	116,983	7.9%	7,013	1.5%	4,230	1.4%	703	1.6%	6,159	1.1%	256	0.0%
Construction & Mining	14,954	0.7%	14,954	2.4%	-	0.0%	-	-	-	-	-	-	-	-	14,954	2.4%
Stationary Sources	168,737	8.5%	17,526	2.9%	151,211	10.2%	<.1	-	<.1	-	-	-	151,211	26.5%	17,526	2.9%
Total	**1,995,840**	**1**	**613,651**	**1**	**1,481,323**	**1**	**474,696**	**1**	**295,262**	**1**	**42,800**	**1**	**569,686**	**1**	**613,651**	**1**

Agricultural GHG Emissions - Residue Burning

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Residue Burning

Crop	Total Acres Harvested (acre/yr)	Residue Burned (tons/acre)	Moisture Content	Percent Acres Burned	Residue Burned (tons/yr)	Emission Factors (ton/ton burned) CO2	CH4	N2O	Total CO2E Emissions (MT CO2e/yr)
Corn	15,000	4.2	0.086	0.03	162.54	1.31	1.75E-03	1.00E-04	203
Rice	25,000	3	0.086	0.99	6,385.50	1.16	7.20E-04	2.00E-04	7,159
Almonds	7,546	1	0.183	0.84	1,159.97	1.83	1.17E-03	2.00E-04	2,016
Walnuts	6,769	1.2	0.331	0.95	2,554.21	1.64	1.64E-03	2.00E-04	4,025
Wheat	70,247	1.9	0.073	0.11	1,071.76	1.19	1.82E-03	1.00E-04	1,227
Barley	4,100	1.7	0.069	0.07	33.67	1.17	2.47E-03	2.00E-04	39
Total					**11,367.65**				**14,669**

Conversion Factor:

1 MT 1.1023 ton

GWP

Methane (CH_4)	23
Nitrous Oxide (N_2O)	296

Sources

California Air Resources Board. 1990 Greenhouse Gas Emissions Inventory: Agriculture and Forestry. Ag Residue Burned. 2007

Yolo County 1990 Agricultural Crop Report

Agricultural GHG Emissions - Livestock

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Livestock

		Enteric Fermentation			Manure Management						Total GHG Emissions
Livestock Type	**Population**	**Emission Factor (kg CH_4/head-year)**	**kg CH_4/year**	**MT CO_2e/year**	**Emission Factor (kg CH_4/head-year)**	**kg CH_4/year**	**MT CO_2e/year**	**Emission Factor (kg N_2O/head-year)**	**kg N_2O/year**	**MT CO_2e/year**	**MT CO_2e/year**
Beef Cattle	13,180	73.8	972,684	22,372	2.2	28,469	655	0.00	0.00	0	23,027
Dairy Cattle	50	128.7	6,437	148	171.5	8,573	197	0.24	12.15	4	349
Lambs	19,300	8	154,400	3,551	0.781	15,073	347	0.01	127.57	38	3,936
Slaughter Sheep	4,800	8	38,400	883	0.781	3,749	86	0.01	31.73	9	979
Hogs	3,600	1.5	5,400	124	18.9	68,110	1,567	0.02	66.61	20	1,710
Poultry	no data										
Total											**30,000**

GWP

Methane (CH_4)	23
Nitrous Oxide (N_2O)	296

Sources

Yolo County 1990 Agricultural Crop Report

California Air Resources Board. 1990 Greenhouse Gas Emissions Inventory: Agriculture and Forestry. Livestock Population. 2007

Agricultural GHG Emissions - Rice Cultivation

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Rice Cultivation

Acres of Rice	Hectares of Rice	Rice Field Emission Factor (g CH4/hectare)	Total GHG Emission (MT CO2e/yr)
25,000	10,117	122,000	28,389

Sources

California Air Resources Board. 1990 Greenhouse Gas Emissions Inventory: Agriculture and Forestry. CH4 from Harvested Rice Area. 2007 Yolo County 1990 Agricultural Crop Report

Agricultural GHG Emissions - Agricultural Equipment

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Agricultural Equipment

GHG	Emissions (tons/day)	Emissions (MT/yr)
Carbon Dioxide (CO_2)	216	71,358
Methane (CH_4)	0	23
Nitrous Oxide (N_2O)	0	1
CO_2E	218	**72,170**

Source: OFFROAD 2007: Annual 1990 Agricultural Equipment in Yolo County

GWP	
Methane (CH_4)	23
Nitrous Oxide (N_2O)	296

Agricultural Pumps

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

# Pumps in Yolo County	Emission Factor (avg tpd/pump) Diesel CO2	Total Emissions (MT CO2e/yr)
643	0.184298584	39,231.34
Total		**39,231.34**

Total YSAQMD pumps

777

Total YSAQMD CO2 Emissions (tpd)

143.2

Sources:

California Air Resources Board 2003. Fuel Consumption Methodologies for Agricultural Irrigation Engines (category 052-042-1200-0000). Available at: http://www.arb.ca.gov/ei/areasrc/FULLPDF/FULL1-1.pdf

California Air Resources Board 2006. Rulemaking to Consider Proposed Amendments to the Stationary Diesel Engine Control Measure - Appendix D: Emission Inventory Methodology Agricultural Irrigation Pumps - Diesel. Available at: http://www.arb.ca.gov/regact/agen06/append.pdf

Agricultural GHG Emissions - Pesticide Application

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Pesticide Application

Year	Pesticide (Chemical Name)	Unincorporated Yolo County Application lbs/yr	lbs/MT Conversion Factor	GWP of 1 MT SO_2F_2 compared to 1 MT CO_2	MT CO2e/yr
1990	METHYL BROMIDE	36730.6282	0.000454	5	83
TOTAL					**83**

California Department of Pesticide Regulation: Pesticide Use Reporting

http://www.cdpr.ca.gov/docs/pur/pur90rep/p90menu.htm

Agricultural GHG Emissions - Fertilizer Application

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Fertilizer Application

Unincorporated Yolo County

Nitrogen Applied in Fertilizer (tons)	Nitrogen Applied (grams)	Nitrogen Emitted As N_2O (g/g)	MT CO2e/yr
29,488	26,751,945,720	334,399,321	**98,982**

Nitrogen Volatilization (g/g)	0.0125
Nitrous Oxide (N_2O) GWP	296

Sources

California Air Resources Board. Greenhouse Gas Emissions Inventory: Agriculture and Forestry. N_2O from Nitrogen Applied in Fertilizer. 2007

Department of Food and Agriculture. Fertilizer Tonnage Report. 1990

Agricultural GHG Emissions - Liming

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Sector	**Agriculture, Forestry and Other Land Use**						
Category	**Liming: Annual CO_2-C emissions from Liming**						
Category code	**3C2**						
Sheet	**1 of 1**						
Equation	**Equation 11.12**						
Type of lime applied	Annual amount of calcic limestone ($CaCO_3$)	Emission factor	Annual amount of dolomite ($CaMg(CO_3)_2$)	Emission factor	Annual C emissions from liming		**Annual CO2 emissions from liming**
	(tonnes yr^{-1})	[tonnes of C (tonne of limestone)$^{-1}$]	(tonnes yr^{-1})	[tonnes of C (tonne of dolomite)$^{-1}$]	(tonnes C yr^{-1})		**tonnes CO2 yr-1**
		default is 0.12		default is 0.13	CO_2-C Emission = ($M_{Limestone}$ * $EF_{Limestone}$) + ($M_{Dolomite}$ * $EF_{Dolomite}$)		
	$M_{Limestone}$	**$EF_{Limestone}$**	**$M_{Dolomite}$**	**$EF_{Dolomite}$**	**CO_2-C Emission**	mol wt ratio	
Limestone	**9,879**	**0.12**			**1185.4752**	**3.6642**	**4,344**
Dolomite			0		0		**-**
Total							**4,344**

Yolo Lime Sales Data (CDFA tonnage report 1990)

Year	Amt of lime (us tons)	Metric tons
1990	10,856	9,879

Source:
UC Davis. Department of Land, Air and Water Resources. 2010.

Agricultural GHG Emissions - Urea Fertilization

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Sector	**Agriculture, Forestry and Other Land Use**				
Category	**Urea Fertilization: Annual CO_2 emissions from Urea Fertilization**				
Category code	**3C3**				
Sheet	**1 of 1**				
Equation	**Equation 11.13**				Annual CO2 emissions from urea fertilization
Subcategories for reporting year	Annual amount of Urea Fertilization	Emission factor	Annual CO_2-C emissions from Urea Fertilization		tonns CO2 yr-1
	(tonnes urea yr^{-1})	[tonnes of C (tonne of urea)$^{-1}$]	(tonnes C yr^{-1})		
		default is 0.20	CO_2-C Emission = M * EF		**4,164**
	M	**EF**	**CO_2-C Emission**	**molar wt ratio**	
(a)	5682.04	**0.2**	**1136.408**	**3.6642**	
(b)					**4,164**
(c)					
Total					

Yolo Urea Sales Data (CDFA tonnage reports 1990)

Year	us tons	metric tons
1990	6244	5682.04

Source:
UC Davis. Department of Land, Air and Water Resources. 2010.

Agricultural GHG Emissions - Summary

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

	MT CO2e/yr	% of total Ag
Residue Burning	14,669	5.0%
Livestock	30,000	10.3%
Rice Cultivation	28,389	9.7%
Agricultural Equipment	72,170	24.7%
Agricultural Irrigation Pumps	39,231	13.4%
Pesticide Application	83	0.0%
Fertilizer Application	98,982	33.9%
Lime Application	4,344	1.5%
Urea Fertilization	4,164	1.4%
Total	**292,032**	100.0%

Sources

1 Yolo County Department of Agriculture. 1990. *Yolo County Crop and Livestock Report* .

2 University of California Coopertaive Extension. 2006. *Sample Costs to Establish an Orchard and Produce Almonds, Sacramento Valley, Low-Volume Sprinkler* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #AM-SV-06. See Table A.

3 University of California Coopertaive Extension. 2008. *Sample Costs to Establish a Vineyard and Produce Winegrapes, Chardonnay Variety, Sacramento Valley, Sacramento River Delta, Sacramento and Yolo Counties - Crush District 17.* Available at <http://coststudies.ucdavis.edu/current.php>. Item #GR-SV-08. See page 6.

4 University of California Coopertaive Extension. 2009. *Sample Costs to Establish a Vineyard and Produce Winegrapes, Cabernet Sauvignon, North Coast Region, Napa County* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #GR-NC-09. See page 6.

5 University of California Coopertaive Extension. 2007. *Sample Costs to Establish a Walnut Orchard and Produce Walnuts, English Walnuts, Sacramento Valley, Sprinkler Irrigated* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #WN-SV-07-R. See page 6.

6 University of California Coopertaive Extension. 2008. *Sample Costs to Produce Prunes (Dried Plums), Sacramento Valley, French Variety & Low-Volume Irrigation* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #PU-SV-08. See page 3.

7 University of California Coopertaive Extension. 2006. *Sample Costs to Establish and Produce Pears, Green Bartlett, North Coast Region, Lake and Mendocino Counties* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #PR-NC-06-2. See page 6.

8 University of California Coopertaive Extension. 2006. *Sample Costs to Establish and Produce Specialty Pears, Standard Planting with Standard Trees, North Coast Region, Lake and Mendocino Counties* . Available at <http://coststudies.ucdavis.edu/current.php>. Item #PR-NC-06-2R. See page 6.

9 University of California Coopertaive Extension. 2007. *Sample Costs to Establish and Produce Apples, Intermountain Region - El Dorado County* . Available at <http://coststudies.ucdavis.edu/files/appleir2007.pdf>. See page 4.

10 University of California Coopertaive Extension. 2005. *Sample Costs to Establish an Orchard and Produce Sweet Cherries, San Joaquin Valley - North* . Available at <http://coststudies.ucdavis.edu/files/cherryvn2005.pdf>. See page 3.

11 University of California Coopertaive Extension. 2005. *Sample Costs to Establish an Fig Orchard and Produce Figs, San Joaquin Valley (Mission and Calimyrna Variety)* . Available at <http://coststudies.ucdavis.edu/files/figmissionsjv05.pdf>. See page 4.
<http://coststudies.ucdavis.edu/files/figcalimyrnasjv05.pdf>. See page 4.

12 University of California Coopertaive Extension. 2005. *Sample Costs to Establish and Produce Nectraines, San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/nectarinevs09.pdf>. See page 4.

13 University of California Coopertaive Extension. 2005. *Sample Costs to Establish and Produce Table Olives, Manzanillo Variety - San Joaquin Valley* . Available at <http://coststudies.ucdavis.edu/files/olivetblsjv2005.pdf>. See page 4.
<http://coststudies.ucdavis.edu/files/olivesv09.pdf>. See page 11.

Sources

14 University of California Coopertaive Extension. 2005. *Sample Costs to Establish and Produce Peaches, San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/peachesvs09.pdf>. See page 4.

15 University of California Coopertaive Extension. 2005. *Sample Costs to Establish and Produce Pistachios, San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/PistachioVS08.pdf>. See page 5.

16 University of California Coopertaive Extension. 2009. *Sample Costs to Establish and Produce Plums, San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/plumvs09.pdf>. See page 4.

17 University of California Coopertaive Extension. 2008. *Sample Costs to Establish and Produce Prunes, Sacramento Valley* . Available at <http://coststudies.ucdavis.edu/files/prunesv2008.pdf>. See page 12.

18 University of California Coopertaive Extension. 2009. *Sample Costs to Establish an Orange Orchard and Produce Oranges, San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/orangevs2009.pdf>. See page 4.

19 <http://coststudies.ucdavis.edu/files/beansvs2_2008.pdf>, <http://coststudies.ucdavis.edu/files/beansvs1_2008.pdf>,

20 University of California Coopertaive Extension. 2008. *Sample Costs to Produce Wheat for Grain (Irrigated), San Joaquin Valley - South* . Available at <http://coststudies.ucdavis.edu/files/wheatsjv2008.pdf>. See page 9.

21 University of California Coopertaive Extension. 2007. *Sample Costs to Establish and Produce Asparagus, San Joaquin Valley - North* . Available at <http://coststudies.ucdavis.edu/files/asparagusvn2007.pdf>. See page 13.

22 University of California Coopertaive Extension. 2007. *Sample Costs to Produce Rice, San Joaquin Valley - North* . Available at <http://coststudies.ucdavis.edu/files/asparagusvn2007.pdf>. See page 13.

Fertilizer Application/Soil Management Summary
1990 Unicorporated Yolo County

Crop Type	Acres	Nitrogen Applied Per Year (lbs/yr)	Nitrogen Applied Per Year (tons/yr)	Grams Applied Per Year	Nitrogen Emitted as N2O	Total GHG Emisions (MT CO2e/yr)
Almonds		2,112,880	1,056	958,402,368	11,980,030	3,546
Wine Grapes/Kiwi		32,045	16	14,535,612	181,695	54
Walnuts, English		1,353,800	677	614,083,680	7,676,046	2,272
Walnuts, Black		1,947,800	974	883,522,080	11,044,026	3,269
Prunes		326,250	163	147,987,000	1,849,838	548
Pears, Barlett		103,000	52	46,720,800	584,010	173
Pears, Others/Persimmons		0	0	0	0	0
Apples		0	0	0	0	0
Apricots		174 see pluots	-	0	-	-
Cherries		0	0	0	0	0
Figs		0	0	0	0	0
Kiwi		26 see wine grapes	-	0	-	-
Nectarines		0	0	0	0	0
Olives		0	0	0	0	0
Peaches (Freestone)		17,969	9	8,150,738	101,884	30
Pluots/Apricots		83,000	42	37,648,800	470,610	139
Rice		3,571,875	1,786	1,620,202,500	20,252,531	5,995
Pistachio Nuts	see Misc	0	0	0	0	0
Plums		0	0	0	0	0
Tangerines		0	0	0	0	0
Tomatoes		12,156,445	6,078	5,514,163,452	68,927,043	20,402
Asparagus		52,650	26	23,882,040	298,526	88
Misc Vegetables		792,376	396	359,421,754	4,492,772	1,330
Misc Fruits		691,325	346	313,585,001	3,919,813	1,160
Barley		328,000	164	148,780,800	1,859,760	550
Beans		379,500	190	172,141,200	2,151,765	637
Corn (and Milo)		1,588,644	794	720,608,878	9,007,611	2,666
Hay - Alfalfa		643,500	322	291,891,600	3,648,645	1,080
Hay - Grain		2,416,800	1,208	1,096,260,480	13,703,256	4,056
Oat and Misc Field Crop		2,154,000	1,077	977,054,400	12,213,180	3,615
Pasture		12,760,000	6,380	5,787,936,000	72,349,200	21,415
Propogative and Nursery		10,754	5	4,877,914	60,974	18
Wheat		15,454,340	7,727	7,010,088,624	87,626,108	25,937
Total		58,976,953	29,488	26,751,945,720	334,399,321	98,982

Nitrogen Emitted As N_2O (g/g)	0.0125	g/g	IPCC. N2O: Direct Emissions From Agricultural Soils. Available: <http://www.ipcc-nggip.iges.or.jp/public/gp/bgp/4_5_N2O_Agricultural_Soils.pdf>
Global Warming Potential of N2O	296	N20:CO2	Intergovernmental Panel on Climate Change. 2001. Climate Change 2001: The Scientific Basis. Geneva, Switzerland. Available: <http://www.ipcc.ch/ipccreports/tar/>. *in* Table C.1 of California Climate Action Registry. 2009 (January). California Climate Action Registry General Reporting Protocol, Version 3.1. Los Angeles, CA. Available: <http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf>. Last updated [January 2009]. Accessed Month day, year.

