

Section xx: Natural Gas Combustion—Manufacturing and Industrial

Prepared By: Hao Quinn, November 12, 2002

EMISSION INVENTORY SOURCE CATEGORY

Manufacturing and Industrial

EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTION

050-995-0110-0000 (47142) - Industrial Natural Gas Combustion (Unspecified)

METHOD SUMMARY

California Energy Commission, Andrea Gough, (916) 654-4928 (agough@energy.state.ca.us), provided 2000 PG&E natural gas deliveries and number of accounts in Sacramento County by SIC code. The natural gas deliveries are categorized as Industrial or Commercial based on the SIC code. The following tables are used to classify SIC usage as commercial or industrial:

Commercial Building Classifications

Building Type	SIC Codes Included
Office-Small <30,000 Square Feet	074, 076, 078, 60-61, 62-67, 73
Restaurants	58
Retail Stores	52, 53, 55-57 (554), 59 (592)*
Food/Liquor Stores	54, 592
Warehouses	42 (4222), 50, 51 (514)
Refrigerated Warehouses	4222, 514
Schools	821, 835
Colleges/Trades	822, 824, 829
Health Care	805-809, 836
Hotel/Motel	70 (703)
Miscellaneous	554, 72, 75, 78, 79, 823, 84, 92
Office-Larger >=30,000 Square Feet	801-804, 81, 91, 93-96, 972

*Excluded industry subgroups in parentheses.

(Source: 1998 Baseline Energy Outlook, CEC Staff Report)

Industrial Sector Definitions By SIC Code

SIC	Process Industries
15	Construction
203	Canned, Frozen, Preserved Fruits, Vegetables, and Food Specialites
206	Sugar and Confectionery Products
24	Lumber and Wood Products
261	Pulp Mills
262-3	Paper and Paperboard Mills
29	Petroleum Refining and Related Industries
321-3	Glass and Glassware
324	Cement

SIC	Resource Extraction Industries
10	Metal Mining
13	Oil and Gas Extraction
14	Mining and Quarrying of Non-Metallic Minerals
SIC	Assembly Industries
20x	Food and Kindred Products (Except 203 and 206)
22	Textile Mill Products
23	Apparel and Other Textile Products
25	Furniture and Fixtures
26x	Paper and Allied Products (Except Pulp, Paper and Paperboard Mill 261-263)
27	Printing and Publishing
28	Chemicals and Allied Products
308	Plastics Products
30x	Rubber Products
31	Leather and Leather Products
32x	Stone and Clay Products
33	Primary Metal Industries
34	Fabricated Metal Products
357	Computers and Office Equipment
35x	Industrial Machinery and Equipment (Except 357)
366	Communications Equipment
367	Electronic Components and Accessories
36x	Electronic and Other Electric Equipment (Except 366, 367)
37	Transportation Equipment
38	Instruments and Related Products
39	Miscellaneous Manufacturing

(Source: 1998 Baseline Energy Outlook, CEC Staff Report)

The total unreconciled industrial natural gas usage (excluding 727 mmcf/yr from point sources which have production rate instead natural gas usage as process rate) is 2644 mmcf/yr. Natural gas usage by the 3 large power plants, the UCD Medical cogeneration, and oil and gas extraction industry is not included in the PG&E data. However, since this area source category does not reconcile with power plant, cogeneration, and oil and gas extraction emissions, the total unreconciled industrial natural gas usage need not include consumption data from these sources. The amount of natural gas consumed by point sources is identified using the Reconciliation Report output from CEIDARS and quantified using point source process data from CEIDARS. For those point sources (HC Muddox, Grafil, asphalt plants) whose process rate is not reported as natural gas consumption, the amount of natural gas usage were compiled from the point source survey. The total amount of natural gas consumption by industrial point sources is slighter higher than the amount determined from PG&E report (3108 mmcf/yr versus 2919 mmcf/yr). It is assumed that if the average natural gas consumption (mmcf/account_year) for a SIC code is less than 5 mmcf/account_year, the combustion units under that SIC code are probably small and uncontrolled. Using this assumption, 263 mmcf/yr from the industrial category is uncontrolled (94 lbs of NOx/mmcf).

The unreconciled emissions for this category is sum of emissions from all industrial CEIDARS point sources that have process rates reported in natural gas usage and from the small and uncontrolled industrial sources (263 mmcf/yr).

Type	Usage (mmcf/yr)	NOx EF (lbs/mmcf)	NOx (tpy)
Exempt (small sources) Industrial Natural Gas Usage	263	94	12.36
Industrial CEIDARS point source with NG process rate	2381	42	49.84
Total Unreconciled Commercial Natural Gas	2644	47	62.20

ACTIVITY DATA SOURCE: California Energy Commission
 EMISSION FACTOR SOURCE: Not applicable, from Point Source Inventory
 TEMPORAL INFORMATION: Daily Activity: 8- 24
 hours/day
 Weekly Activity: 5-7 days/week
 Monthly Activity: Uniform
 MOST RECENT UPDATE: April 24, 2002
 GROWTH PARAMETER:

EMISSION SUMMARY (2000 - ANNUAL TONS/YEAR) UNRECONCILED

CES#	TOG	ROG	CO	NOX	SOX	PM	PM10
47142	14.54	7.51	105.26	62.20	0.79	10.05	10.05

NEEDED CLARIFICATIONS/CORRECTIONS TO CURRENT METHOD

None.

FUTURE PLANS FOR METHOD UPDATE/REVISION

None.