Fertilizer Application
1990 Unicorporated Yolo County

Almonds

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	7,546	acres	1	Is fertilizer applied to non-bearing acreage? Need to ask Ag Commissioner.
area planted in 1990, non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	280	lb/acre	2	It is assum What if a d How to account for unknown portion of planting that is organic?
Nitrogen application rate for fertilization of established plantings, non-bearing	53	lb/acre	2	It is assumed that the average age of non-bearing plantings is 4 years.
Total nitrogen applied	2,112,880	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	958.4	MT/year	conversion calculation	

Wine Grapes/Kiwi

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	1,740	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	1,740	acres	summation	
Nitrogen application rate for fertilization of established plantings, Chardonnay	18	lb/acre	3	
Total nitrogen applied	32,045	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	14.5	MT/year	conversion calculation	

12	Intermountain (Shasta-Trinity)	2005	
	North Coast (Napa) organic	2005	
12	San Joaquin N&S	2005	
10	North Coast (Lake)	2008	
40	Sac/Yolo	2008	

Walnuts, English

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	6,769	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	6,769	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	200	lb/acre	5	This guide for purchase at http://anrcatalog.ucdavis.edu/Nuts/21623.aspx may also be useful.
Nitrogen application rate for fertilization of established plantings, non-bearing	57			
Total nitrogen applied	1,353,800	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	614.1	MT/year	conversion calculation	

Walnuts, Black

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	9,739	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	9,739	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	200	lb/acre	5	It is assumed that the application rate for black walnuts is the same as English walnuts because UCCE does not provide a cost report specific to black walnuts.
Nitrogen application rate for fertilization of established plantings, non-bearing	57			
Total nitrogen applied	1,947,800	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	883.5	MT/year	conversion calculation	

Pears, Bartlett

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	515	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	515	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	200	lb/acre	7	
Nitrogen application rate for fertilization of established plantings, non bearing	52			
Total nitrogen applied	103,000	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	46.7	MT/year	conversion calculation	

Pears, Others/Persimmons

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	200	lb/acre	8	
Nitrogen application rate for fertilization of established plantings, non bearing	52			
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Apples

1990 Unicorporated Yolo County

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	21	lb/acre	9	Using El Dorado County application rates
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Cherries

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	Assume cherry trees are 10+ years for maximum fertlizer application
area planted in 1990, non-bearing		acres	1	Assumes non-bearing trees are 1-3 years old and use average of 1-3 year application rates
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	154	lb/acre	10	
Nitrogen application rate for fertilization of established plantings, non-bearing	15	lb/acre	10	
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Figs

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	75	lb/acre	11	Average of Mission and Calimyrna application rate for 5+ year old trees
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Nectarines

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	151	lb/acre	12	Use application rate of 4+ year old trees
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Olives

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	90	lb/acre	13	Used average application rate from San Joaquin and Sacramento Valley reports
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Peaches

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	119	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	119	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	151	lb/acre	14	Used application rate from 4+ year old trees
Nitrogen application rate for fertilization of established plantings, non-bearing	53	lb/acre	14	Used average application rate for 1-3 year old trees
Total nitrogen applied	17,969	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	8.2	MT/year	conversion calculation	

Pistachios

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	200	lb/acre	15	Used application rate from 7+ year old trees
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	

Total nitrogen applied	0.0	MT/year	conversion calculation	

Plums

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	125	lb/acre	15	Used application rate from 4+ year old trees
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Prunes

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	2,175	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	2,175	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	150	lb/acre	17	
Total nitrogen applied	326,250	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	148.0	MT/year	conversion calculation	

Tangerines

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing		acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	110	lb/acre	18	Used Cost Study for oranges as surrogate
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Beans

	value	units	source	notes/questions/assumptions				
						no fertilizer needed	http://coststudies.ucdavis.edu/files/beansvs1_2008.pdf	blackeye single
area planted in 1990, bearing	3,450	acres	1		32.36	209 lb/ac @ 4%; 120 lb/ac @ 20%	http://coststudies.ucdavis.edu/files/beansdryvn2005.pdf	common dry double
area planted in 1990, non-bearing		acres	1		29.6	20 gal/ac @ 8%; 60 lbs/ac @ 20%	http://coststudies.ucdavis.edu/files/Beans_SC_SV08.pdf	single cropped
area planted in 1990, bearing and non-bearing	3,450	acres	1		33.6	21 gal/ac @ 8%; 80 lbs/ac @ 20%	http://coststudies.ucdavis.edu/files/Beans_DC_SV08.pdf	double cropped
Nitrogen application rate for fertilization of established plantings, bearing	110	lb/acre	19	Used Blackeye, common dry, green, and chinese long beans	90.3	500 lbs/ac @ 15%; 90lbs/ac @17%	http://coststudies.ucdavis.edu/files/beangrsjv2005-1.pdf	green blue lake
Total nitrogen applied	379,500	lb/year	calculation		2	10 lbs/ac @ 20%	http://coststudies.ucdavis.edu/files/beanchlongsjv2005.pdf	chinese long bean
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm					
Total nitrogen applied	172.1	MT/year	conversion calculation			fertilizer gal-weight conversion	http://www.agry.purdue.edu/ext/corn/news/articles.02/Fert_Math-0326.html	

Corn

	value	units	source	notes/questions/assumptions				
area planted in 1990, bearing	15,414	acres	1		91.36	342 lb/ac @ 8%; 200 lb/ac	http://coststudies.ucdavis.edu/files/cornsilagevs08_3.pdf	silage, reduced till, double cropped
area planted in 1990, non-bearing		acres	1		164	200lb/ac @ 10%;180lbs/ac @ 80%	http://coststudies.ucdavis.edu/files/cornsilagevs2008.pdf	silage, double cropped
area planted in 1990, bearing and non-bearing	15,414	acres	1		60.1	151 lb/ac @ 10%; 225 lb/ac @ 20%	http://coststudies.ucdavis.edu/files/CornSV2008.pdf	field, mineral soil
Nitrogen application rate for fertilization of established plantings, bearing	103	lb/acre	18		96.8	200lb/ac @ 10%; 240 lbs/ac	http://coststudies.ucdavis.edu/files/CornVS08_2.pdf	grain/field corn
Total nitrogen applied	1,588,644	lb/year	calculation					
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm					
Total nitrogen applied	720.6	MT/year	conversion calculation					

Wheat

	value	units	source	notes/questions/assumptions
area planted in 1990, irrigated	70,247	acres	1	
area planted in 1990, dryland		acres	1	
area planted in 1990, bearing and non-bearing	70,247	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	220	lb/acre	20	
Total nitrogen applied	15,454,340	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	7,010.0	MT/year	conversion calculation	

Hay

	value	units	source	notes/questions/assumptions			
area planted in 1990, alfalfa	36,000	acres	1		150 lb/ac @ 11%; 75 lb/ac @ 11%	http://coststudies.ucdavis.edu/files/alfalfa300sjv2008.pdf	est and production alfalfa
area planted in 1990, grain (and safflower)	30,210	acres	1		151 lb/ac @ 11%; 75 lb/ac @ 11%	http://coststudies.ucdavis.edu/files/alfalfa50sjv2008.pdf	est and production alfalfa
area planted in 1990, grass	0	acres	1		100 lb/ac @ 11%	http://coststudies.ucdavis.edu/files/alfalfa_im_scott2007.pdf	hay, mixed irrigation alfalfa
area planted in 1990, bearing and non-bearing	66,210	acres	1		100 lb/ac @ 11%	http://coststudies.ucdavis.edu/files/alfalfaim_butte2007.pdf	hay, center pivot irrigation alfalfa
Nitrogen application rate for fertilization of established plantings, alfalfa	18	lb/acre			no need	http://coststudies.ucdavis.edu/files/alfalfaorg2007.pdf	organic alfalfa, est and production

1990 Unicorporated Yolo County

Nitrogen application rate for fertilization of established plantings, grain	80	lb/acre			100 lb/ac @ 11%	http://coststudies.ucdavis.edu/files/AlfalfaSV08.pdf	alfalfa
Nitrogen application rate for fertilization of established plantings, dryland	12	lb/acre			80 lbs/ac	http://coststudies.ucdavis.edu/files/grainhay_ir2007.pdf	grain hay
Total nitrogen applied - alfalfa	643,500	lb/year	calculation		60 lbs/ac @ 20%	http://coststudies.ucdavis.edu/files/oathaysv05.pdf	dryland
Total nitrogen applied - grain	2,416,800						
Total nitrogen applied - dryland	0						
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm				
Total nitrogen applied	291.9	MT/year	conversion calculation				

Mixed Vegetables/Bell Peppers

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	7,619	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	7,619	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	104	lb/acre		http://coststudies.ucdavis.edu/files/MixedVegIR09.pdf
Total nitrogen applied	792,376	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	359.4	MT/year	conversion calculation	

Tomatoes

	value	units	source	notes/questions/assumptions				
area planted in 1990, bearing	59,500	acres	1		280.2	100 lb/ac @ 11%; 15lb/ac @ 8%; 150 lb/ac @ 32%; 118 lb/ac @ 18%	http://coststudies.ucdavis.edu/files/tomatoessv1_2008.pdf	processing tomatoes
area planted in 1990, non-bearing		acres	1		155.13	1000lb/ac @ 8%;41.3lb/ac @ 10%; 70lb/ac @32%; 10lb/ac @10%	http://coststudies.ucdavis.edu/files/tomatofrmktsj07.pdf	fresh market
area planted in 1990, bearing and non-bearing	59,500	acres	1		177.6	100lb/ac @11%; 15gal/ac @8%; 20lb/ac @17%;150lb/ac @ 32%	http://coststudies.ucdavis.edu/files/tomatods_sv2007.pdf	processing
Nitrogen application rate for fertilization of established plantings, bearing	204	lb/acre	18	Used Cost Study for oranges as surrogate	10	10 lb/ac @20%	http://coststudies.ucdavis.edu/files/tomatochsjv2004.pdf	cherry
Total nitrogen applied	12,156,445	lb/year	calculation					
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm					
Total nitrogen applied	5,514.1	MT/year	conversion calculation					

Apricots/Pluots

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	664	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	664	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	125	lb/acre	18	Used Plums as surrogate
Nitrogen application rate for fertilization of established plantings, non-bearing	60			non-bear assumed to be trees 1-3 years old
Total nitrogen applied	83,000	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	37.6	MT/year	conversion calculation	

Barley

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	4,100	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	4,100	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	80	lb/acre	18	Use Hay-Grain as surrogate
Total nitrogen applied	328,000	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	148.8	MT/year	conversion calculation	

Rice

	value	units	source	notes/questions/assumptions		
area planted in 1990, bearing	25,000	acres	1		185.625	Sac Valley North (rotation)
area planted in 1990, non-bearing		acres	1		121.5	Sac Valley North (continuous)
area planted in 1990, bearing and non-bearing	25,000	acres	1		121.5	Sac Valley North (2-yr rotation)
Nitrogen application rate for fertilization of established plantings, bearing	143	lb/acre	22			
Total nitrogen applied	3,571,875	lb/year	calculation			
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm			
Total nitrogen applied	1,620.2	MT/year	conversion calculation			

Asparagus

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	585	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	585	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	90	lb/acre	21	
Total nitrogen applied	52,650	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	23.9	MT/year	conversion calculation	

1990 Unicorporated Yolo County

Pecans

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	0	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	0	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	211	lb/acre		
Total nitrogen applied	0	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	0.0	MT/year	conversion calculation	

Misc Fruits (apples, figs, olives, oranges, pecans, pistachios - added melons)

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	5,745	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	5,745	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	120	lb/acre		
Total nitrogen applied	691,325	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	313.6	MT/year	conversion calculation	

Oat

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	35,900	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	35,900	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	60	lb/acre		
Total nitrogen applied	2,154,000	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	977.0	MT/year	conversion calculation	

Pasture and Other (Crop stubble and Rangeland)

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	145,000	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	145,000	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	88	lb/acre	http://coststudies.ucdavis.edu/files/pastureir2008.pdf	
Total nitrogen applied	12,760,000	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	5,787.8	MT/year	conversion calculation	

Christmas Tree (Propagative and Nusery Stock)

	value	units	source	notes/questions/assumptions
area planted in 1990, bearing	526	acres	1	
area planted in 1990, non-bearing		acres	1	
area planted in 1990, bearing and non-bearing	526	acres	1	
Nitrogen application rate for fertilization of established plantings, bearing	20	lb/acre	http://coststudies.ucdavis.edu/files/christmastreesn2005.pdf	
Total nitrogen applied	10,754	lb/year	calculation	
weight conversion	0.000454	lb/MT	http://www.onlineconversion.com/weight.htm	
Total nitrogen applied	4.9	MT/year	conversion calculation	

Construction & Mining

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

GHG	Emissions (tons/day)	Emissions (MT/yr)
Carbon Dioxide (CO_2)	45	14,801
Methane (CH_4)	0	7
Nitrous Oxide (N_2O)	0	0
CO_2E	45	**14,954**

OFFROAD 2007: Annual 1990 Construction & Mining Equipment in Yolo County

GWP	
Methane (CH_4)	23
Nitrous Oxide (N_2O)	296

Energy Consumption

Yolo County Greenhouse Gas Emissions Inventory - 1990

	Electricity (kWh)	Natural Gas (cf)	Liquefied Petroleum (gal)	
Total 1990 Consumption	1,016,903,887	8,178,559,472	2,351,549	Projected based on population growth between 1978-1990

	Electricity (MWh)	Natural Gas (MMBtu)	Liquefied Petroleum (gal)
Total 1990 Consumption	1,016,904	8,415,738	2,351,549

		Emission Factors and GWP (lb/MWh delivered), (kg/MMBtu), and (kg/gal)						
fuel	**units**	**CO_2**	**GWP**	**N_2O**	**GWP**	**CH_4**	**GWP**	**Total County-wide Emissions (MTCO2e/yr)**
electricity	MWH/yr	804.5	1	0.0037	296	0.0067	23	371,679
natural gas	MMBtu/yr	53.06	1	0.0001	296	0.005	23	447,756
propane	gal/yr	5.74	1	0.0001	296	0.001	23	6,179
Total								**825,613**

Source:

CCAR GRP. 2009. v 3.1 Appendix E. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

ncorporated County	131,652
Cities	693,961
Davis	268,786
West Sac	162,132
Winters	26,962
Woodland	236,082

1978 Consumption

Sector	**Electricity (kWh)**	**Natural Gas (cf)**	**Liquefied Petroleum (gal)**
Residential	286,400,000	2,593,000,000	593,000
Commercial/Institutional	170,800,000	1,392,000,000	164,000
Manufacturing	110,000,000	1,949,000,000	148,000
Agricultural	101,000,000	285,000,000	817,000
Gov - Street lights	7,500,000	0	0
Gov - Other	98,800,000	10,000,000	69,000
Total 1978 Consumption	774,500,000	6,229,000,000	1,791,000

Source: Yolo County 1982 Energy Plan (106,000 persons)

Conversion Factors

1,029	Btu		1	scf natural gas	
1	MMBtu		1,000,000	Btu	
2,205	lb		1	MT	1,000 kg

Demographic Data

Jurisdiction	Population (1990)		Population (1978)	Annual growth rate
Davis	45,310			
West Sacramento	27,331			
Winters	4,545			
Woodland	39,797			
Unincorporated	22,193			
Total County	139,176		106,000	2.6%
Total Cities		116,983		

Source: Solid Waste Disposal Study

Solid Waste

Yolo County Greenhouse Gas Emissions Inventory - 1990

Yolo County Central Landfill (1990-1991 Fiscal Year)

Waste Disposed	tons/yr		
Total		254,793	Source: YCCL's Joint Technical Document, 2007
Unincorporated County-Generated		13,711	Source: 1991 Unincorporated Waste Generation Study Results; Attachment A
Difference (City-Generated)		241,082	

UC Davis Landfill

Waste Disposed (tons/year)	tons/yr		
UCD-Generated		11,070	Source: 1991 Unincorporated Waste Generation Study Results; Attachment A

GHG Emissions

$Q_{CH4} = 1.3Lo\ R(e^{-kc} - e^{-kt})$

where:

Q_{CH4} = Methane generation rate [m3/yr]

Lo = Methane generation potential [m3 CH4/Mg of "wet" refuse]	100	default
R = Average annual refuse acceptance rate during active life of landfill [Mg of "wet" refuse/yr]		
k = Methane generation rate constant [yr^{-1}]	0.02	for regions receiving < 25 inches of rain/year
c = Time since landfill closure [yrs] (c = 0 for active landfill)	0	
t = Time since initial refuse placement [yrs]	10	

Source: EPA 2008. AP-42 Compilation of Emission Factors. Chapter 2.4 Solid Waste Disposal

Facility			**Jurisdiction**							
Yolo County Central Landfill	6,619,843	m3/yr	Unincorporated	356,219	m3/yr	Cities	6,263,624	m3/yr	Davis	11,264 MT CO2e/yr
	4,728	MT CH4/yr		254	MT CH4/yr		4,474	MT CH4/yr	West Sac	6,794 MT CO2e/yr
Methane capture efficiency	75%			75%			75%		Winters	1,130 MT CO2e/yr
	30,735	**MT CO2e/yr**		**1,654**	**MT CO2e/yr**		**29,081**	**MT CO2e/yr**	Woodland	9,893 MT CO2e/yr
									UC Davis	4,725 MT CO2e/yr
UC Davis Landfill	287,602	m3/yr								
	205	MT CH4/yr								
	4,725	**MT CO2e/yr**								

Conversion Factors

	1	MT	0.907	tons	1,000,000 g
	1	Mg	1	MT	
	1000	L	1	m3	
Ideal Gas Law	22.4	L/mol			
molecular weight of CH4	16	g/mol			

GWP

Methane (CH4)	23
Nitrous Oxide (N2O)	296

Stationary Sources

Yolo County Greenhouse Gas Emissions Inventory - 1990

Industrial Equipment

GHG	Emissions (tons/day)	Emissions (MT/yr)	Davis	West Sac	Winters	Woodland	Unincorporated
			Emissions (MT CO2e/yr)				
Carbon Dioxide (CO_2)	12	4,123					
Methane (CH_4)	0	5					
Nitrous Oxide (N_2O)	0	0					
CO_2e	13	**4,382**	**0**	**0**	**0**	**1,735**	**2,647**

OFFROAD 2007: Annual 1990 Industrial Equipment in Yolo County

Stationary Facilities

see YSAQMD data worksheet		**164,355**	**0**	**0**	**0**	**149,476**	**3,974**

Agricultural Processing

see Ag Processing worksheet							**10,905**
Total		**168,737**	**0**	**0**	**0**	**151,211**	**17,526**

GWP

Methane (CH_4)	23
Nitrous Oxide (N_2O)	296

Stationary Source Emissions - Agricultural Processing

Unincorporated Yolo County Greenhouse Gas Emissions Inventory - 1990

Commodity Fumigation

Year	Pesticide (Chemical Name)	Countywide Application lbs/yr	lbs/MT Conversion Factor	GWP of 1 MT SO_2F_2 compared to 1 MT CO_2	MT CO2e/yr
1990	SULFURYL FLUORIDE	0	0.000454	4,800	-
Facility emissions					10,905
TOTAL					**10,905**

California Department of Pesticide Regulation: Pesticide Use Reporting

http://www.cdpr.ca.gov/docs/pur/pur90rep/p90menu.htm

Stationary Sources - Permitted Sources

Yolo County Greenhouse Gas Emissions Inventory - 1990

CO	AB	DIS	FACID	FNAME	FSTREET	FCITY	FZIP	FSIC	DEV	PROID	SIC	SCC	SICN	SCC1N	SCC3N	SCC6N	SCC8N	CONF	SCCUN	PR	Process Rate (annual)		Consumption	Units	Emission Factor	Units
57	SV	YS	19	ADAMS GRAIN CO.	1020 EAST STREET	WOODLAND	95695	723	7	5	723	39000699	CROP PREPARATION SVCS FOR M	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	N	MILLION CUBIC FEET BURNED	17		0.02	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	4	2	2033	10200602	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	109		0.11	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	1	1	2033	10200601	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	>100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	164		0.17	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	2	1	2033	10200601	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	>100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	163		0.17	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	3	2	2033	10200601	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	>100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	190		0.20	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	38	CONTADINA FOODS, INC	1376 LEMEN AVENUE	WOODLAND, CA	95695	2033	7	1	2033	10200601	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	>100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	158		0.16	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	38	CONTADINA FOODS, INC	1376 LEMEN AVENUE	WOODLAND, CA	95695	2033	4	2	2033	10200602	CANNED FRUITS AND VEGETABLE	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	442		0.45	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	11	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	27		0.03	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	5	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	26		0.03	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	2	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	53		0.05	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	3	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	53		0.05	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	1	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	53		0.05	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	4	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	53		0.05	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	10	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	64		0.07	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	12	1	2063	10200602	BEET SUGAR	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	92		0.09	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	4	DELTA SUGAR DRIER	WILLOW POINT AND RIVER ROAD	CLARKSBURG	95620	2048	3	1	2048	10200603	PREPARED FEEDS, NEC	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	<10MMBTU/HR	Y	MILLION CUBIC FEET BURNED	25		0.03	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	4	DELTA SUGAR DRIER	WILLOW POINT AND RIVER ROAD	CLARKSBURG	95620	2048	2	3	2048	39000989	PREPARED FEEDS, NEC	INDUSTRIAL PROCES	INPROCESS FUEL	WOOD	NOT CLASSIFIED	Y	TONS BURNED	7551		6,852	MT/yr	1.59	MT CO2e/MT/yr
57	SV	YS	5	FARMERS RICE COOP	2224 INDUSTRIAL BLVD	WEST SACRAMENTO	95691	2044	1	3	2044	39000699	RICE MILLING	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	8		0.01	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	5	FARMERS RICE COOP	2224 INDUSTRIAL BLVD	WEST SACRAMENTO	95691	2044	4	3	2044	39000699	RICE MILLING	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	10		0.01	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	45	MOBIL CHEMICAL COMPANY	1355 E. BEAMER STREET	WOODLAND	95695	3079	3	1	3079	30890003	MISC PLASTICS PRODUCTS	RUBBER/PLASTICS	FUEL FIRED EQPMNT	PROCESS HEATERS	NAT GAS	Y	MILLION CUBIC FEET BURNED	14		0.01	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	6	PAC. INT. RICE MILLS INC	845 KENTUCKY	WOODLAND	95695	2044	5	5	2044	39000699	RICE MILLING	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	7		0.01	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	255	RIVER DELTA COGENERATION	ROUTE 1	CLARKSBURG	95612	4911	2	1	4911	20200204	ELECTRIC SERVICES	INTERNLCOMBUSTION	INDUSTRIAL	NATURAL GAS	ENGINE-COGENERATN	N	MILLION CUBIC FEET BURNED	143		0.15	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	255	RIVER DELTA COGENERATION	ROUTE 1	CLARKSBURG	95612	4911	1	1	4911	20200204	ELECTRIC SERVICES	INTERNLCOMBUSTION	INDUSTRIAL	NATURAL GAS	ENGINE-COGENERATN	N	MILLION CUBIC FEET BURNED	144		0.15	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	40	SOLANO CONCRETE CO., INC.	CACHE CREEK & SSR 16 @I-505	MADISON	95653	2951	1	4	2951	30500208	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ASPHALT HEATER	DISTILLATE OIL	Y	1000 GALLONS OF OIL BURNE	241		241,000	gal/yr	0.01	MT CO2e/gal/yr
57	SV	YS	40	SOLANO CONCRETE CO., INC.	CACHE CREEK & SSR 16 @I-505	MADISON	95653	2951	1	1	2951	30500201	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ROTARY DRYER	CONVENTIONAL PLNT	Y	TONS PRODUCED	73157				no data	
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	5	1	2063	10100602	BEET SUGAR	EXTCOMB BOILER	ELECTRIC GENERATN	NATURAL GAS	<100MMBTU/HR EXTF	Y	MILLION CUBIC FEET BURNED	53		0.05	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	3	3	2063	39000699	BEET SUGAR	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	95		0.10	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	2	3	2063	39000699	BEET SUGAR	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	95		0.10	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	1	3	2063	39000699	BEET SUGAR	INDUSTRIAL PROCES	INPROCESS FUEL	NATURAL GAS	NOT CLASSIFIED	Y	MILLION CUBIC FEET BURNED	189		0.19	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	4	1	2063	10100602	BEET SUGAR	EXTCOMB BOILER	ELECTRIC GENERATN	NATURAL GAS	<100MMBTU/HR EXTF	Y	MILLION CUBIC FEET BURNED	411		0.42	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	11	SYAR INDUSTRIES, INC.	CO. RD. 89, 1 MI. N. HWY 16	MADISON	95653	2951	1	4	2951	30500208	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ASPHALT HEATER	DISTILLATE OIL	N	1000 GALLONS OF OIL BURNE	149		149,000	gal/yr	0.01	MT CO2e/gal/yr
57	SV	YS	11	SYAR INDUSTRIES, INC.	CO. RD. 89, 1 MI. N. HWY 16	MADISON	95653	2951	1	1	2951	30500201	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ROTARY DRYER	CONVENTIONAL PLNT	Y	TONS PRODUCED	79162				no data	
57	SV	YS	13	TEICHERT AGGREGATES	RD. 20 & CACHE CRK.	WOODLAND	95695	2951	1	4	2951	30500209	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ASPHALT HEATER	LPG	Y	1000 GALLONS BURNED	447		447,000	gal/yr	0.01	MT CO2e/gal/yr
57	SV	YS	13	TEICHERT AGGREGATES	RD. 20 & CACHE CRK.	WOODLAND	95695	2951	1	1	2951	30500201	PAVING MIXTURES AND BLOCKS	PETROLEUM INDRY	ASPHALT CONCRETE	ROTARY DRYER	CONVENTIONAL PLNT	Y	TONS PRODUCED	127013				no data	
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	3	1	8221	10200602	COLLEGES & UNIVERSITIES, NEC	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	N	MILLION CUBIC FEET BURNED	22		0.02	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	7	1	8221	10200604	COLLEGES & UNIVERSITIES, NEC	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	COGENERATION	N	MILLION CUBIC FEET BURNED	17		0.02	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	9	1	8221	50200505	COLLEGES & UNIVERSITIES, NEC	SOLID WASTE DISPL	COMMERCL/INSTITNL	INCINERATION-SPCL	PATHOLOGICAL	N	TONS BURNED	718				no data	
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	4	1	8221	10500206	COLLEGES & UNIVERSITIES, NEC	EXTCOMB BOILER	SPACE HEATER	COMMERCL-INSTUTNL	NATURAL GAS	N	MILLION CUBIC FEET BURNED	120		0.12	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	1	1	8221	10200602	COLLEGES & UNIVERSITIES, NEC	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	N	MILLION CUBIC FEET BURNED	664		0.68	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	209	UNOCAL CHEMICALS DIVISION	3961 CHANNEL DRIVE	WEST SACRAMENTO	95691	2873	1	1	2873	10200602	NITROGENOUS FERTILIZERS	EXTCOMB BOILER	INDUSTRIAL	NATURAL GAS	10-100MMBTU/HR	Y	MILLION CUBIC FEET BURNED	130		0.13	MMBtu/yr	0.05	MT CO2e/MMBtu/yr
57	SV	YS	209	UNOCAL CHEMICALS DIVISION	3961 CHANNEL DRIVE	WEST SACRAMENTO	95691	2873	3	1	2873	30101302	NITROGENOUS FERTILIZERS	CHEMICAL MFG	NITRIC ACID		ABSRBR TAILGAS/NW	Y	TONS PURE ACID PRODUCED	73568				no data	
57	SV	YS	257	WOODLAND BIOMASS POWER LIMITED	1786 E. KENTUCKY AVENUE	WOODLAND	95695	4911	1	1	4911	10100902	ELECTRIC SERVICES	EXTCOMB BOILER	ELECTRIC GENERATN	WOOD/BARK WASTE	WOOD/BARK BOILER	Y	TONS BURNED	101696		92,283	MT/yr	1.59	MT CO2e/MT/yr

Total

Direct, Stationary

% of Total

Emission Factors

Fuel	CO_2	GWP	N_2O	GWP	CH_4	GWP	units	CO2e Emission Factor (MT/unit/yr)		Source:
electricity	804.5	1	0.0037	296	0.0067	23	lb/MWh delivered	0.37	MT CO2e/MWH/yr	CCAR GRP. 2009. v 3.1 Appendix E. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf
natural gas	53.06	1	0.0001	296	0.005	23	kg/MMBtu	0.05	MT CO2e/MMBtu/yr	CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/
propane	5.74	1	0.0001	296	0.001	23	kg/gal	0.01	MT CO2e/gal/yr	CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/
LPG	5.79	1	0.0001	296	0.0003	23	kg/gal	0.01	MT CO2e/gal/yr	CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/
distillate fuel oil	10.15	1	0.0001	296	0.0004	23	kg/gal	0.01	MT CO2e/gal/yr	CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/
wood	1,591.53	1					kg/MT	1.59	MT CO2e/MT/yr	CCAR GRP. 2009. v 3.1 Appendix C. http://www.climateregistry.org/resources/docs/protocols/

Conversion Factors

1,029	Btu		1	scf natural gas			
1	MMBtu		1,000,000	Btu			
2,204.62	lb		1	MT	####	kg	1.102 tons

Stationary Sources - Permitted Sources

Yolo County Greenhouse Gas Emissions Inventory - 1990

*CO2 from wood, wood waste, and biogas may be considered biogenic, and not direct, stationary

CO	AB	DIS	FACID	FNAME	FSTREET	FCITY	FZIP	FSIC	DEV	PROID	SIC	SCC	GHG Emissions (MT/CO2e/yr)	Davis	West Sac	Winters	Woodland	Unincorporated	PRDESC	TOGT	ROGT	VOCT	COT	NOXT	SOXT	PMT	PM10T	PM2_5T	NH3T
57	SV	YS	19	ADAMS GRAIN CO.	1020 EAST STREET	WOODLAND	95695	723	7	5	723	39000699	0.00				0.00		DRYER - NG	0	0	0	0.1	1.2	0	0	0	0	0
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	4	2	2033	10200602	0.01	0.01					BOILER #4	0.2	0.08446	0.08446	1.9	9.2	0	0.2	0.2	0.2	0
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	1	1	2033	10200601	0.01	0.01					BOILER #1	0.2	0.08446	0.08446	3.3	13.9	0	0.2	0.2	0.2	0
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	2	1	2033	10200601	0.01	0.01					BOILER #2	0.2	0.08446	0.08446	3.3	13.9	0	0.2	0.2	0.2	0
57	SV	YS	39	BEATRICE/HUNT-WESSON FOODS	1111 COVELL BLVD.	DAVIS,CA	95616	2033	3	2	2033	10200601	0.01	0.01					BOILER #3	0.3	0.12669	0.12669	3.8	17.1	0.1	0.3	0.3	0.3	0
57	SV	YS	38	CONTADINA FOODS, INC	1376 LEMEN AVENUE	WOODLAND, CA	95695	2033	7	1	2033	10200601	0.01				0.01		#7 - NG	0.2	0.08446	0.08446	2.8	11.1	0	0.2	0.2	0.2	0
57	SV	YS	38	CONTADINA FOODS, INC	1376 LEMEN AVENUE	WOODLAND, CA	95695	2033	4	2	2033	10200602	0.02				0.02		#4 - NG	0.6	0.25338	0.25338	7.7	30.9	0.1	0.7	0.7	0.7	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	11	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.5	1.9	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	5	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.5	1.8	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	2	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.9	3.6	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	3	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.9	3.6	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	1	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.9	3.6	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	4	1	2063	10200602	0.00					0.00	BOILER	0.1	0.04223	0.04223	0.9	3.6	0	0.1	0.1	0.1	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	10	1	2063	10200602	0.00					0.00	BOILER	0.2	0.08446	0.08446	1.1	4.5	0	0.2	0.2	0.2	0
57	SV	YS	1	DELTA SUGAR CORPORATION	WILLOW AVE	CLARKSBURG	95612	2063	12	1	2063	10200602	0.01					0.01	BOILER	0.2	0.08446	0.08446	1.1	4.5	0	0.2	0.2	0.2	0
57	SV	YS	4	DELTA SUGAR DRIER	WILLOW POINT AND RIVER ROAD	CLARKSBURG	95620	2048	3	1	2048	10200603	0.00					0.00	BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	4	DELTA SUGAR DRIER	WILLOW POINT AND RIVER ROAD	CLARKSBURG	95620	2048	2	3	2048	39000989	10,905					10,905	BEET DEHYD WOOD	5.3	2.32405	2.32405	15.1	10.6	0.6	0	0	0	0
57	SV	YS	5	FARMERS RICE COOP	2224 INDUSTRIAL BLVD	WEST SACRAMENTO	95691	2044	1	3	2044	39000699	0.00		0.00				BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	5	FARMERS RICE COOP	2224 INDUSTRIAL BLVD	WEST SACRAMENTO	95691	2044	4	3	2044	39000699	0.00		0.00				BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	45	MOBIL CHEMICAL COMPANY	1355 E. BEAMER STREET	WOODLAND	95695	3079	3	1	3079	30890003	0.00				0.00		PROCESS HEATERS	0	0	0	0.2	1	0	0	0	0	0
57	SV	YS	6	PAC. INT. RICE MILLS INC	845 KENTUCKY	WOODLAND	95695	2044	5	5	2044	39000699	0.00				0.00		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	255	RIVER DELTA COGENERATION	ROUTE 1	CLARKSBURG	95612	4911	2	1	4911	20200204	0.01					0.01	BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	255	RIVER DELTA COGENERATION	ROUTE 1	CLARKSBURG	95612	4911	1	1	4911	20200204	0.01					0.01	BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	40	SOLANO CONCRETE CO., INC.	CACHE CREEK & SSR 16 @I-505	MADISON	95653	2951	1	4	2951	30500208	2,456					2,456	HOT PLANT-DIESEL	0	0	0	0.6	2.4	0.7	0	0	0	0
57	SV	YS	40	SOLANO CONCRETE CO., INC.	CACHE CREEK & SSR 16 @I-505	MADISON	95653	2951	1	1	2951	30500201						0.00	DRYER	1.5	1.5	1.5	1.5	1.5	0.1	0.7	0.28	0.2331	0
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	5	1	2063	10100602	0.00				0.00		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	3	3	2063	39000699	0.01				0.01		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	2	3	2063	39000699	0.01				0.01		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	1	3	2063	39000699	0.01				0.01		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	3	SPRECKLES SUGAR CO., INC.	HWY 113 AND CR 18C	WOODLAND	95695	2063	4	1	2063	10100602	0.02				0.02		BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	11	SYAR INDUSTRIES, INC.	CO. RD. 89, 1 MI. N. HWY 16	MADISON	95653	2951	1	4	2951	30500208	1,518					1,518	HOT PLANT - DIESEL	0	0	0	0.4	1.5	0	0.1	0.0976	0.0967	0
57	SV	YS	11	SYAR INDUSTRIES, INC.	CO. RD. 89, 1 MI. N. HWY 16	MADISON	95653	2951	1	1	2951	30500201						0.00	ROTARY DRYER	2	2	2	1.6	1.6	0	0.8	0.32	0.2664	0
57	SV	YS	13	TEICHERT AGGREGATES	RD. 20 & CACHE CRK.	WOODLAND	95695	2951	1	4	2951	30500209	2,604				2,604		HOT PLANT-LPG	0.1	0.06601	0.06601	0.4	2	0	0	0	0	0
57	SV	YS	13	TEICHERT AGGREGATES	RD. 20 & CACHE CRK.	WOODLAND	95695	2951	1	1	2951	30500201					0.00		DRYER	3.2	3.2	3.2	2.5	2.5	0.2	1.3	0.52	0.4329	0
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	3	1	8221	10200602	0.00	0.00					BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	7	1	8221	10200604	0.00	0.00					BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	9	1	8221	50200505		0.00					PATH INCINERATOR	0.7	0.11501	0.11501	0.4	0.7	0.4	0.9	0.27	0.18	0
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	4	1	8221	10500206	0.01	0.01					BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	25	UNIV. OF CALIFORNIA, DAVIS	ENVIRONMENTAL HEALTH & SAFETY	DAVIS	95616	8221	1	1	8221	10200602	0.04	0.04					BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	SV	YS	209	UNOCAL CHEMICALS DIVISION	3961 CHANNEL DRIVE	WEST SACRAMENTO	95691	2873	1	1	2873	10200602	0.01		0.01				BOILERS	0.1	0.04223	0.04223	0.4	1.5	0	0.1	0.1	0.1	0
57	**SV**	**YS**	**209**	**UNOCAL CHEMICALS DIVISION**	**3961 CHANNEL DRIVE**	**WEST SACRAMENTO**	**95691**	**2873**	**3**	**1**	**2873**	**30101302**			**0.00**				**NITRIC ACID FOR UAN**	**0**	**0**	**0**	**190.2**	**23.2**	**0**	**0**	**0**	**0**	**0**
57	SV	YS	257	WOODLAND BIOMASS POWER LIMITED	1786 E. KENTUCKY AVENUE	WOODLAND	95695	4911	1	1	4911	10100902	146,871				146,871		BIOMASS BOILER	1	0.4385	0.4385	8.2	45.5	3.6	11.3	11.2661	10.4751	0
													164,355	**0.0793**	**0**	**-**	**149,476**	**3,974**											
													6,578	**0**	**0**	**-**	**2,605**	**3,974**											
														0.0%	0.0%	0.0%	39.6%	60.4%											

Transportation - On-Road Mobile Sources

Yolo County Greenhouse Gas Emissions Inventory - 1990

	Maintained Roads			Daily VMT (1000s)			Adjusted VMT (annual)	Adjusted VMT (annual) per Jurisdiction + State Hwy VMT Portion	MT CO2e/year
Jurisdiction	Rural	Urban	Total	Rural	Urban	**Total**			
Davis	0.1	99.8	99.9		348	348	99,621,757	354,423,959	186,811
West Sacramento	6.2	102.9	109.1	6	255	261	74,716,318	228,413,051	121,608
Winters	17.8	0	17.8	6	0	6	1,717,617	27,276,566	13,926
Woodland	0	121.2	121.2	0	303	303	86,739,634	310,539,308	165,613
Total Cities	24.1	323.9	348	12	906	918	262,795,326	920,652,884	487,958
Unincorporated County	738	22	760	551	54	605	173,192,998	297,996,027	**158,474**
State Highway	155.2	27.6	182.8	1765	969	2,734	782,660,588		
US Bureau Indian Affairs	0.2	0	0.2	0	0	-	-		-
US BLM	16	0	16	0	0	-	-		-
Total	933.5	373.5	1307	2328	1929	4,257	1,218,648,912		**646,432**

Conversion factor 0.000001 MT/g

Source: Caltrans HPMS data (1990)

Notes: Caltrans HPMS VMT data was adjusted by a factor derived in sheet 4 using the Yolo County General Plan Travel Demand Forecasting Model data for 2005

VMT Distribution and EMFAC 2007 Output by Speed Bin

Source: Fehr & Peers 2010; Yolo County General Plan Travel Demand Forecast Model 2005

VMT Speed Bins (MPH)	Davis (VMT/day)	%	Weighted Emission Factor (g/mile)	West Sac (VMT/day)	%	Weighted Emission Factor (g/mile)	Winters (VMT/day)	%	Weighted Emission Factor (g/mile)	Woodland (VMT/day)	%	Weighted Emission Factor (g/mile)	Unincorporated (VMT/day)	%	Weighted Emission Factor (g/mile)
0 - 5	20	0.0%	0.030	1,595	0.1%	1.685	1	0.0%	0.025	5	0.0%	0.007	14	0.0%	0.034
5 - 10	73	0.0%	0.084	1,502	0.1%	1.215	3	0.0%	0.058	40	0.0%	0.041	26	0.0%	0.048
10 - 15	178	0.0%	0.163	2,263	0.2%	1.455	7	0.0%	0.108	195	0.0%	0.161	187	0.0%	0.277
15 - 20	95,104	10.4%	71.784	120,037	9.3%	63.784	6,798	12.6%	86.752	91,856	9.1%	62.479	51,786	9.2%	63.398
20 - 25	37,487	4.1%	24.581	71,620	5.5%	33.062	566	1.0%	6.275	36,289	3.6%	21.443	7,802	1.4%	8.298
25 - 30	54,125	5.9%	31.860	103,069	7.9%	42.712	3,500	6.5%	34.832	29,494	2.9%	15.645	25,597	4.5%	24.438
30 - 35	46,228	5.1%	25.192	92,054	7.1%	35.315	4,247	7.9%	39.129	106,211	10.5%	52.158	23,149	4.1%	20.461
35 - 40	25,680	2.8%	13.343	52,505	4.0%	19.206	7,159	13.3%	62.891	30,902	3.0%	14.469	27,507	4.9%	23.181
40 - 45	77,287	8.5%	39.410	83,085	6.4%	29.826	20,341	37.7%	175.363	81,661	8.1%	37.524	52,894	9.4%	43.746
45 - 50	92,011	10.1%	47.388	95,648	7.4%	34.679	4,116	7.6%	35.840	72,829	7.2%	33.801	72,477	12.9%	60.542
50 - 55	260,179	28.5%	139.371	308,976	23.8%	116.518	3,672	6.8%	33.256	180,159	17.8%	86.966	110,291	19.6%	95.823
55 - 60	147,054	16.1%	84.465	238,474	18.4%	96.430	2,569	4.8%	24.948	202,845	20.0%	104.993	57,388	10.2%	53.463
60 - 65	77,692	8.5%	49.413	126,224	9.7%	56.517	1,029	1.9%	11.065	180,797	17.8%	103.622	133,864	23.8%	138.090
65 - 70	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000
70 - 75	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000
>75	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000	0	0.0%	0.000
Total	**913,118**		**527.083**	**1,297,052**		**532.403**	**54,008**		**510.543**	**1,013,283**		**533.309**	**562,982**		**531.800**

Title : Yolo County 1990
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/05/28 10:17:45
Scen Year: 1990 -- All model years in the range 1965 to 1990 selected
Season : Annual
Area : Yolo

State Highway VMT Allocation

1990

	VMT/year	population	
Unincorporated County	173,192,998	22,193	
State Hwy	782,660,588		**124,803,030**
Total County	1,218,648,912	139,176	

Source: Caltrans HPMS Solid Waste Disposal Study

Demographic Data

Jurisdiction	Population (1990)		State Highway VMT
Davis	45,310	32.6%	254,802,202
West Sacramento	27,331	19.6%	153,696,733
Winters	4,545	3.3%	25,558,950
Woodland	39,797	28.6%	223,799,674
Unincorporated County	22,193	15.9%	124,803,030
Total	139,176		

VMT Adjustment Derivation

Caltrans HPMS Data (2005)

Jurisdiction	Total Daily VMT
Davis	452,920
West Sacramento	314,570
Winters	16,080
Woodland	434,220
Total Cities	1,217,790
Unincorporated County	608,980
UC Davis	25,240
State Highway	3,830,440
Total	**5,682,530**

Source: Caltrans HPMS 2005 data; pg 136

Fehr & Peers (2005 Yolo County General Plan Travel Demand Forecasting Model)

Jurisdiction	Total Daily VMT
Davis	913,118
West Sacramento	1,297,052
Winters	54,008
Woodland	1,013,283
Total Cities	
Unincorporated County	562,982
Cache Creek	176,917
County Airport	9,431
UC Davis	430,016
State Highway	
Total	**4,456,807**

Source: Fehr & Peers 2010

Adjustment Factor
78%

Wastewater Treatment

Yolo County Greenhouse Gas Emissions Inventory - 1990

= Input

Facility	First Year of Operation	Year of Data	Type of Treatment	Capacity (MGD)	Capacity (G/yr)	Influent (MGD)	Influent (G/yr)	Influent BOD (mg/L)	BOD (Kg/Gal)	BOD (kg/yr)	Adjusted Emission Factor (kg CH4/kg BOD)	kg CH4/yr	MT CO2e/yr	Default Emission Factor (kg CH4/kg BOD)	CH4 Correction Factor	Adjusted Emission Factor (kg CH4/kg BOD)
	Facility-Specific Data													0.6	0.2	0.12
Yolo County (Unincorporated) Facilities																
Esparto	**1963**	2001, 2002	secondary	3.00	1,095,000,000	0.02	6,570,000	62	0.0002	1,541	0.12	185	**4**			
Source: Esparto CSD Waste Discharge Requirements 2001 (influent data); Esparto CSD Wastewater Pond Monitoring Report 2002 (BOD data)																
Madison	**?**	1998, 2001	secondary	0.14		0.13	47,085,000	330	0.0012	58,818	0.12	7,058	**162**			
Source: Madison Service District Cease and Desist Order 1994 (influent data); Madison Service District Pond Monitoring Report 2000-2001 (BOD data)																
Knights Landing	**?**	2000, 2007	secondary			0.08	29,200,000	292	0.0011	32,276	0.12	3,873	**89**			
Source: Knights Landing CSD Waste Discharge Requirements 2007 (influent data, BOD data)																
Unincorporated											**Total 1990**		**256**			
Incorporated Facilities																
Davis	**1970**	1989		**7.50**	2,737,500,000	-	-	-	-	-	0.12	-	-			
West Sac													**4,230**			
Winters																
Woodland																
Sac Regional WWTP	**1983**	2005	secondary	181.00	66,065,000,000	188.00	68,620,000,000	188.08	0.0007	48,854,356	0.12	5,862,523	134,838			
Total Incorporated Emissions											**Total 1990**		**4,230**			

Notes:
See Sac Regional Data worksheet for service area; GHG emissions from Sac Regional were allocated by population to West Sac.
Methane CF of 0.2 is the EF representing the lowest end of the "poorly managed centralized aerobic treatment plant" range.

Source:
Intergovernmental Panel on Climate Change 2006. IPCC Guidelines for National Greenhouse Gas Inventories; Chapter 6: Wastewater Treatment and Discharge

http://cityofdavis.org/pw/water/WPCP.cfm

Esparto Data
Year 2002

	BOD (mg/L) pond						
	1	2	3	4	5	6	7
Month							
Apr	38	43	49	23	13	14	
May	90	100	66	52	24	44	14
Jun	24	28	34	32	29	53	12
July	65	90	60	35		50	21
Aug	58	72	160	57	140	60	98
Sep	70	70	63	62		41	43
Oct	61	64	47	57		58	50
Nov	78	84	170	170	170	66	51
Average	**62**						

Sac Regional Data

Sac Regional Service Area	2005 Population		Influent BOD (mg/L)	
			295000	lb/day (ADAL)
Citrus Heights	86988		1.33848E+11	mg/day
West Sacramento	44162	3.14%	711,955,052.71	mg/mgal
Sacramento	457837		711.96	mg/gal
Folsom	69521		188.08	mg/L
Rancho Cordova	56432			
Elk Grove	131033			
Unicorporated Sac County	561625			
Total Sac Regional Service Area	1407598			

Sources:

County of Sacramento. 2003. Sacramento Regional Wastewater Treatment Plan 2020 Master Plan EIR. SCH # 2002052004

US Census Bureau. Population Data for West Sacramento. http://quickfacts.census.gov/qfd/states/06/0684816.html

Sacramento County Department of Environmental Review and Assessmet. 2009 (June). Greenhouse Gas Emissions Inventory for Sacramento County.

Sacramento Regional County Sanitation District. 2009. Service Area. http://www.srcsd.com/contributing-agencies-map.php

Water Consumption

Yolo County GHG Emissions Inventory - 1990

= input

Notes: the majority of Yolo County is located in DWR "Eto Agricultural Irrigation Zone" # 14.

Average Irrigation District Groundwater Pumping Energy Requirement	145	KWh/ac-ft
Average Irrigation District Surface Water Pumping Energy Requirement	16	KWh/ac-ft
Average Irrigation District Groundwater Pumping	0.01	ac-ft/ac
Average Irrigation District Surface Supply	3.76	ac-ft/ac

Source: California Agricultural Water Electrical Energy Requirements. 2003 (December). Prepared by Irrigation Training and Research Center for CEC.
http://www.itrc.org/reports/energyreq/energyreq.pdf
Source: CCAR GRP. 2009. v 3.1 Appendix E. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

Incorporated GHG Emissions - 1990

Domestic Water Supply from Groundwater Pumping

KWh/million gallons/year	KWh/acre-ft/year	acre-ft/year	Total KWh	MWh	Region	Emission Factor (lb CO2/MWh)	GWP	Emission Factor (lb CH4/MWh)	GWP	Emission Factor (lb N2O/MWh)	GWP	Total CO2e (MT/year)
	145	95.4	13,833	14	CALI	804.54	1	0.0067	23	0.0037	296	**5**

Groundwater pumping data

Davis	48	ac-ft/yr
Woodland	38.5	ac-ft/yr
UC Davis	8.9	ac-ft/yr
Total	95.4	ac-ft/yr

Source: City of Davis, 2006 City of Woodland, 2005, City of Davis & UC Davis, 2002; D. Phillips, 2007 as cited in pg 2-3 of http://www.wdcwa.com/docs/draft_eir.pdf;
Source: CCAR GRP. 2009. v 3.1 Appendix E. http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf

Conversion Factors

3.069	acre-ft	1	MG
2204.62	lb	1	MT

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2260002006	Tampers/Rammers	G2	15	Construction and Mining Equipment	Yolo	8.94E+00	4.46E+00	2.17E+00	4.65E-03	1.77E-06	1.77E-04
1990	2260002009	Plate Compactors	G2	15	Construction and Mining Equipment	Yolo	7.67E-01	4.33E-01	2.11E-01	4.51E-04	1.72E-07	1.72E-05
1990	2260003040	Other General Industrial Equipmen	G2	15	Industrial Equipment	Yolo	1.85E-01	1.90E-01	1.82E-01	3.89E-04	1.08E-07	1.48E-05
1990	2265002003	Asphalt Pavers	G4	15	Construction and Mining Equipment	Yolo	1.95E-01	2.12E-01	1.75E-01	5.96E-04	5.85E-07	2.51E-06
1990	2265002003	Asphalt Pavers	G4	25	Construction and Mining Equipment	Yolo	3.34E-01	3.62E-01	7.25E-01	2.49E-03	1.59E-06	9.38E-06
1990	2265002003	Asphalt Pavers	G4	50	Construction and Mining Equipment	Yolo	4.39E-01	4.72E-01	1.14E+00	8.60E-03	3.71E-06	6.69E-06
1990	2265002003	Asphalt Pavers	G4	120	Construction and Mining Equipment	Yolo	2.41E-01	2.59E-01	1.05E+00	8.91E-03	3.54E-06	4.90E-06
1990	2265002006	Tampers/Rammers	G4	15	Construction and Mining Equipment	Yolo	4.13E-01	2.06E-01	1.42E-01	4.83E-04	5.15E-07	2.02E-06
1990	2265002009	Plate Compactors	G4	5	Construction and Mining Equipment	Yolo	1.52E+01	7.48E+00	3.28E+00	7.79E-03	8.71E-06	1.05E-04
1990	2265002009	Plate Compactors	G4	15	Construction and Mining Equipment	Yolo	1.61E+01	9.08E+00	5.55E+00	1.89E-02	2.13E-05	7.84E-05
1990	2265002015	Rollers	G4	5	Construction and Mining Equipment	Yolo	1.69E+00	3.84E-01	2.27E-01	5.64E-04	5.35E-07	6.72E-06
1990	2265002015	Rollers	G4	15	Construction and Mining Equipment	Yolo	2.73E+00	2.32E+00	1.80E+00	6.13E-03	6.19E-06	2.57E-05
1990	2265002015	Rollers	G4	25	Construction and Mining Equipment	Yolo	1.84E+00	1.57E+00	2.54E+00	8.74E-03	6.14E-06	3.27E-05
1990	2265002015	Rollers	G4	50	Construction and Mining Equipment	Yolo	3.09E-01	5.26E-01	1.42E+00	1.04E-02	4.35E-06	9.76E-06
1990	2265002015	Rollers	G4	120	Construction and Mining Equipment	Yolo	5.81E-01	9.89E-01	4.74E+00	3.93E-02	1.47E-05	2.60E-05
1990	2265002021	Paving Equipment	G4	5	Construction and Mining Equipment	Yolo	2.12E+01	9.89E+00	4.64E+00	1.10E-02	1.19E-05	1.47E-04
1990	2265002021	Paving Equipment	G4	15	Construction and Mining Equipment	Yolo	3.59E+01	1.97E+01	1.61E+01	5.49E-02	5.39E-05	2.27E-04
1990	2265002021	Paving Equipment	G4	25	Construction and Mining Equipment	Yolo	7.97E-01	4.37E-01	7.81E-01	2.69E-03	1.80E-06	9.93E-06
1990	2265002021	Paving Equipment	G4	50	Construction and Mining Equipment	Yolo	1.20E+00	5.75E-01	1.39E+00	1.08E-02	4.57E-06	6.90E-06
1990	2265002021	Paving Equipment	G4	120	Construction and Mining Equipment	Yolo	3.09E-01	1.48E-01	5.74E-01	4.93E-03	1.98E-06	2.22E-06
1990	2265002024	Surfacing Equipment	G4	5	Construction and Mining Equipment	Yolo	3.89E+00	2.13E+00	1.05E+00	2.48E-03	2.63E-06	3.40E-05
1990	2265002024	Surfacing Equipment	G4	15	Construction and Mining Equipment	Yolo	1.16E+01	1.60E+01	8.76E+00	2.96E-02	3.56E-05	1.32E-04
1990	2265002024	Surfacing Equipment	G4	25	Construction and Mining Equipment	Yolo	1.58E-01	2.18E-01	2.82E-01	9.62E-04	7.61E-07	3.82E-06
1990	2265002027	Signal Boards	G4	5	Construction and Mining Equipment	Yolo	4.81E-02	1.71E-02	1.26E-02	3.08E-05	2.66E-08	3.82E-07
1990	2265002027	Signal Boards	G4	15	Construction and Mining Equipment	Yolo	3.42E-01	2.66E-01	2.25E-01	7.67E-04	7.43E-07	3.18E-06
1990	2265002030	Trenchers	G4	15	Construction and Mining Equipment	Yolo	3.16E+00	3.76E+00	3.47E+00	1.18E-02	1.10E-05	5.07E-05
1990	2265002030	Trenchers	G4	25	Construction and Mining Equipment	Yolo	2.45E+00	2.92E+00	5.59E+00	1.91E-02	1.25E-05	7.35E-05
1990	2265002030	Trenchers	G4	50	Construction and Mining Equipment	Yolo	2.81E+00	3.10E+00	7.04E+00	5.30E-02	2.36E-05	4.26E-05
1990	2265002030	Trenchers	G4	120	Construction and Mining Equipment	Yolo	9.33E-01	1.03E+00	4.55E+00	3.83E-02	1.47E-05	2.18E-05
1990	2265002033	Bore/Drill Rigs	G4	15	Construction and Mining Equipment	Yolo	9.05E-02	3.08E-02	3.36E-02	1.15E-04	9.80E-08	4.59E-07
1990	2265002033	Bore/Drill Rigs	G4	25	Construction and Mining Equipment	Yolo	4.50E-01	1.53E-01	2.98E-01	1.03E-03	6.58E-07	3.69E-06
1990	2265002033	Bore/Drill Rigs	G4	50	Construction and Mining Equipment	Yolo	1.36E-01	3.99E-02	1.12E-01	8.71E-04	3.43E-07	5.47E-07

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2265002033	Bore/Drill Rigs	G4	120	Construction and Mining Equipment	Yolo	6.24E-01	1.83E-01	1.26E+00	1.09E-02	3.32E-06	4.83E-06
1990	2265002033	Bore/Drill Rigs	G4	175	Construction and Mining Equipment	Yolo	1.55E-01	4.53E-02	4.12E-01	3.75E-03	1.05E-06	9.66E-07
1990	2265002039	Concrete/Industrial Saws	G4	5	Construction and Mining Equipment	Yolo	1.66E+00	5.92E-01	3.57E-01	8.74E-04	8.28E-07	1.08E-05
1990	2265002039	Concrete/Industrial Saws	G4	15	Construction and Mining Equipment	Yolo	7.46E+00	6.34E+00	6.19E+00	2.11E-02	1.91E-05	8.84E-05
1990	2265002039	Concrete/Industrial Saws	G4	25	Construction and Mining Equipment	Yolo	2.34E+00	1.99E+00	3.63E+00	1.25E-02	8.28E-06	4.67E-05
1990	2265002039	Concrete/Industrial Saws	G4	50	Construction and Mining Equipment	Yolo	5.07E-01	8.48E-01	2.56E+00	2.00E-02	7.59E-06	1.25E-05
1990	2265002039	Concrete/Industrial Saws	G4	120	Construction and Mining Equipment	Yolo	2.91E-01	4.86E-01	2.48E+00	2.14E-02	7.51E-06	9.44E-06
1990	2265002042	Cement and Mortar Mixers	G4	5	Construction and Mining Equipment	Yolo	3.01E+01	7.60E+00	4.33E+00	1.06E-02	1.03E-05	1.31E-04
1990	2265002042	Cement and Mortar Mixers	G4	15	Construction and Mining Equipment	Yolo	5.11E+01	1.29E+01	8.43E+00	2.88E-02	3.13E-05	1.17E-04
1990	2265002042	Cement and Mortar Mixers	G4	25	Construction and Mining Equipment	Yolo	2.15E-01	5.42E-02	1.10E-01	3.78E-04	2.39E-07	1.38E-06
1990	2265002045	Cranes	G4	50	Construction and Mining Equipment	Yolo	1.55E-01	1.76E-01	3.51E-01	2.64E-03	1.25E-06	2.15E-06
1990	2265002045	Cranes	G4	120	Construction and Mining Equipment	Yolo	3.09E-01	3.52E-01	1.24E+00	1.04E-02	4.45E-06	5.99E-06
1990	2265002045	Cranes	G4	175	Construction and Mining Equipment	Yolo	1.24E-02	1.41E-02	7.58E-02	6.86E-04	2.49E-07	1.90E-07
1990	2265002054	Crushing/Proc. Equipment	G4	15	Construction and Mining Equipment	Yolo	8.20E-02	6.50E-02	6.91E-02	2.35E-04	2.05E-07	9.79E-07
1990	2265002054	Crushing/Proc. Equipment	G4	25	Construction and Mining Equipment	Yolo	5.37E-02	4.26E-02	7.97E-02	2.74E-04	1.80E-07	1.02E-06
1990	2265002054	Crushing/Proc. Equipment	G4	120	Construction and Mining Equipment	Yolo	1.79E-01	1.18E-01	9.69E-01	8.25E-03	2.35E-06	4.13E-06
1990	2265002057	Rough Terrain Forklifts	G4	50	Construction and Mining Equipment	Yolo	6.18E-02	7.00E-02	2.38E-01	1.79E-03	6.60E-07	1.45E-06
1990	2265002057	Rough Terrain Forklifts	G4	120	Construction and Mining Equipment	Yolo	8.78E-01	9.94E-01	5.40E+00	4.54E-02	1.58E-05	2.60E-05
1990	2265002057	Rough Terrain Forklifts	G4	175	Construction and Mining Equipment	Yolo	3.09E-02	3.50E-02	2.87E-01	2.60E-03	7.76E-07	7.20E-07
1990	2265002060	Rubber Tired Loaders	G4	50	Construction and Mining Equipment	Yolo	1.55E-01	2.17E-01	5.42E-01	4.05E-03	1.73E-06	3.44E-06
1990	2265002060	Rubber Tired Loaders	G4	120	Construction and Mining Equipment	Yolo	1.03E+00	1.44E+00	5.71E+00	4.78E-02	1.94E-05	2.87E-05
1990	2265002066	Tractors/Loaders/Backhoes	G4	120	Construction and Mining Equipment	Yolo	5.44E-01	1.30E+00	4.02E+00	3.35E-02	1.53E-05	2.11E-05
1990	2265002072	Skid Steer Loaders	G4	15	Construction and Mining Equipment	Yolo	1.61E-01	1.41E-01	1.59E-01	5.42E-04	4.61E-07	2.32E-06
1990	2265002072	Skid Steer Loaders	G4	25	Construction and Mining Equipment	Yolo	1.08E+01	9.42E+00	1.43E+01	4.92E-02	3.57E-05	1.88E-04
1990	2265002072	Skid Steer Loaders	G4	50	Construction and Mining Equipment	Yolo	4.22E+00	3.58E+00	7.41E+00	5.74E-02	2.61E-05	3.75E-05
1990	2265002072	Skid Steer Loaders	G4	120	Construction and Mining Equipment	Yolo	2.52E+00	2.14E+00	9.91E+00	8.49E-02	3.14E-05	3.93E-05
1990	2265002078	Dumpers/Tenders	G4	5	Construction and Mining Equipment	Yolo	1.54E+00	6.28E-01	2.08E-01	4.88E-04	6.26E-07	6.73E-06
1990	2265002078	Dumpers/Tenders	G4	15	Construction and Mining Equipment	Yolo	3.28E+00	1.34E+00	6.88E-01	2.34E-03	2.87E-06	9.92E-06
1990	2265002078	Dumpers/Tenders	G4	25	Construction and Mining Equipment	Yolo	6.08E-01	2.48E-01	2.67E-01	9.16E-04	7.82E-07	3.46E-06
1990	2265002078	Dumpers/Tenders	G4	120	Construction and Mining Equipment	Yolo	1.11E-01	3.87E-02	1.04E-01	8.95E-04	4.25E-07	4.05E-07
1990	2265002081	Other Construction Equipment	G4	175	Construction and Mining Equipment	Yolo	4.33E-01	4.40E-01	2.43E+00	2.21E-02	7.81E-06	5.75E-06
1990	2265003010	Aerial Lifts	G4	15	Industrial Equipment	Yolo	3.58E-02	3.68E-02	3.06E-02	1.04E-04	1.02E-07	4.35E-07

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2265003010	Aerial Lifts	G4	25	Industrial Equipment	Yolo	1.52E+00	1.57E+00	1.89E+00	6.49E-03	5.25E-06	2.48E-05
1990	2265003010	Aerial Lifts	G4	50	Industrial Equipment	Yolo	1.86E+00	1.84E+00	3.13E+00	2.42E-02	1.21E-05	1.64E-05
1990	2265003010	Aerial Lifts	G4	120	Industrial Equipment	Yolo	1.86E+00	1.84E+00	5.68E+00	4.85E-02	2.17E-05	2.33E-05
1990	2265003020	Forklifts	G4	25	Industrial Equipment	Yolo	3.58E-02	8.82E-02	8.46E-02	2.88E-04	2.62E-07	1.14E-06
1990	2265003020	Forklifts	G4	50	Industrial Equipment	Yolo	6.22E+00	3.07E+01	4.58E+01	3.26E-01	1.83E-04	3.54E-04
1990	2265003020	Forklifts	G4	120	Industrial Equipment	Yolo	2.18E+01	1.08E+02	2.38E+02	1.93E+00	1.05E-03	1.48E-03
1990	2265003020	Forklifts	G4	175	Industrial Equipment	Yolo	7.97E-01	3.93E+00	1.60E+01	1.43E-01	6.09E-05	4.37E-05
1990	2265003030	Sweepers/Scrubbers	G4	15	Industrial Equipment	Yolo	1.04E+00	7.68E-01	6.03E-01	2.06E-03	2.05E-06	8.12E-06
1990	2265003030	Sweepers/Scrubbers	G4	25	Industrial Equipment	Yolo	1.01E+00	7.49E-01	1.32E+00	4.53E-03	3.06E-06	1.67E-05
1990	2265003030	Sweepers/Scrubbers	G4	50	Industrial Equipment	Yolo	1.73E+00	2.45E+00	6.83E+00	5.26E-02	2.09E-05	3.60E-05
1990	2265003030	Sweepers/Scrubbers	G4	120	Industrial Equipment	Yolo	1.45E+00	2.05E+00	9.89E+00	8.44E-02	3.07E-05	4.09E-05
1990	2265003030	Sweepers/Scrubbers	G4	175	Industrial Equipment	Yolo	8.41E-03	1.19E-02	1.08E-01	9.83E-04	2.76E-07	2.59E-07
1990	2265003040	Other General Industrial Equipmen	G4	15	Industrial Equipment	Yolo	2.05E+00	2.11E+00	1.27E+00	4.32E-03	4.92E-06	1.81E-05
1990	2265003040	Other General Industrial Equipmen	G4	25	Industrial Equipment	Yolo	6.73E-01	7.94E-01	1.07E+00	3.65E-03	2.82E-06	1.42E-05
1990	2265003040	Other General Industrial Equipmen	G4	50	Industrial Equipment	Yolo	5.95E-01	1.16E+00	2.15E+00	1.63E-02	7.94E-06	1.25E-05
1990	2265003040	Other General Industrial Equipmen	G4	120	Industrial Equipment	Yolo	1.96E-01	3.82E-01	1.65E+00	1.39E-02	5.38E-06	7.58E-06
1990	2265003040	Other General Industrial Equipmen	G4	175	Industrial Equipment	Yolo	1.89E-02	3.70E-02	3.19E-01	2.89E-03	8.39E-07	7.87E-07
1990	2265003050	Other Material Handling Equipment	G4	50	Industrial Equipment	Yolo	8.41E-03	8.91E-03	2.21E-02	1.67E-04	7.11E-08	1.33E-07
1990	2265003050	Other Material Handling Equipment	G4	120	Industrial Equipment	Yolo	3.72E-01	3.94E-01	1.14E+00	9.63E-03	4.49E-06	5.41E-06
1990	2265005010	2-Wheel Tractors	G4	5	Agricultural Equipment	Yolo	2.20E+01	9.67E+00	4.75E+00	1.14E-02	1.20E-05	1.50E-04
1990	2265005010	2-Wheel Tractors	G4	15	Agricultural Equipment	Yolo	2.56E+01	2.34E+01	1.61E+01	5.48E-02	5.86E-05	2.32E-04
1990	2265005010	2-Wheel Tractors	G4	25	Agricultural Equipment	Yolo	6.88E-01	6.27E-01	8.57E-01	2.94E-03	2.24E-06	1.11E-05
1990	2265005015	Agricultural Tractors	G4	120	Agricultural Equipment	Yolo	1.78E+01	2.68E+01	1.40E+02	1.17E+00	4.17E-04	7.35E-04
1990	2265005015	Agricultural Tractors	G4	175	Agricultural Equipment	Yolo	2.44E+00	3.68E+00	2.62E+01	2.37E-01	7.60E-05	6.76E-05
1990	2265005020	Combines	G4	120	Agricultural Equipment	Yolo	4.46E+00	1.53E+00	1.15E+01	9.95E-02	2.91E-05	4.27E-05
1990	2265005020	Combines	G4	175	Agricultural Equipment	Yolo	2.48E+00	8.49E-01	9.39E+00	8.56E-02	2.18E-05	2.19E-05
1990	2265005020	Combines	G4	250	Agricultural Equipment	Yolo	4.57E-01	1.57E-01	2.00E+00	1.82E-02	4.40E-06	4.78E-06
1990	2265005025	Balers	G4	50	Agricultural Equipment	Yolo	6.49E+01	1.21E+01	2.57E+01	2.01E-01	9.00E-05	1.22E-04
1990	2265005025	Balers	G4	120	Agricultural Equipment	Yolo	3.32E+01	6.20E+00	2.16E+01	1.86E-01	7.82E-05	7.96E-05
1990	2265005030	Agricultural Mowers	G4	15	Agricultural Equipment	Yolo	2.29E+01	1.13E+01	6.04E+00	2.05E-02	2.47E-05	8.63E-05
1990	2265005030	Agricultural Mowers	G4	25	Agricultural Equipment	Yolo	1.87E+01	9.24E+00	1.10E+01	3.78E-02	3.07E-05	1.42E-04
1990	2265005035	Sprayers	G4	5	Agricultural Equipment	Yolo	8.68E+01	2.33E+01	9.27E+00	2.21E-02	2.58E-05	2.94E-04

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2265005035	Sprayers	G4	15	Agricultural Equipment	Yolo	2.70E+01	7.26E+00	3.53E+00	1.20E-02	1.51E-05	4.99E-05
1990	2265005035	Sprayers	G4	25	Agricultural Equipment	Yolo	6.99E+01	1.88E+01	2.20E+01	7.56E-02	6.18E-05	2.80E-04
1990	2265005035	Sprayers	G4	50	Agricultural Equipment	Yolo	1.22E+01	2.68E+00	4.89E+00	3.82E-02	1.84E-05	2.34E-05
1990	2265005035	Sprayers	G4	120	Agricultural Equipment	Yolo	2.06E+01	4.52E+00	1.52E+01	1.31E-01	5.60E-05	5.68E-05
1990	2265005035	Sprayers	G4	175	Agricultural Equipment	Yolo	4.65E+00	1.02E+00	6.51E+00	5.93E-02	1.95E-05	1.52E-05
1990	2265005040	Tillers	G4	15	Agricultural Equipment	Yolo	2.95E+03	5.76E+02	3.96E+02	1.35E+00	1.43E-03	5.38E-03
1990	2265005045	Swathers	G4	120	Agricultural Equipment	Yolo	6.66E+01	1.74E+01	7.88E+01	6.78E-01	2.52E-04	2.98E-04
1990	2265005045	Swathers	G4	175	Agricultural Equipment	Yolo	5.10E+01	1.33E+01	8.14E+01	7.41E-01	2.49E-04	1.90E-04
1990	2265005050	Hydro Power Units	G4	5	Agricultural Equipment	Yolo	5.23E+00	2.51E+00	1.40E+00	3.33E-03	3.32E-06	4.46E-05
1990	2265005050	Hydro Power Units	G4	15	Agricultural Equipment	Yolo	1.04E+01	1.33E+01	8.32E+00	2.82E-02	3.18E-05	1.24E-04
1990	2265005050	Hydro Power Units	G4	25	Agricultural Equipment	Yolo	3.98E+00	5.07E+00	6.68E+00	2.28E-02	1.78E-05	8.91E-05
1990	2265005050	Hydro Power Units	G4	50	Agricultural Equipment	Yolo	6.09E-01	7.53E-01	1.79E+00	1.38E-02	5.91E-06	9.08E-06
1990	2265005050	Hydro Power Units	G4	120	Agricultural Equipment	Yolo	7.62E-02	9.41E-02	3.45E-01	2.97E-03	1.22E-06	1.32E-06
1990	2265005055	Other Agricultural Equipment	G4	5	Agricultural Equipment	Yolo	3.65E+00	1.45E+00	6.27E-01	1.51E-03	1.69E-06	1.95E-05
1990	2265005055	Other Agricultural Equipment	G4	15	Agricultural Equipment	Yolo	3.19E+00	1.27E+00	9.69E-01	3.30E-03	3.35E-06	1.37E-05
1990	2265005055	Other Agricultural Equipment	G4	25	Agricultural Equipment	Yolo	8.13E-01	3.23E-01	6.12E-01	2.11E-03	1.37E-06	7.80E-06
1990	2265005055	Other Agricultural Equipment	G4	50	Agricultural Equipment	Yolo	2.02E+00	6.87E-01	1.21E+00	9.46E-03	4.62E-06	5.93E-06
1990	2265005055	Other Agricultural Equipment	G4	120	Agricultural Equipment	Yolo	1.17E+01	3.98E+00	1.46E+01	1.25E-01	5.15E-05	5.55E-05
1990	2265005055	Other Agricultural Equipment	G4	175	Agricultural Equipment	Yolo	1.33E+00	4.54E-01	3.09E+00	2.82E-02	9.00E-06	7.26E-06
1990	2265005055	Other Agricultural Equipment	G4	250	Agricultural Equipment	Yolo	4.95E-01	1.68E-01	2.02E+00	1.84E-02	4.58E-06	4.88E-06
1990	2266003010	Aerial Lifts	C4	15	Industrial Equipment	Yolo	4.00E-02	4.11E-02	4.18E-02	1.83E-04	0.00E+00	1.35E-06
1990	2266003010	Aerial Lifts	C4	25	Industrial Equipment	Yolo	1.71E+00	1.76E+00	2.66E+00	1.15E-02	0.00E+00	1.08E-04
1990	2266003020	Forklifts	C4	25	Industrial Equipment	Yolo	1.68E-02	5.77E-02	7.10E-02	2.96E-04	0.00E+00	4.16E-06
1990	2266003020	Forklifts	C4	50	Industrial Equipment	Yolo	1.14E+01	5.63E+01	7.59E+01	5.15E-01	0.00E+00	1.54E-03
1990	2266003020	Forklifts	C4	120	Industrial Equipment	Yolo	4.00E+01	1.97E+02	4.76E+02	3.08E+00	0.00E+00	1.03E-02
1990	2266003020	Forklifts	C4	175	Industrial Equipment	Yolo	1.46E+00	7.23E+00	3.55E+01	2.35E-01	0.00E+00	4.44E-04
1990	2270002003	Pavers	D	25	Construction and Mining Equipment	Yolo	4.29E-02	9.65E-02	8.35E-02	9.00E-04	0.00E+00	3.16E-07
1990	2270002003	Pavers	D	50	Construction and Mining Equipment	Yolo	2.49E+00	5.02E+00	6.71E+00	7.01E-02	0.00E+00	5.34E-05
1990	2270002003	Pavers	D	120	Construction and Mining Equipment	Yolo	2.94E+00	5.91E+00	1.90E+01	2.04E-01	0.00E+00	7.70E-05
1990	2270002003	Pavers	D	175	Construction and Mining Equipment	Yolo	1.83E+00	3.68E+00	2.18E+01	2.36E-01	0.00E+00	6.82E-05
1990	2270002003	Pavers	D	250	Construction and Mining Equipment	Yolo	2.20E-01	4.43E-01	3.98E+00	4.30E-02	0.00E+00	1.24E-05
1990	2270002003	Pavers	D	500	Construction and Mining Equipment	Yolo	2.26E-01	4.55E-01	4.97E+00	5.30E-02	0.00E+00	1.35E-05

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270002009	Plate Compactors	D	15	Construction and Mining Equipment	Yolo	9.20E-01	1.51E+00	3.02E-01	3.26E-03	0.00E+00	9.35E-07
1990	2270002015	Rollers	D	15	Construction and Mining Equipment	Yolo	1.73E+00	3.30E+00	9.62E-01	1.04E-02	0.00E+00	2.98E-06
1990	2270002015	Rollers	D	25	Construction and Mining Equipment	Yolo	7.23E-01	1.38E+00	8.52E-01	9.19E-03	0.00E+00	3.23E-06
1990	2270002015	Rollers	D	50	Construction and Mining Equipment	Yolo	2.25E+00	3.78E+00	4.69E+00	4.90E-02	0.00E+00	3.69E-05
1990	2270002015	Rollers	D	120	Construction and Mining Equipment	Yolo	1.21E+01	2.03E+01	5.56E+01	5.98E-01	0.00E+00	2.25E-04
1990	2270002015	Rollers	D	175	Construction and Mining Equipment	Yolo	4.86E+00	8.16E+00	4.08E+01	4.41E-01	0.00E+00	1.32E-04
1990	2270002015	Rollers	D	250	Construction and Mining Equipment	Yolo	6.89E-01	1.16E+00	8.19E+00	8.85E-02	0.00E+00	2.65E-05
1990	2270002015	Rollers	D	500	Construction and Mining Equipment	Yolo	4.83E-01	8.11E-01	8.34E+00	8.88E-02	0.00E+00	2.35E-05
1990	2270002018	Scrapers	D	120	Construction and Mining Equipment	Yolo	1.11E-01	2.91E-01	1.27E+00	1.36E-02	0.00E+00	5.23E-06
1990	2270002018	Scrapers	D	175	Construction and Mining Equipment	Yolo	1.02E+00	2.66E+00	1.82E+01	1.97E-01	0.00E+00	5.70E-05
1990	2270002018	Scrapers	D	250	Construction and Mining Equipment	Yolo	9.95E-01	2.59E+00	2.51E+01	2.72E-01	0.00E+00	7.86E-05
1990	2270002018	Scrapers	D	500	Construction and Mining Equipment	Yolo	2.74E+00	7.14E+00	1.08E+02	1.15E+00	0.00E+00	2.93E-04
1990	2270002018	Scrapers	D	750	Construction and Mining Equipment	Yolo	2.36E-01	6.14E-01	1.60E+01	1.70E-01	0.00E+00	4.35E-05
1990	2270002021	Paving Equipment	D	25	Construction and Mining Equipment	Yolo	7.43E-02	1.69E-01	9.89E-02	1.07E-03	0.00E+00	3.74E-07
1990	2270002021	Paving Equipment	D	50	Construction and Mining Equipment	Yolo	6.29E-02	1.32E-01	1.51E-01	1.58E-03	0.00E+00	1.21E-06
1990	2270002021	Paving Equipment	D	120	Construction and Mining Equipment	Yolo	9.06E-01	1.90E+00	4.82E+00	5.17E-02	0.00E+00	1.97E-05
1990	2270002021	Paving Equipment	D	175	Construction and Mining Equipment	Yolo	4.26E-01	8.93E-01	4.17E+00	4.51E-02	0.00E+00	1.35E-05
1990	2270002021	Paving Equipment	D	250	Construction and Mining Equipment	Yolo	1.20E-01	2.52E-01	1.42E+00	1.54E-02	0.00E+00	4.59E-06
1990	2270002024	Surfacing Equipment	D	50	Construction and Mining Equipment	Yolo	5.72E-02	5.85E-02	3.92E-02	4.12E-04	0.00E+00	2.75E-07
1990	2270002024	Surfacing Equipment	D	120	Construction and Mining Equipment	Yolo	1.14E-02	1.17E-02	3.46E-02	3.73E-04	0.00E+00	1.30E-07
1990	2270002024	Surfacing Equipment	D	175	Construction and Mining Equipment	Yolo	8.58E-03	8.78E-03	3.48E-02	3.76E-04	0.00E+00	1.02E-07
1990	2270002024	Surfacing Equipment	D	250	Construction and Mining Equipment	Yolo	1.72E-02	1.76E-02	1.09E-01	1.18E-03	0.00E+00	3.21E-07
1990	2270002024	Surfacing Equipment	D	500	Construction and Mining Equipment	Yolo	1.43E-01	1.46E-01	1.51E+00	1.62E-02	0.00E+00	3.92E-06
1990	2270002024	Surfacing Equipment	D	750	Construction and Mining Equipment	Yolo	4.50E-02	4.61E-02	7.47E-01	7.99E-03	0.00E+00	1.94E-06
1990	2270002027	Signal Boards	D	15	Construction and Mining Equipment	Yolo	8.05E+00	1.65E+01	4.72E+00	5.10E-02	0.00E+00	1.46E-05
1990	2270002027	Signal Boards	D	50	Construction and Mining Equipment	Yolo	4.00E-02	5.87E-02	1.00E-01	1.06E-03	0.00E+00	6.15E-07
1990	2270002027	Signal Boards	D	120	Construction and Mining Equipment	Yolo	6.55E-01	9.60E-01	3.57E+00	3.85E-02	0.00E+00	1.24E-05
1990	2270002027	Signal Boards	D	175	Construction and Mining Equipment	Yolo	4.06E-01	5.95E-01	4.23E+00	4.60E-02	0.00E+00	1.02E-05
1990	2270002027	Signal Boards	D	250	Construction and Mining Equipment	Yolo	8.58E-02	1.26E-01	1.48E+00	1.60E-02	0.00E+00	3.55E-06
1990	2270002030	Trenchers	D	15	Construction and Mining Equipment	Yolo	2.14E-01	3.63E-01	1.42E-01	1.54E-03	0.00E+00	4.40E-07
1990	2270002030	Trenchers	D	25	Construction and Mining Equipment	Yolo	2.26E-01	3.83E-01	5.84E-01	6.29E-03	0.00E+00	2.21E-06
1990	2270002030	Trenchers	D	50	Construction and Mining Equipment	Yolo	8.60E+00	1.29E+01	2.03E+01	2.12E-01	0.00E+00	1.53E-04

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270002030	Trenchers	D	120	Construction and Mining Equipment	Yolo	1.16E+01	1.75E+01	5.28E+01	5.67E-01	0.00E+00	2.07E-04
1990	2270002030	Trenchers	D	175	Construction and Mining Equipment	Yolo	1.27E+00	1.92E+00	1.27E+01	1.38E-01	0.00E+00	3.82E-05
1990	2270002030	Trenchers	D	250	Construction and Mining Equipment	Yolo	1.14E-01	1.72E-01	1.77E+00	1.91E-02	0.00E+00	5.31E-06
1990	2270002030	Trenchers	D	500	Construction and Mining Equipment	Yolo	1.46E-01	2.19E-01	3.19E+00	3.41E-02	0.00E+00	8.40E-06
1990	2270002030	Trenchers	D	750	Construction and Mining Equipment	Yolo	9.00E-03	1.35E-02	3.72E-01	3.97E-03	0.00E+00	9.78E-07
1990	2270002033	Bore/Drill Rigs	D	15	Construction and Mining Equipment	Yolo	2.86E-02	6.36E-02	3.04E-02	3.29E-04	0.00E+00	9.41E-08
1990	2270002033	Bore/Drill Rigs	D	25	Construction and Mining Equipment	Yolo	8.58E-02	1.91E-01	1.41E-01	1.52E-03	0.00E+00	5.35E-07
1990	2270002033	Bore/Drill Rigs	D	50	Construction and Mining Equipment	Yolo	3.74E-01	3.65E-01	5.37E-01	5.66E-03	0.00E+00	3.71E-06
1990	2270002033	Bore/Drill Rigs	D	120	Construction and Mining Equipment	Yolo	1.15E+00	1.12E+00	4.00E+00	4.32E-02	0.00E+00	1.43E-05
1990	2270002033	Bore/Drill Rigs	D	175	Construction and Mining Equipment	Yolo	2.66E-01	2.59E-01	1.68E+00	1.83E-02	0.00E+00	4.11E-06
1990	2270002033	Bore/Drill Rigs	D	250	Construction and Mining Equipment	Yolo	2.29E-01	2.23E-01	1.93E+00	2.10E-02	0.00E+00	4.72E-06
1990	2270002033	Bore/Drill Rigs	D	500	Construction and Mining Equipment	Yolo	5.09E-01	4.96E-01	7.18E+00	7.72E-02	0.00E+00	1.57E-05
1990	2270002033	Bore/Drill Rigs	D	750	Construction and Mining Equipment	Yolo	1.40E-01	1.36E-01	3.89E+00	4.18E-02	0.00E+00	8.49E-06
1990	2270002033	Bore/Drill Rigs	D	1000	Construction and Mining Equipment	Yolo	2.34E-01	2.28E-01	9.84E+00	1.06E-01	0.00E+00	2.13E-05
1990	2270002036	Excavators	D	25	Construction and Mining Equipment	Yolo	1.06E-01	4.05E-01	3.08E-01	3.32E-03	0.00E+00	1.17E-06
1990	2270002036	Excavators	D	50	Construction and Mining Equipment	Yolo	3.98E+00	1.09E+01	1.31E+01	1.37E-01	0.00E+00	1.12E-04
1990	2270002036	Excavators	D	120	Construction and Mining Equipment	Yolo	1.08E+01	2.97E+01	1.02E+02	1.09E+00	0.00E+00	4.28E-04
1990	2270002036	Excavators	D	175	Construction and Mining Equipment	Yolo	2.09E+01	5.73E+01	2.97E+02	3.21E+00	0.00E+00	9.92E-04
1990	2270002036	Excavators	D	250	Construction and Mining Equipment	Yolo	8.48E+00	2.33E+01	1.71E+02	1.85E+00	0.00E+00	5.71E-04
1990	2270002036	Excavators	D	500	Construction and Mining Equipment	Yolo	6.12E+00	1.68E+01	1.85E+02	1.96E+00	0.00E+00	5.33E-04
1990	2270002036	Excavators	D	750	Construction and Mining Equipment	Yolo	7.05E-02	1.94E-01	3.53E+00	3.75E-02	0.00E+00	1.02E-05
1990	2270002039	Concrete/Industrial Saws	D	25	Construction and Mining Equipment	Yolo	1.14E-02	1.86E-02	1.42E-02	1.53E-04	0.00E+00	5.37E-08
1990	2270002039	Concrete/Industrial Saws	D	50	Construction and Mining Equipment	Yolo	1.00E-01	1.59E-01	2.30E-01	2.40E-03	0.00E+00	1.88E-06
1990	2270002039	Concrete/Industrial Saws	D	120	Construction and Mining Equipment	Yolo	1.74E-01	2.77E-01	9.57E-01	1.03E-02	0.00E+00	4.02E-06
1990	2270002039	Concrete/Industrial Saws	D	175	Construction and Mining Equipment	Yolo	5.72E-03	9.09E-03	6.75E-02	7.28E-04	0.00E+00	2.42E-07
1990	2270002042	Cement and Mortar Mixers	D	15	Construction and Mining Equipment	Yolo	1.46E+00	1.20E+00	3.51E-01	3.79E-03	0.00E+00	1.09E-06
1990	2270002042	Cement and Mortar Mixers	D	25	Construction and Mining Equipment	Yolo	1.31E-01	1.08E-01	8.80E-02	9.49E-04	0.00E+00	3.33E-07
1990	2270002045	Cranes	D	50	Construction and Mining Equipment	Yolo	9.72E-02	3.23E-01	3.59E-01	3.74E-03	0.00E+00	3.08E-06
1990	2270002045	Cranes	D	120	Construction and Mining Equipment	Yolo	1.07E+00	3.54E+00	8.27E+00	8.87E-02	0.00E+00	3.53E-05
1990	2270002045	Cranes	D	175	Construction and Mining Equipment	Yolo	1.07E+00	3.54E+00	1.32E+01	1.42E-01	0.00E+00	4.59E-05
1990	2270002045	Cranes	D	250	Construction and Mining Equipment	Yolo	2.07E+00	6.87E+00	3.57E+01	3.85E-01	0.00E+00	1.24E-04
1990	2270002045	Cranes	D	500	Construction and Mining Equipment	Yolo	7.57E-01	2.52E+00	2.14E+01	2.26E-01	0.00E+00	6.41E-05

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270002045	Cranes	D	750	Construction and Mining Equipment	Yolo	2.93E-01	9.72E-01	1.39E+01	1.47E-01	0.00E+00	4.16E-05
1990	2270002045	Cranes	D	9999	Construction and Mining Equipment	Yolo	3.68E-01	1.22E+00	5.58E+01	5.91E-01	0.00E+00	1.67E-04
1990	2270002048	Graders	D	50	Construction and Mining Equipment	Yolo	4.00E-02	7.82E-02	1.03E-01	1.08E-03	0.00E+00	8.15E-07
1990	2270002048	Graders	D	120	Construction and Mining Equipment	Yolo	2.67E+00	5.21E+00	1.82E+01	1.95E-01	0.00E+00	7.23E-05
1990	2270002048	Graders	D	175	Construction and Mining Equipment	Yolo	9.12E+00	1.78E+01	1.02E+02	1.10E+00	0.00E+00	2.99E-04
1990	2270002048	Graders	D	250	Construction and Mining Equipment	Yolo	5.66E+00	1.11E+01	8.78E+01	9.50E-01	0.00E+00	2.58E-04
1990	2270002048	Graders	D	500	Construction and Mining Equipment	Yolo	1.60E-01	3.13E-01	3.36E+00	3.58E-02	0.00E+00	8.60E-06
1990	2270002048	Graders	D	750	Construction and Mining Equipment	Yolo	4.50E-03	8.79E-03	2.00E-01	2.13E-03	0.00E+00	5.12E-07
1990	2270002051	Off-Highway Trucks	D	175	Construction and Mining Equipment	Yolo	1.86E-01	7.61E-01	4.41E+00	4.76E-02	0.00E+00	1.51E-05
1990	2270002051	Off-Highway Trucks	D	250	Construction and Mining Equipment	Yolo	1.37E+00	5.62E+00	4.33E+01	4.68E-01	0.00E+00	1.49E-04
1990	2270002051	Off-Highway Trucks	D	500	Construction and Mining Equipment	Yolo	1.93E+00	7.91E+00	1.02E+02	1.08E+00	0.00E+00	3.00E-04
1990	2270002051	Off-Highway Trucks	D	750	Construction and Mining Equipment	Yolo	9.44E-01	3.87E+00	8.05E+01	8.53E-01	0.00E+00	2.38E-04
1990	2270002051	Off-Highway Trucks	D	1000	Construction and Mining Equipment	Yolo	4.43E-01	1.81E+00	5.33E+01	5.65E-01	0.00E+00	1.57E-04
1990	2270002054	Crushing/Proc. Equipment	D	50	Construction and Mining Equipment	Yolo	4.57E-01	1.20E+00	2.51E+00	2.63E-02	0.00E+00	1.85E-05
1990	2270002054	Crushing/Proc. Equipment	D	120	Construction and Mining Equipment	Yolo	1.29E+00	3.38E+00	1.30E+01	1.40E-01	0.00E+00	5.02E-05
1990	2270002054	Crushing/Proc. Equipment	D	175	Construction and Mining Equipment	Yolo	5.46E-01	1.43E+00	1.10E+01	1.19E-01	0.00E+00	2.92E-05
1990	2270002054	Crushing/Proc. Equipment	D	250	Construction and Mining Equipment	Yolo	5.43E-02	1.42E-01	1.60E+00	1.74E-02	0.00E+00	4.25E-06
1990	2270002054	Crushing/Proc. Equipment	D	500	Construction and Mining Equipment	Yolo	3.06E-01	8.01E-01	1.40E+01	1.50E-01	0.00E+00	3.26E-05
1990	2270002054	Crushing/Proc. Equipment	D	750	Construction and Mining Equipment	Yolo	7.50E-03	1.96E-02	5.40E-01	5.78E-03	0.00E+00	1.26E-06
1990	2270002054	Crushing/Proc. Equipment	D	9999	Construction and Mining Equipment	Yolo	7.50E-03	1.96E-02	1.20E+00	1.28E-02	0.00E+00	2.79E-06
1990	2270002057	Rough Terrain Forklifts	D	50	Construction and Mining Equipment	Yolo	3.17E-01	8.49E-01	1.38E+00	1.44E-02	0.00E+00	1.18E-05
1990	2270002057	Rough Terrain Forklifts	D	120	Construction and Mining Equipment	Yolo	1.52E+01	4.06E+01	1.18E+02	1.27E+00	0.00E+00	5.07E-04
1990	2270002057	Rough Terrain Forklifts	D	175	Construction and Mining Equipment	Yolo	1.95E+00	5.21E+00	3.01E+01	3.25E-01	0.00E+00	1.08E-04
1990	2270002057	Rough Terrain Forklifts	D	250	Construction and Mining Equipment	Yolo	1.09E-01	2.91E-01	2.30E+00	2.48E-02	0.00E+00	8.24E-06
1990	2270002057	Rough Terrain Forklifts	D	500	Construction and Mining Equipment	Yolo	7.15E-02	1.91E-01	2.31E+00	2.45E-02	0.00E+00	7.13E-06
1990	2270002060	Rubber Tired Loaders	D	25	Construction and Mining Equipment	Yolo	4.00E-02	1.05E-01	8.24E-02	8.88E-04	0.00E+00	3.12E-07
1990	2270002060	Rubber Tired Loaders	D	50	Construction and Mining Equipment	Yolo	7.77E-01	1.59E+00	2.37E+00	2.47E-02	0.00E+00	1.90E-05
1990	2270002060	Rubber Tired Loaders	D	120	Construction and Mining Equipment	Yolo	2.11E+01	4.32E+01	1.18E+02	1.27E+00	0.00E+00	4.78E-04
1990	2270002060	Rubber Tired Loaders	D	175	Construction and Mining Equipment	Yolo	1.19E+01	2.44E+01	1.20E+02	1.29E+00	0.00E+00	3.68E-04
1990	2270002060	Rubber Tired Loaders	D	250	Construction and Mining Equipment	Yolo	1.18E+01	2.42E+01	1.67E+02	1.80E+00	0.00E+00	5.13E-04
1990	2270002060	Rubber Tired Loaders	D	500	Construction and Mining Equipment	Yolo	4.93E+00	1.01E+01	1.12E+02	1.19E+00	0.00E+00	3.00E-04
1990	2270002060	Rubber Tired Loaders	D	750	Construction and Mining Equipment	Yolo	1.82E-01	3.71E-01	8.45E+00	9.00E-02	0.00E+00	2.26E-05

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270002060	Rubber Tired Loaders	D	1000	Construction and Mining Equipment	Yolo	1.95E-02	3.98E-02	1.11E+00	1.18E-02	0.00E+00	2.96E-06
1990	2270002063	Rubber Tired Dozers	D	175	Construction and Mining Equipment	Yolo	2.86E-02	1.14E-01	6.82E-01	7.36E-03	0.00E+00	2.20E-06
1990	2270002063	Rubber Tired Dozers	D	250	Construction and Mining Equipment	Yolo	7.00E-01	2.79E+00	2.37E+01	2.56E-01	0.00E+00	7.65E-05
1990	2270002063	Rubber Tired Dozers	D	500	Construction and Mining Equipment	Yolo	1.08E+00	4.29E+00	5.35E+01	5.68E-01	0.00E+00	1.49E-04
1990	2270002063	Rubber Tired Dozers	D	750	Construction and Mining Equipment	Yolo	2.00E-01	7.94E-01	1.49E+01	1.58E-01	0.00E+00	4.16E-05
1990	2270002063	Rubber Tired Dozers	D	1000	Construction and Mining Equipment	Yolo	1.35E-02	5.37E-02	1.50E+00	1.59E-02	0.00E+00	4.15E-06
1990	2270002066	Tractors/Loaders/Backhoes	D	25	Construction and Mining Equipment	Yolo	8.06E-01	2.08E+00	1.53E+00	1.65E-02	0.00E+00	5.80E-06
1990	2270002066	Tractors/Loaders/Backhoes	D	50	Construction and Mining Equipment	Yolo	4.82E+00	7.89E+00	1.14E+01	1.20E-01	0.00E+00	9.09E-05
1990	2270002066	Tractors/Loaders/Backhoes	D	120	Construction and Mining Equipment	Yolo	6.44E+01	1.06E+02	2.54E+02	2.73E+00	0.00E+00	1.01E-03
1990	2270002066	Tractors/Loaders/Backhoes	D	175	Construction and Mining Equipment	Yolo	4.81E+00	7.88E+00	3.69E+01	3.99E-01	0.00E+00	1.11E-04
1990	2270002066	Tractors/Loaders/Backhoes	D	250	Construction and Mining Equipment	Yolo	1.55E+00	2.55E+00	2.02E+01	2.19E-01	0.00E+00	6.08E-05
1990	2270002066	Tractors/Loaders/Backhoes	D	500	Construction and Mining Equipment	Yolo	2.51E+00	4.11E+00	6.64E+01	7.08E-01	0.00E+00	1.74E-04
1990	2270002066	Tractors/Loaders/Backhoes	D	750	Construction and Mining Equipment	Yolo	9.08E-01	1.49E+00	3.60E+01	3.84E-01	0.00E+00	9.46E-05
1990	2270002069	Crawler Tractors	D	50	Construction and Mining Equipment	Yolo	4.00E-02	9.32E-02	1.11E-01	1.16E-03	0.00E+00	9.02E-07
1990	2270002069	Crawler Tractors	D	120	Construction and Mining Equipment	Yolo	2.27E+01	5.29E+01	1.62E+02	1.74E+00	0.00E+00	6.56E-04
1990	2270002069	Crawler Tractors	D	175	Construction and Mining Equipment	Yolo	7.68E+00	1.79E+01	1.00E+02	1.08E+00	0.00E+00	2.98E-04
1990	2270002069	Crawler Tractors	D	250	Construction and Mining Equipment	Yolo	6.60E+00	1.54E+01	1.18E+02	1.28E+00	0.00E+00	3.51E-04
1990	2270002069	Crawler Tractors	D	500	Construction and Mining Equipment	Yolo	4.52E+00	1.05E+01	1.28E+02	1.37E+00	0.00E+00	3.31E-04
1990	2270002069	Crawler Tractors	D	750	Construction and Mining Equipment	Yolo	1.20E-01	2.80E-01	6.09E+00	6.49E-02	0.00E+00	1.58E-05
1990	2270002069	Crawler Tractors	D	1000	Construction and Mining Equipment	Yolo	1.20E-01	2.79E-01	8.62E+00	9.18E-02	0.00E+00	2.21E-05
1990	2270002072	Skid Steer Loaders	D	25	Construction and Mining Equipment	Yolo	5.49E+00	1.26E+01	8.02E+00	8.65E-02	0.00E+00	3.04E-05
1990	2270002072	Skid Steer Loaders	D	50	Construction and Mining Equipment	Yolo	4.98E+01	8.66E+01	1.05E+02	1.10E+00	0.00E+00	7.83E-04
1990	2270002072	Skid Steer Loaders	D	120	Construction and Mining Equipment	Yolo	2.61E+01	4.54E+01	9.00E+01	9.69E-01	0.00E+00	3.47E-04
1990	2270002075	Off-Highway Tractors	D	120	Construction and Mining Equipment	Yolo	2.86E-03	7.78E-03	3.39E-02	3.64E-04	0.00E+00	1.41E-07
1990	2270002075	Off-Highway Tractors	D	175	Construction and Mining Equipment	Yolo	3.50E+00	9.51E+00	5.74E+01	6.20E-01	0.00E+00	1.82E-04
1990	2270002075	Off-Highway Tractors	D	250	Construction and Mining Equipment	Yolo	3.30E+00	8.99E+00	5.42E+01	5.86E-01	0.00E+00	1.72E-04
1990	2270002075	Off-Highway Tractors	D	750	Construction and Mining Equipment	Yolo	7.53E-01	2.05E+00	5.47E+01	5.81E-01	0.00E+00	1.50E-04
1990	2270002075	Off-Highway Tractors	D	1000	Construction and Mining Equipment	Yolo	7.95E-02	2.16E-01	8.27E+00	8.79E-02	0.00E+00	2.26E-05
1990	2270002078	Dumpers/Tenders	D	25	Construction and Mining Equipment	Yolo	6.86E-02	1.25E-01	4.40E-02	4.74E-04	0.00E+00	1.67E-07
1990	2270002081	Other Construction Equipment	D	15	Construction and Mining Equipment	Yolo	9.46E-01	1.79E+00	8.36E-01	9.04E-03	0.00E+00	2.59E-06
1990	2270002081	Other Construction Equipment	D	25	Construction and Mining Equipment	Yolo	1.60E-01	3.03E-01	1.85E-01	2.00E-03	0.00E+00	7.03E-07
1990	2270002081	Other Construction Equipment	D	50	Construction and Mining Equipment	Yolo	2.46E-01	3.39E-01	4.54E-01	4.75E-03	0.00E+00	3.61E-06

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270002081	Other Construction Equipment	D	120	Construction and Mining Equipment	Yolo	4.06E-01	5.60E-01	2.11E+00	2.26E-02	0.00E+00	8.58E-06
1990	2270002081	Other Construction Equipment	D	175	Construction and Mining Equipment	Yolo	5.60E-01	7.74E-01	3.81E+00	4.12E-02	0.00E+00	1.27E-05
1990	2270002081	Other Construction Equipment	D	500	Construction and Mining Equipment	Yolo	1.30E+00	1.80E+00	2.14E+01	2.28E-01	0.00E+00	6.23E-05
1990	2270003010	Aerial Lifts	D	15	Industrial Equipment	Yolo	8.97E-01	9.82E-01	3.93E-01	4.24E-03	0.00E+00	1.22E-06
1990	2270003010	Aerial Lifts	D	25	Industrial Equipment	Yolo	1.47E+00	1.60E+00	8.14E-01	8.78E-03	0.00E+00	3.08E-06
1990	2270003010	Aerial Lifts	D	50	Industrial Equipment	Yolo	5.35E+00	5.64E+00	5.19E+00	5.52E-02	0.00E+00	2.85E-05
1990	2270003010	Aerial Lifts	D	120	Industrial Equipment	Yolo	4.74E+00	5.00E+00	8.80E+00	9.50E-02	0.00E+00	2.91E-05
1990	2270003010	Aerial Lifts	D	500	Industrial Equipment	Yolo	6.08E-01	6.40E-01	6.30E+00	6.81E-02	0.00E+00	1.31E-05
1990	2270003010	Aerial Lifts	D	750	Industrial Equipment	Yolo	4.89E-02	5.15E-02	9.16E-01	9.90E-03	0.00E+00	1.91E-06
1990	2270003020	Forklifts	D	50	Industrial Equipment	Yolo	1.62E+00	8.01E+00	5.62E+00	5.87E-02	0.00E+00	4.50E-05
1990	2270003020	Forklifts	D	120	Industrial Equipment	Yolo	2.55E+00	1.26E+01	1.82E+01	1.96E-01	0.00E+00	7.24E-05
1990	2270003020	Forklifts	D	175	Industrial Equipment	Yolo	2.56E+00	1.26E+01	3.26E+01	3.54E-01	0.00E+00	8.63E-05
1990	2270003020	Forklifts	D	250	Industrial Equipment	Yolo	2.54E+00	1.25E+01	4.46E+01	4.83E-01	0.00E+00	1.18E-04
1990	2270003020	Forklifts	D	500	Industrial Equipment	Yolo	1.09E+00	5.36E+00	2.79E+01	2.97E-01	0.00E+00	6.45E-05
1990	2270003030	Sweepers/Scrubbers	D	15	Industrial Equipment	Yolo	1.19E-01	2.12E-01	1.17E-01	1.27E-03	0.00E+00	3.63E-07
1990	2270003030	Sweepers/Scrubbers	D	25	Industrial Equipment	Yolo	1.19E-01	2.12E-01	1.93E-01	2.08E-03	0.00E+00	7.31E-07
1990	2270003030	Sweepers/Scrubbers	D	50	Industrial Equipment	Yolo	2.32E+00	7.76E+00	1.17E+01	1.22E-01	0.00E+00	8.77E-05
1990	2270003030	Sweepers/Scrubbers	D	120	Industrial Equipment	Yolo	3.84E+00	1.28E+01	4.47E+01	4.81E-01	0.00E+00	1.72E-04
1990	2270003030	Sweepers/Scrubbers	D	175	Industrial Equipment	Yolo	1.77E+00	5.91E+00	3.79E+01	4.11E-01	0.00E+00	9.82E-05
1990	2270003030	Sweepers/Scrubbers	D	250	Industrial Equipment	Yolo	2.83E-01	9.46E-01	7.07E+00	7.66E-02	0.00E+00	1.83E-05
1990	2270003040	Other General Industrial Equipmen	D	15	Industrial Equipment	Yolo	3.13E-01	1.22E+00	3.61E-01	3.90E-03	0.00E+00	1.12E-06
1990	2270003040	Other General Industrial Equipmen	D	25	Industrial Equipment	Yolo	4.19E-01	1.64E+00	1.16E+00	1.26E-02	0.00E+00	4.41E-06
1990	2270003040	Other General Industrial Equipmen	D	50	Industrial Equipment	Yolo	5.19E-01	2.03E+00	2.11E+00	2.20E-02	0.00E+00	1.69E-05
1990	2270003040	Other General Industrial Equipmen	D	120	Industrial Equipment	Yolo	2.08E+00	8.11E+00	2.34E+01	2.51E-01	0.00E+00	9.43E-05
1990	2270003040	Other General Industrial Equipmen	D	175	Industrial Equipment	Yolo	2.08E+00	8.14E+00	3.60E+01	3.90E-01	0.00E+00	9.97E-05
1990	2270003040	Other General Industrial Equipmen	D	250	Industrial Equipment	Yolo	2.07E+00	8.10E+00	5.07E+01	5.49E-01	0.00E+00	1.40E-04
1990	2270003040	Other General Industrial Equipmen	D	500	Industrial Equipment	Yolo	2.07E+00	8.09E+00	1.01E+02	1.07E+00	0.00E+00	2.43E-04
1990	2270003040	Other General Industrial Equipmen	D	750	Industrial Equipment	Yolo	5.17E-01	2.02E+00	4.14E+01	4.41E-01	0.00E+00	9.99E-05
1990	2270003040	Other General Industrial Equipmen	D	1000	Industrial Equipment	Yolo	3.15E-01	1.23E+00	3.22E+01	3.43E-01	0.00E+00	7.73E-05
1990	2270003050	Other Material Handling Equipment	D	50	Industrial Equipment	Yolo	1.49E-02	5.38E-02	7.79E-02	8.15E-04	0.00E+00	6.17E-07
1990	2270003050	Other Material Handling Equipment	D	120	Industrial Equipment	Yolo	8.93E-02	3.23E-01	9.10E-01	9.78E-03	0.00E+00	3.64E-06
1990	2270003050	Other Material Handling Equipment	D	175	Industrial Equipment	Yolo	9.57E-02	3.46E-01	1.95E+00	2.11E-02	0.00E+00	5.36E-06

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270003050	Other Material Handling Equipment	D	250	Industrial Equipment	Yolo	2.28E-01	8.22E-01	5.50E+00	5.96E-02	0.00E+00	1.51E-05
1990	2270003050	Other Material Handling Equipment	D	500	Industrial Equipment	Yolo	4.25E-02	1.54E-01	1.38E+00	1.47E-02	0.00E+00	3.31E-06
1990	2270003050	Other Material Handling Equipment	D	9999	Industrial Equipment	Yolo	1.28E-02	4.61E-02	1.60E+00	1.71E-02	0.00E+00	3.82E-06
1990	2270005015	Agricultural Tractors	D	15	Agricultural Equipment	Yolo	3.47E+02	5.06E+02	2.46E+02	2.66E+00	0.00E+00	7.63E-04
1990	2270005015	Agricultural Tractors	D	25	Agricultural Equipment	Yolo	4.28E+02	6.24E+02	5.84E+02	6.30E+00	0.00E+00	2.21E-03
1990	2270005015	Agricultural Tractors	D	50	Agricultural Equipment	Yolo	9.97E+02	1.30E+03	2.09E+03	2.22E+01	0.00E+00	1.24E-02
1990	2270005015	Agricultural Tractors	D	120	Agricultural Equipment	Yolo	1.15E+03	1.50E+03	5.07E+03	5.47E+01	0.00E+00	1.73E-02
1990	2270005015	Agricultural Tractors	D	175	Agricultural Equipment	Yolo	6.50E+02	8.47E+02	4.85E+03	5.27E+01	0.00E+00	1.14E-02
1990	2270005015	Agricultural Tractors	D	250	Agricultural Equipment	Yolo	4.20E+02	5.47E+02	4.48E+03	4.87E+01	0.00E+00	1.06E-02
1990	2270005015	Agricultural Tractors	D	500	Agricultural Equipment	Yolo	8.34E+01	1.09E+02	1.47E+03	1.58E+01	0.00E+00	3.14E-03
1990	2270005020	Combines	D	120	Agricultural Equipment	Yolo	2.44E+01	1.00E+01	4.39E+01	4.75E-01	0.00E+00	1.32E-04
1990	2270005020	Combines	D	175	Agricultural Equipment	Yolo	3.61E+01	1.49E+01	8.51E+01	9.26E-01	0.00E+00	1.75E-04
1990	2270005020	Combines	D	250	Agricultural Equipment	Yolo	3.86E+01	1.59E+01	1.28E+02	1.39E+00	0.00E+00	2.64E-04
1990	2270005020	Combines	D	500	Agricultural Equipment	Yolo	1.54E+00	6.35E-01	7.05E+00	7.66E-02	0.00E+00	1.37E-05
1990	2270005025	Balers	D	50	Agricultural Equipment	Yolo	4.61E-02	1.20E-02	2.03E-02	2.18E-04	0.00E+00	8.54E-08
1990	2270005025	Balers	D	120	Agricultural Equipment	Yolo	3.24E+01	8.46E+00	2.13E+01	2.30E-01	0.00E+00	6.24E-05
1990	2270005030	Agricultural Mowers	D	120	Agricultural Equipment	Yolo	1.52E+00	1.51E+00	2.45E+00	2.65E-02	0.00E+00	8.04E-06
1990	2270005035	Sprayers	D	25	Agricultural Equipment	Yolo	7.14E+00	2.16E+00	1.19E+00	1.28E-02	0.00E+00	4.51E-06
1990	2270005035	Sprayers	D	50	Agricultural Equipment	Yolo	1.61E+00	3.98E-01	4.18E-01	4.49E-03	0.00E+00	1.75E-06
1990	2270005035	Sprayers	D	120	Agricultural Equipment	Yolo	1.54E+01	3.81E+00	1.00E+01	1.09E-01	0.00E+00	2.93E-05
1990	2270005035	Sprayers	D	175	Agricultural Equipment	Yolo	6.50E+00	1.60E+00	6.97E+00	7.59E-02	0.00E+00	1.39E-05
1990	2270005035	Sprayers	D	250	Agricultural Equipment	Yolo	4.05E+00	1.00E+00	7.14E+00	7.78E-02	0.00E+00	1.43E-05
1990	2270005035	Sprayers	D	500	Agricultural Equipment	Yolo	6.91E-01	1.71E-01	1.33E+00	1.45E-02	0.00E+00	2.53E-06
1990	2270005040	Tillers	D	15	Agricultural Equipment	Yolo	1.61E-01	1.16E-01	3.68E-02	3.98E-04	0.00E+00	1.14E-07
1990	2270005040	Tillers	D	250	Agricultural Equipment	Yolo	2.30E-02	1.09E-02	1.20E-01	1.30E-03	0.00E+00	2.48E-07
1990	2270005040	Tillers	D	500	Agricultural Equipment	Yolo	6.91E-02	3.26E-02	6.41E-01	6.96E-03	0.00E+00	1.25E-06
1990	2270005045	Swathers	D	120	Agricultural Equipment	Yolo	1.75E+02	5.29E+01	1.31E+02	1.42E+00	0.00E+00	3.88E-04
1990	2270005045	Swathers	D	175	Agricultural Equipment	Yolo	1.57E+00	4.73E-01	2.24E+00	2.44E-02	0.00E+00	4.53E-06
1990	2270005050	Hydro Power Units	D	15	Agricultural Equipment	Yolo	1.34E+00	2.98E+00	8.30E-01	8.97E-03	0.00E+00	2.57E-06
1990	2270005050	Hydro Power Units	D	25	Agricultural Equipment	Yolo	4.03E+00	9.00E+00	4.77E+00	5.14E-02	0.00E+00	1.81E-05
1990	2270005050	Hydro Power Units	D	50	Agricultural Equipment	Yolo	4.52E+00	9.79E+00	9.78E+00	1.03E-01	0.00E+00	6.85E-05
1990	2270005050	Hydro Power Units	D	120	Agricultural Equipment	Yolo	4.15E-01	8.99E-01	1.76E+00	1.89E-02	0.00E+00	6.57E-06

CY	Code	Equipment	Fuel	MaxHP	Class	County	Population	Activity	Consumption	CO2 Exhaust	N2O Exhaust	CH4 Exhaust
1990	2270005055	Other Agricultural Equipment	D	15	Agricultural Equipment	Yolo	4.88E+00	5.98E+00	2.12E+00	2.29E-02	0.00E+00	6.56E-06
1990	2270005055	Other Agricultural Equipment	D	25	Agricultural Equipment	Yolo	1.36E+01	1.66E+01	1.08E+01	1.17E-01	0.00E+00	4.11E-05
1990	2270005055	Other Agricultural Equipment	D	50	Agricultural Equipment	Yolo	1.19E+01	1.24E+01	1.49E+01	1.59E-01	0.00E+00	8.19E-05
1990	2270005055	Other Agricultural Equipment	D	120	Agricultural Equipment	Yolo	4.01E+01	4.20E+01	9.93E+01	1.07E+00	0.00E+00	3.28E-04
1990	2270005055	Other Agricultural Equipment	D	175	Agricultural Equipment	Yolo	3.34E+00	3.49E+00	1.49E+01	1.62E-01	0.00E+00	3.38E-05
1990	2270005055	Other Agricultural Equipment	D	250	Agricultural Equipment	Yolo	3.34E+00	3.49E+00	2.16E+01	2.34E-01	0.00E+00	4.90E-05
1990	2270005055	Other Agricultural Equipment	D	500	Agricultural Equipment	Yolo	8.06E-01	8.43E-01	7.53E+00	8.13E-02	0.00E+00	1.57E-05